Reference number(s)
2509-A

Standard Medicare Part B Management Avastin

Products Referenced by this Document

Drugs that are listed in the following table include both brand and generic and all dosage forms and strengths unless otherwise stated. Over-the-counter (OTC) products are not included unless otherwise stated.

Brand Name	Generic Name
Avastin	bevacizumab
Alymsys	bevacizumab-maly
Avzivi	bevacizumab-tnjn
Mvasi	bevacizumab-awwb
Vegzelma	bevacizumab-adcd
Zirabev	bevacizumab-bvzr
Ocular & Other	ocular & other

Indications

The indications below including FDA-approved indications and compendial uses are considered a covered benefit provided that all the approval criteria are met and the member has no exclusions to the prescribed therapy.

FDA-Approved Indications

Avastin/Alymsys/Avzivi/Mvasi/Vegzelma/Zirabev does not have FDA-approved non-oncology indications. For oncology indications, please see the Avastin/Alymsys/Avzivi/Mvasi/Vegzelma/Zirabev - Oncology MedB policy.

Compendial Uses

- Diabetic macular edema
- Neovascular (wet) age-related macular degeneration
- Retinal vein occlusion with macular edema
- Proliferative diabetic retinopathy

- Choroidal neovascularization
- Neovascular glaucoma
- Retinopathy of prematurity
- Epistaxis due to hereditary hemorrhagic telangiectasia syndrome

All other indications will be assessed on an individual basis. Submissions for indications other than those enumerated in this policy should be accompanied by supporting evidence from Medicare approved compendia.

Coverage Criteria

Diabetic Macular Edema

Authorization of 12 months may be granted for the treatment of diabetic macular edema.

Neovascular (Wet) Age-Related Macular Degeneration

Authorization of 12 months may be granted for the treatment of neovascular (wet) age-related macular degeneration including polypoidal choroidopathy.

Macular Edema Following Retinal Vein Occlusion

Authorization of 12 months may be granted for the treatment of macular edema following retinal vein occlusion.

Proliferative Diabetic Retinopathy

Authorization of 12 months may be granted for the treatment of proliferative diabetic retinopathy.

Choroidal Neovascularization

Authorization of 12 months may be granted for the treatment of choroidal neovascularization.

Neovascular Glaucoma

Authorization of 12 months may be granted for the treatment of neovascular glaucoma.

Retinopathy of Prematurity

Authorization of 12 months may be granted for the treatment of retinopathy of prematurity.

Epistaxis Due to Hereditary Hemorrhagic Telangiectasia Syndrome[7]

Authorization of 12 months may be granted for the treatment of epistaxis due to hereditary hemorrhagic telangiectasia syndrome.

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Continuation of Therapy

All members (including new members) requesting authorization for continuation of therapy must be currently receiving therapy with the requested agent.

Authorization for 12 months may be granted when all of the following criteria are met:

- The member is currently receiving therapy with the requested medication.
- The requested medication is being used to treat an indication in the coverage criteria section.
- The medication has been effective for treating the diagnosis or condition.

Summary of Evidence

The contents of this policy were created after examining the following resources:

- The prescribing information for Avastin, Alymsys, Avzivi, Mvasi, Vegzelma, and Zirabev. The prescribing information only contains oncology indications.
- The available compendium
    - National Comprehensive Cancer Network (NCCN) Drugs and Biologics Compendium
    - Micromedex DrugDex
    - American Hospital Formulary Service- Drug Information (AHFS-DI)
    - Lexi-Drugs
    - Clinical Pharmacology
- American Academy of Ophthalmology Retinal/Vitreous Panel. Preferred Practice Pattern® Guidelines. Diabetic Retinopathy.
- American Academy of Ophthalmology Retinal/Vitreous Panel. Preferred Practice Pattern® Guidelines. Age-Related Macular Degeneration.
- American Academy of Ophthalmology Retinal/Vitreous Panel. Preferred Practice Pattern® Guidelines. Retinal Vein Occlusions.

After reviewing the information in the above resources, the following indications are covered for Avastin, Alymsys, Avzivi, Mvasi, Vegzelma, and Zirbev:

- Diabetic macular edema
- Neovascular (Wet) age-related macular degeneration
- Retinal vein occlusion with macular edema
- Proliferative diabetic retinopathy
- Choroidal neovascularization
- Neovascular glaucoma
- Retinopathy of prematurity
- Epistaxis due to hereditary hemorrhagic telangiectasia syndrome

Explanation of Rationale

Support for diabetic macular edema can be found in a systematic review and network meta-analysis of 24 randomized trials in 6007 patients with diabetic macular edema, antiangiogenic therapy with anti-vascular endothelial growth factor (anti-VEGF) agents (aflibercept, bevacizumab, pegaptanib, ranibizumab) was significantly more effective compared with laser photocoagulation in improving vision at 1 year evaluated with the best-corrected visual acuity. Aflibercept significantly improved the likelihood of a gain of 3+ lines and mean BCVA change compared with ranibizumab and bevacizumab. There was no significant difference in functional outcomes at 1 year comparing ranibizumab and bevacizumab, but reduction in central retinal thickness was better with ranibizumab.

A single-center randomized clinical trial also demonstrated that intravitreal injection of bevacizumab every 6 weeks based on clinical response determined by OCT and visual acuity is superior to macular photocoagulation every 4 months (Michaelides et al, 2010). The authors reported the odds of gaining greater than or equal to 10 ETDRS letters over 12 months were 5.1 times greater in the bevacizumab group than in the laser group (adjusted odds ratio, 5.1; 95 % CI: 1.3 to 19.7; p = 0.019).

Support for neovascular (wet) age-related macular degeneration can be found in a multicenter, single-blind, noninferiority trial conducted by the CATT Research Group. The study randomly assigned 1208 patients with neovascular AMD to receive intravitreal injections of ranibizumab or bevacizumab on either a monthly schedule or as needed with monthly evaluation. The primary outcome was the mean change in visual acuity at 1 year, with a noninferiority limit of 5 letters on the eye chart. Bevacizumab administered monthly was equivalent to ranibizumab administered monthly, with 8.0 and 8.5 letters gained, respectively. Bevacizumab administered as needed was equivalent to ranibizumab as needed, with 5.9 and 6.8 letters gained, respectively. Ranibizumab as needed was equivalent to monthly ranibizumab, although the comparison between bevacizumab as needed and monthly bevacizumab was inconclusive. The mean decrease in central retinal thickness was greater in the ranibizumab-monthly group (196 µm) than in the other groups (152 to 168 µm, P=0.03 by analysis of variance). Rates of death, myocardial infarction, and stroke were similar for patients receiving either bevacizumab or ranibizumab (P>0.20). The proportion of patients with serious systemic adverse events (primarily hospitalizations) was higher with bevacizumab than with ranibizumab (24.1% vs. 19.0%; risk ratio, 1.29; 95% confidence interval, 1.01 to 1.66), with excess events broadly distributed in disease categories not identified in previous studies as areas of concern. At 1 year, bevacizumab and ranibizumab had equivalent effects on visual acuity when administered according to the same schedule. Ranibizumab given as needed with monthly evaluation had effects on vision that were equivalent to those of ranibizumab administered monthly. Differences in rates of serious adverse events require further study.

Support for branch retinal vein occlusion with macular edema can be found in a study by Russo et al. Thirty eyes of 30 consecutive patients with cystoid macular edema secondary to nonischemic branch retinal vein occlusion were assigned to either GLP group or to intravitreal bevacizumab (IB) group. Complete ophthalmologic examinations were performed just before GLP and IB injection at 1, 3, 6, and 12 months after treatment. Changes in logarithm of minimum angle of resolution (logMAR) best-corrected visual acuity (BCVA), central macular thickness (CMT) shown by optical coherence tomography-3 were evaluated. Baseline BCVA (logMAR) and CMT were, respectively, 0.89 +/- 0.13 and 650 +/- 140 microm for the GLP group, 0.87 +/- 0.16 and 690 +/- 120 microm for the IB group. After the treatment, at 1, 3, 6, and 12 months in the GLP group, BCVA had improved by 0.19, 0.22, 0.21, and 0.20 logMAR, CMT had decreased by 40%, 41.3%, 40.5%, and 42%. In the IB group, BCVA had improved by 0.31, 0.32, 0.30, and 0.31 logMAR and CMT had decreased by 59.5%, 59%, 60%, and 60.3%. The group receiving bevacizumab had better BCVA and lower CMT values at all time points (P < 0.05). Intravitreal bevacizumab injection improved BCVA and reduced CMT more than GLP. Intravitreal bevacizumab

injection was well tolerated and could be used as primary treatment in patients with cystoid macular edema secondary to perfused branch retinal vein occlusion.

Support for central retinal vein occlusion with macular edema can be found in the SCORE2 randomized clinical trial. Intravitreal bevacizumab was not inferior to aflibercept in mean change in visual acuity letter score (VALS) at 6 months (from 50.4 to 69.3 vs from 50.3 to 69.3) in the randomized SCORE-2 trial in patients with macular edema secondary to central retinal or hemiretinal vein occlusion (N=362). There were also no significant between-group differences at 6 months in the proportion of eyes with a VALS gain of at least 15 (61.3% vs 65.1%), a VALS decrease of at least 15 (1.7% each group) or mean decrease in central subfield thickness (387 vs 425 mcm). A post hoc analysis demonstrated that the likelihood of resolution of macular edema was significantly decreased by 72% with bevacizumab. Bevacizumab was associated with 1 case of endophthalmitis (culture negative) and 2 cases of intraocular pressure (IOP) greater than 35 mmHg. An IOP increase of more than 10 mmHg from baseline occurred in 4.9% of patients with bevacizumab and in 2.2% of patients with aflibercept. Intravitreal interventions included 6 months of bevacizumab 1.25 mg every 4 weeks or aflibercept 2 mg every 4 weeks.

In a 24-week, prospective, randomized, double-blind study (n=60 eyes) of patients with macular edema secondary to central retinal vein occlusion (CRVO), intravitreal injections of bevacizumab statistically significantly improved visual acuity compared with sham (Epstein et al). Patients with CRVO for up to 6 months, best corrected visual acuity (BCVA) of 15 to 65 Early Treatment Diabetic Retinopathy Study (ETDRS) letters (Snellen equivalent approximately 20/50 to 20/500), and a mean central subfield thickness of 300 micrometers (mcm) or greater were included in the study. Patients (mean age of 70.5 years [range, 52 to 93 years]) were randomized to receive either bevacizumab 1.25 mg/0.05 mL via intravitreal injection (n=30 eyes) via the plans plana or sham (n=30 eyes) injection using a needless syringe pressed to the globe every 6 weeks for 6 months (4 injections). The percentage of patients achieving a 15 or greater ETDRS letter improvement (primary endpoint) was 60% vs 20% (p=0.003) in the bevacizumab and sham arms, respectively. At the 24-week follow-up, visual acuity improved from baseline by a mean of 14.1 ETDRS letters in the bevacizumab arm compared with a mean decrease from baseline of 2 ETDRS letters in the sham arm, with a statistically significant treatment difference occurring from week 12 and beyond (p less than 0.01). There was a statistically significant improvement in the mean decrease in central retinal thickness (CRT; 426 vs 102 mcm), respectively, at all-time points up to week 24 (p less than 0.001). There was no residual edema (CRT less than 300 mcm) at 24 weeks in 86.7% in the bevacizumab arm compared with 20% in the sham arm (p less than 0.001). Iris rubeosis occurred at week 24 in 16.7% of patients in the sham arm and 0% in the bevacizumab arm (p=0.052). There were no reports of serious adverse events, endophthalmitis, or retinal tear or detachment.

Support for proliferative diabetic retinopathy can be found in a study by Mirshahi et al. A prospective, fellow-eye sham controlled clinical trial was conducted on 80 eyes of 40 high-risk characteristic proliferative diabetic retinopathy type II diabetics. All cases received standard laser treatment according to Early Treatment Diabetic Retinopathy Study protocol. Avastin-assigned eyes received 1.25 mg intravitreal bevacizumab on the first session of their laser treatments. Fluorescein angiography was performed at baseline and at weeks 6 and 16, and proliferative diabetic retinopathy regression was evaluated in a masked fashion. The median age was 52 years (range: 39-68) and 30% of the participants were male. All patients were followed for 16 weeks. A total of 87.5% of Avastin-injected eyes and 25% of sham group showed complete regression at week 6 of follow-up (p<0.005). However, at week 16, PDR recurred in a sizable number of the Avastin-treated eyes, and the complete regression rate in the two groups became identical (25%; p=1.000); partial regression rates were 70% vs 65%. In the subgroup of Avastin-treated eyes, multivariate analysis identified hemoglobin A1c as the strongest predictor of proliferative diabetic retinopathy recurrence (p=0.033). Intravitreal bevacizumab remarkably augmented the short-term response to scatter panretinal laser photocoagulation in high-risk characteristic proliferative diabetic retinopathy but the effect was short-lived, as many of the eyes showed rapid recurrence. Alternative dosing (multiple and/or periodic intravitreal Avastin injections) is recommended for further evaluation.

Support for choroidal neovascularization can be found in a study published by Wang et al. Treatment with anti-vascular endothelial growth factor injections was more effective compared with photodynamic therapy, with significant improvements in best corrected visual acuity and retinal thickness reduction. A systematic review identified 2 randomized trials of patients treated with bevacizumab or ranibizumab for myopic choroidal neovascularization (N=32 eyes, duration 6 months; N=48 eyes, duration 18 months), and a meta-analysis found no significant difference between these groups in best corrected visual acuity or retinal thickness reduction. In the 6-month study, the number of required injections did not significantly differ (2.8 vs 2.4); however, in the 18-month study, significantly more injections were required in the bevacizumab group compared with ranibizumab (4.7 vs 2.6).

Chan and colleagues conducted a prospective pilot study studying the 1-year results of intravitreal bevacizumab for myopic choroidal neovascularization. Twenty-nine eyes of 29 patients with myopic CNV were prospectively recruited to receive three initial monthly intravitreal bevacizumab injections. Three additional monthly injections were performed in eyes with persistent or recurrent CNV after 3 months. The mean spherical equivalent refractive error was -10.0 D. Sixteen eyes had previous photodynamic therapy (PDT) and 13 eyes had no prior PDT. All patients completed follow-up at 1 year. Following the initial three bevacizumab injections, 27 (93.1%) eyes had angiographic closure and two (6.9%) required further treatment. Two additional patients required re-treatment for CNV recurrence between 6 and 9 months. The mean baseline logarithm of the minimum angle of resolution (logMAR best-corrected visual acuity) was 0.62 (20/83), which improved to 0.38 (20/48) at 12 months ($p<0.001$). The mean visual improvement was 2.4 lines and 21 (72.4%) eyes had improvement of > or =2 lines. Optical coherence tomography showed significant reduction in central foveal thickness following treatment. Eyes without previous PDT were more likely to gain > or =2 lines after treatment than eyes that had previous PDT ($p = 0.010$). The 1-year outcomes confirmed the results of previous short-term studies that intravitreal bevacizumab is effective for myopic CNV, with a high proportion of patients sustaining visual gain after treatment.

Support for neovascular glaucoma can be found in a study by Yazdani et al. This randomized controlled trial included 26 eyes of 26 patients with neovascular glaucoma (NVG). All eyes received conventional treatment for NVG and were randomly allocated to three 2.5 mg intravitreal bevacizumab injections at 4-week intervals or a sham procedure (subconjunctival normal saline) at similar time intervals and in the same setting. Overall, 14 eyes of 14 patients received intravitreal bevacizumab and 12 eyes of 12 subjects were allocated to the sham procedure and followed for a mean period of 5.9+/-1.4 months. The intravitreal bevacizumab group demonstrated significant reduction in intraocular pressure from a baseline value of 33.4+/-14.5 mm Hg to 21.8+/-13.7 mm Hg (P=0.007), 25.1+/-20 mm Hg (P=0.058), and 23.9+/-18.7 mm Hg (P=0.047) at 1, 3, and 6 months after intervention, respectively. Iris neovascularization was also significantly reduced from a mean baseline value of 347+/-48 degrees to 206+/-185 degrees (P=0.01), 180+/-187 degrees (P=0.004), and 180+/-180 degrees (P=0.004) at 1, 3, and 6 months after intervention. In contrast, intraocular pressure and iris neovascularization remained unchanged or increased insignificantly at all follow-up intervals in the control group. No significant change in visual acuity was observed within the study groups at any time interval. The study groups were comparable in terms of requirement for additional interventions such as panretinal photocoagulation and cyclodestructive procedures.

Support for retinopathy of prematurity can be found in a study by the BEAT-ROP Cooperative Group. The BEAT-ROP Cooperative Group conducted a prospective, controlled, randomized, stratified, multicenter trial to assess intravitreal bevacizumab monotherapy for zone I or zone II posterior stage 3+ (i.e., stage 3 with plus disease) retinopathy of prematurity. Infants were randomly assigned to receive intravitreal bevacizumab (0.625 mg in 0.025 ml of solution) or conventional laser therapy, bilaterally. The primary ocular outcome was recurrence of retinopathy of prematurity in one or both eyes requiring retreatment before 54 weeks' postmenstrual age. One hundred and fifty infants were enrolled (total sample of 300 eyes); 143 infants survived to 54 weeks' postmenstrual age, and the 7 infants who died were not included in the primary-outcome analyses. Retinopathy of prematurity recurred in 4 infants in the bevacizumab group (6

of 140 eyes [4%]) and 19 infants in the laser-therapy group (32 of 146 eyes [22%], P=0.002). A significant treatment effect was found for zone I retinopathy of prematurity (P=0.003) but not for zone II disease (P=0.27). Intravitreal bevacizumab monotherapy, as compared with conventional laser therapy, in infants with stage 3+ retinopathy of prematurity showed a significant benefit for zone I but not zone II disease. Development of peripheral retinal vessels continued after treatment with intravitreal bevacizumab, but conventional laser therapy led to permanent destruction of the peripheral retina. This trial was too small to assess safety.

Support for using bevacizumab as an intranasal injection to treat epistaxis due to hereditary hemorrhagic telangiectasia syndrome can be found in two studies. Steineger and colleagues found repeated intranasal submucosal bevacizumab injections produced a continued positive response in 36.3% of patients with hereditary hemorrhagic telangiectasia in a single arm study (N=33). The mean duration from first to last injection in responders was 54 months (range, 33 to 66 months). A positive response was any reduction in the epistaxis severity score (ESS) and epistaxis intensity, frequency, and need for blood transfusion (IFT) score 6 to 8 weeks after the procedure. After the first intranasal bevacizumab procedure, 87.8% of patients had a positive response. With repeated injections, 33% of patients had a gradual shortening of the effect duration that resulted in treatment discontinuation when the effect duration was less than 8 weeks. Included patients had no benefit from repeated pulsed-dye laser, diode laser, argon plasma coagulation, and septodermoplasty in the previous 2 years or had contraindications to those therapies. During the 5.5 years of study observation, no local adverse events were reported. However, there was 1 case of bilateral osteonecrosis of the knees after eight 200-mg doses with a mean interval between treatments of 5.6 months. The bevacizumab dosage was 100 mg per procedure (50 mg in each side of the nose) initially and later increased to 200 mg per procedure (100 mg on each side). Injections were in the sphenopalatine area, upper part of the bony septum, upper part of the lateral nasal wall, and the anterior floor of the nose; injections were repeated as soon as the effect of the previous treatment diminished. The mean duration between injections was 5.1 +/- 2 months (range, 7 weeks to 11 months).

A prospective study by Karnezis et al found submucosal bevacizumab injection plus nasal spray significantly decreased epistaxis severity scores (ESS) over a 9- to 12-month follow-up period in patients with recalcitrant hereditary hemorrhagic telangiectasia epistaxis. Patients (n=19, mean age, 60 years) received an intranasal submucosal injection of bevacizumab 100 mg (25 mg/mL) at initial presentation. Injections were made along the lateral nasal wall, middle/inferior turbinates, nasal floor, and bony septum; there was intention for two-thirds of the injection to be placed in the anterior one-third of the nose. Over the 12-month follow-up, 6 of the 19 patients received 8 additional treatments with bevacizumab 100 mg nasal spray via a metered dose atomizer, which was given 3, 4, 6, 7, and 11 months after the original submucosal injection for increased bleeding. Following the submucosal injection, the ESS score significantly improved from a mean of 8.12 (severe disease) before treatment to a nadir of 2 (mild disease) at 2 months; in evaluable patients at month 11, the maximum mean ESS was 3.6.

References

1. Avastin [package insert]. South San Francisco, CA: Genentech, Inc.; September 2022.
2. Alymsys [package insert]. Bridgewater, NJ: Amneal Pharmaceuticals LLC; April 2022.
3. Avzivi [package insert]. Guangzhou, Guangdong Province, China: Bio-Thera Solutions, Ltd.; December 2023.
4. Mvasi [package insert]. Thousand Oaks, CA: Amgen Inc.; February 2023.
5. Zirabev [package insert]. New York, NY: Pfizer Inc.; February 2023.
6. Vegzelma [package insert]. Incheon, Republic of Korea: Celltrion, Inc.; February 2023.
7. Micromedex Solutions [database online]. Truven Health Analytics, Greenwood Village, CO. Available at: http://www.micromedexsolutions.com/. Accessed February 12, 2024.

8. Chan WM, Lai TY, Lui DT, et al. Intravitreal bevacizumab (Avastin) for myopic choroidal neovascularization: 1-year results of a prospective pilot study. Br J Ophthalmol.2009;93(2):150-154.
9. Gupta B, Elagouz M, Sivaprasad S. Intravitreal bevacizumab for choroidal neovascularization secondary to causes other than age-related macular degeneration. Eye.2010;24:203-213.
10. CATT Research Group, Martin DF, Maguire MG, et al. Ranibizumab and bevacizumab for neovascular age-related macular degeneration. *N Engl J Med.* 2011;364(20):1897-1908.
11. Russo V, Barone A, Conte E, et al. Bevacizumab compared with macular laser grid photocoagulation for cystoid macular edema in branch retinal vein occlusion. *Retina*. 2009;29:511-5.
12. Michaelides M, Kaines A, Hamilton RD, et al. A prospective randomized trial of intravitreal bevacizumab or laser therapy in the management of diabetic macular edema (BOLT Study) 12-month data: report 2. *Ophthalmology.* 2010;117:1078-1086.
13. Mirshahi A, Roohipoor R, Lashay A, et al. Bevacizumab-augmented retinal laser photocoagulation in proliferative diabetic retinopathy: a randomized double-masked clinical trial. Eur J Ophthalmol. 2008;18(2):263-269.
14. Yazdani S, Hendi K, Pakravan M, et al. Intravitreal bevacizumab for neovascular glaucoma: a randomized controlled trial. J Glaucoma.2009;18(8):632-637.
15. Mintz-Hittner HA, Kennedy KA, Chuang AZ, et al. Efficacy of intravitreal bevacizumab for stage 3+ retinopathy of prematurity. N Engl J Med.2011;364(7):603-615.
16. American Academy of Ophthalmology Retinal/Vitreous Panel. Preferred Practice Pattern® Guidelines. Age-Related Macular Degeneration. San Francisco, CA: American Academy of Ophthalmology; 2019. Available at: https://www.aao.org/preferred-practice-pattern/age-related-macular-degeneration-ppp.
17. American Academy of Ophthalmology Retinal/Vitreous Panel. Preferred Practice Pattern® Guidelines. Diabetic Retinopathy. San Francisco, CA: American Academy of Ophthalmology; 2019. Available at: https://www.aao.org/preferred-practice-pattern/diabetic-retinopathy-ppp.
18. American Academy of Ophthalmology Retinal/Vitreous Panel. Preferred Practice Pattern® Guidelines. Retinal Vein Occlusions. San Francisco, CA: American Academy of Ophthalmology; 2019. Available at: https://www.aao.org/preferred-practice-pattern/retinal-vein-occlusions-ppp.
19. Wang E & Chen Y: Intravitreal anti-vascular endothelial growth factor for choroidal neovascularization secondary to pathologic myopia: systematic review and meta-analysis. Retina 2013; 33(7):1375-1392.
20. Virgili G, Parravano M, Evans JR, et al: Anti-vascular endothelial growth factor for diabetic macular oedema: a network meta-analysis. Cochrane Database Syst Rev 2018; 2018(10):CD007419.
21. Scott IU, VanVeldhuisen PC, Ip MS, et al: Effect of bevacizumab vs aflibercept on visual acuity among patients with macular edema due to central retinal vein occlusion: the SCORE2 randomized clinical trial. JAMA 2017; 317(20):2072-2087.
22. Epstein DL, Algvere PV, von Wendt G, et al: Bevacizumab for macular edema in central retinal vein occlusion: a prospective, randomized, double-masked clinical study. Ophthalmology 2012; 119(6):1184-1189.
23. Steineger J, Osnes T, Heimdal K, et al: Long-term experience with intranasal bevacizumab therapy. Laryngoscope 2018; 128(10):2237-2244.
24. Karnezis TT & Davidson TM: Treatment of hereditary hemorrhagic telangiectasia with submucosal and topical bevacizumab therapy. Laryngoscope 2012; 122(3):495-497.

