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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.

Fundamental Principles of an Effective Diabetic Retinopathy Screening Program

Background

Diabetic retinopathy (DR) is the leading cause of blindness in adults of working age (20–74 years) worldwide.[1] Laser photocoagulation or intravitreal injections of anti–vascular endothelial growth factor (anti-VEGF) can reduce vision loss in patients with DR, but the opportunity for early treatment intervention is often missed due to its asymptomatic nature in the early stages of disease.[2–5]

With prompt diagnosis and treatment of DR essential to achieving the best possible visual outcomes, screening programs that assess and grade the eyes of diabetic patients are now commonplace. The key aims of DR screening programs are to ensure that patients with sight-threatening DR are identified and referred to an ophthalmologist for further investigation/ treatment to ultimately prevent vision loss and preserve function and quality of life.[6–8]

While the implementation of screening programs for patients with diabetes has been successful in preventing vision loss, expert consensus on this matter is lacking and greater clarity is needed on the most effective methods of identifying those at risk.

The Vision Academy brought together a working group of experts in order to generate evidence-based recommendations on DR screening. A review of the literature and available evidence was conducted to identify the most effective DR screening methods.[9]

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

Date of review: January 2026

Full consensus Variations in opinion

Viewpoint

1. **Screening methods used to identify DR must be suitable for the specific country, and classification/ grading systems for DR must be systematic and uniformly applied**
   - Seven-field retinal imaging is recognized as the reference standard for DR screening; however, two-field retinal imaging is sufficient
   - A clear definition of DR should be in place and used by screening staff to ensure reliable identification of patients with referable DR
2. **In many countries/regions, screening can and should take place outside the ophthalmology clinic**
   - For example, cost-effective telemedicine programs can be performed in a variety of alternative settings
3. **Staff responsible for screening patients for DR should be accredited and able to show evidence of ongoing training**
4. **It is important that screening programs adhere to relevant national quality assurance standards**
5. **In order to identify optimal risk-based screening intervals, further studies that use consistent definitions of risk are required**
6. **In order to protect patient information, it is important that the appropriate technology infrastructure is in place to ensure the secure storage of high-quality images**
7. **Although screening for diabetic macular edema (DME) in conjunction with DR evaluations may have merit, there is currently insufficient evidence to support the implementation of screening programs solely for DME**

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Further considerations

Key factors to consider when implementing systematic and uniform program standards of DR screening include point of care, cost-effectiveness, imaging methods, training of personnel, and induction of mydriasis.

While age is an independent risk factor, it should not be viewed as the only barrier to successful screening rates in children, young adults, and older adults with reduced mobility.[10] Geography,[11,12] financial constraints or socioeconomic status,[10,13] and lower education level[11] can also be barriers to DR screening.

Nonmydriatic imaging systems using scanning confocal ophthalmoscopy may be preferable to standard retinal fundus photography in some cases, particularly if examinations are to occur without induction of mydriasis.[14,15] Currently, handheld devices have failed to show a similar degree of sensitivity and specificity to seven-field examinations. However, these devices may be beneficial from a telemedicine perspective and when barriers to standard screening exist. The handheld device and patient's head should be in a fixed position in order to limit the introduction of movement artifacts when using these devices.[16–18]

There is a need to standardize and validate methods for risk stratification for DR in order to identify the appropriate screening intervals and improve the cost-effectiveness of screening programs.[19]

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 in 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 Paolo Lanzetta, Valentina Sarao, Peter H. Scanlon, Jane Barratt, Massimo Porta, Francesco Bandello, and Anat Loewenstein.
Always refer to local treatment guidelines and relevant prescribing information.
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