

VISION ACADEMY VIEWPOINT

The Vision Academy is a partnership between Bayer and ophthalmic specialists, established with the aim of addressing key clinical challenges in the field of retinal diseases: www.visionacademy.org.

Monitoring of the Fellow Eye in Neovascular Age-Related Macular Degeneration

Background

Neovascular age-related macular degeneration (nAMD) is a major cause of central vision loss, affecting 10% of people aged ≥ 65 years.¹ The development of nAMD typically manifests in one eye and the presence of nAMD in one eye is a major risk factor for its development in the fellow eye.^{1,2} Early detection of nAMD in the fellow eye is critical to preventing bilateral vision loss, thereby preserving patient functioning and quality of life.³

Imaging techniques such as optical coherence tomography (OCT) can potentially detect asymptomatic choroidal neovascularization (CNV). However, many patients with nAMD may have already experienced a decrease in visual acuity (VA) prior to the detection of lesions.^{2,4,5} A recent development has been the increased availability of home-based monitoring techniques which present an opportunity for patients to monitor their own vision.^{3,6,7}

A review of the literature was conducted to examine the rationale for monitoring the fellow eye in at-risk patients with unilateral nAMD, with a focus on the advantages and limitations of current detection methods in the clinic and at home.⁸


Developed on behalf of the Vision Academy Steering Committee in May 2020.

Date of review: May 2022

 Full consensus  Variations in opinion


Viewpoint

Based on the current evidence, the Vision Academy recommends the following for the monitoring of the fellow eye in patients with unilateral nAMD:

- 1. Monitoring of the fellow eye should be considered standard of care in most patients with CNV due to nAMD. Examinations should be performed at least every 3 to 4 months after the diagnosis of CNV in the first eye** 

Early detection of nAMD is essential to preventing vision loss and maintaining quality of life. Better visual outcomes occur if treatment is started early, before the CNV lesion advances and loss of VA occurs.⁹⁻¹¹

- Patients examined in the clinic for intravitreal injection should also undergo examination of the fellow eye at each visit
- Patients should be carefully educated on the symptoms associated with disease progression in the fellow eye, as well as on the importance of early access to diagnosis and proper care

- 2. In the clinic, patients should be monitored by VA examination and appropriate imaging techniques** 

Patients are unlikely to notice small changes in their vision during the early stages of disease, so VA examination and appropriate imaging techniques are critical aspects of fellow-eye monitoring. A range of techniques are available for the detection of nAMD, from chart-based methods such as Amsler grids and VA testing through to specific software and devices such as microperimetry, OCT, OCT angiography, and noise field perimetry.^{3,7,12,13}

Vision Academy Viewpoints are intended to raise awareness of a clinical challenge within ophthalmology and provide an expert opinion to engage further discussion.

They can be downloaded from <https://www.visionacademy.org/resource-zone/resources/all>

The Vision Academy is sponsored by Bayer. This document was prepared on behalf of the Vision Academy by Tien Yin Wong, Paolo Lanzetta, Francesco Bandello, Bora Eldem, Rafael Navarro, Monica Lövestam-Adrian, and Anat Loewenstein.

Always refer to local treatment guidelines and relevant prescribing information.
The views represented in this document do not necessarily reflect those of Bayer.

May 2020 | MA-PFM-OPHT-ALL-0172-1

References

1. Al-Zamil WM and Yassin SA. Recent developments in age-related macular degeneration: a review. *Clin Interv Aging* 2017; 12: 1313–1330.
2. Chew JK, Zhu M, Broadhead GK *et al*. Bilateral neovascular age-related macular degeneration: comparisons between first and second eyes. *Ophthalmologica* 2017; 238 (1-2): 23–30.
3. Schwartz R and Loewenstein A. Early detection of age related macular degeneration: current status. *Int J Retina Vitreous* 2015; 1: 20.
4. Elshout M, Webers CA, van der Reis MI *et al*. Tracing the natural course of visual acuity and quality of life in neovascular age-related macular degeneration: a systematic review and quality of life study. *BMC Ophthalmol* 2017; 17 (1): 120.
5. Capuano V, Miere A, Querques L *et al*. Treatment-naïve quiescent choroidal neovascularization in geographic atrophy secondary to nonexudative age-related macular degeneration. *Am J Ophthalmol* 2017; 182: 45–55.
6. Chew EY, Clemons TE, Bressler SB *et al*. Randomized trial of a home monitoring system for early detection of choroidal neovascularization home monitoring of the eye (HOME) study. *Ophthalmology* 2014; 121 (2): 535–544.
7. Keane PA, de Salvo G, Sim DA *et al*. Strategies for improving early detection and diagnosis of neovascular age-related macular degeneration. *Clin Ophthalmol* 2015; 9: 353–366.
8. Wong TY, Lanzetta P, Bandello F *et al*. Current concepts and modalities for monitoring the fellow eye in neovascular age-related macular degeneration: an expert panel consensus. *Retina* 2020 [epub ahead of print].
9. Ying G-S, Huang J, Maguire MG *et al*. Baseline predictors for one-year visual outcomes with ranibizumab or bevacizumab for neovascular age-related macular degeneration. *Ophthalmology* 2013; 120 (1): 122–129.
10. Lee AY, Lee CS, Butt T *et al*. UK AMD EMR USERS GROUP REPORT V: Benefits of initiating ranibizumab therapy for neovascular AMD in eyes with vision better than 6/12. *Br J Ophthalmol* 2015; 99 (8): 1045–1050.
11. Writing Committee for the UK Age-Related Macular Degeneration EMR Users Group. The neovascular age-related macular degeneration database: multicenter study of 92 976 ranibizumab injections. *Ophthalmology* 2014; 121 (5): 1092–1101.
12. Lovie-Kitchin J and Feigl B. Assessment of age-related maculopathy using subjective vision tests. *Clin Exp Optom* 2005; 88 (5): 292–303.
13. Laishram M, Srikanth K, Rajalakshmi AR *et al*. Microperimetry - a new tool for assessing retinal sensitivity in macular diseases. *J Clin Diagn Res* 2017; 11 (7): NC08–NC11.
14. Varano M, Eter N, Winyard S *et al*. Current barriers to treatment for wet age-related macular degeneration (wAMD): findings from the wAMD patient and caregiver survey. *Clin Ophthalmol* 2015; 9: 2243–2250.
15. Bolster NM, Giardini ME and Bastawrous A. The diabetic retinopathy screening workflow: potential for smartphone imaging. *J Diabetes Sci Technol* 2015; 10 (2): 318–324.
16. Tofigh S, Shortridge E, Elkeeb A *et al*. Effectiveness of a smartphone application for testing near visual acuity. *Eye (Lond)* 2015; 29 (11): 1464–1468.
17. Dorr M, Lesmes LA, Lu ZL *et al*. Rapid and reliable assessment of the contrast sensitivity function on an iPad. *Invest Ophthalmol Vis Sci* 2013; 54 (12): 7266–7273.
18. Wu Z, Guymer RH, Jung CJ *et al*. Measurement of retinal sensitivity on tablet devices in age-related macular degeneration. *Transl Vis Sci Technol* 2015; 4 (3): 13.
19. Wang Y-Z, He Y-G, Mitzel G *et al*. Handheld shape discrimination hyperacuity test on a mobile device for remote monitoring of visual function in maculopathy. *Invest Ophthalmol Vis Sci* 2013; 54 (8): 5497–5504.

3. Patients should be encouraged to monitor their vision at home through weekly monocular reading tests, and should employ home-based technologies as appropriate for the patient



During the initial stages of nAMD, patients may remain asymptomatic and compensatory brain mechanisms may prevent them from noticing initial changes in vision.³ In addition, the inability of patients or their caregivers to get to clinic appointments is a key barrier to treatment.¹⁴

Advancements in home-based detection and monitoring of nAMD (including use of smartphones and other personal devices, and the development of a home-based OCT system) can help patients overcome these barriers and prevent delays in treatment.^{3,6,7,15–18} The specificity and sensitivity of an instrument, along with its ease of use, should be carefully considered when recommending it for patient monitoring at home.

- Simple tests, including monocular reading of a standardized text at the limit of a patient's reading ability, can be utilized to detect changes in vision and are especially important in those patients who already have a diagnosis of nAMD in one eye
- Patient ability to utilize home-based devices should be determined through in-office trial sessions under clinical supervision, and any comorbid conditions or disabilities should also be considered

Further considerations

While home monitoring techniques are becoming increasingly available to patients, potential challenges with using these technologies will need to be addressed.



For example, consistency of viewing distance and ambient illumination may be challenging with self-testing.¹⁸ Additionally, the use of smartphone-based apps may be difficult for patients with poor eye, head, and hand coordination or dexterity problems.¹⁹ Operation of a home-based OCT system may be difficult and time-consuming for elderly patients who struggle with technology. Finally, home monitoring tools may not be affordable or available to all patients, which may prevent the broad-scale use of these technologies. Further developments are needed to address such clinical challenges.



Full consensus



Variations in opinion

Vision Academy Viewpoints are intended to raise awareness of a clinical challenge within ophthalmology and provide an expert opinion to engage further discussion.

They can be downloaded from <https://www.visionacademy.org/resource-zone/resources/all>

The Vision Academy is sponsored by Bayer. This document was prepared on behalf of the Vision Academy by Tien Yin Wong, Paolo Lanzetta, Francesco Bandello, Bora Eldem, Rafael Navarro, Monica Lövestam-Adrian, and Anat Loewenstein.

Always refer to local treatment guidelines and relevant prescribing information.

The views represented in this document do not necessarily reflect those of Bayer.

May 2020 | MA-PFM-OPHT-ALL-0172-1