

# CURRENT APPROACHES TO THE PREVENTION AND TREATMENT OF AGE-RELATED MACULAR DEGENERATION



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## Background

**Age-related macular degeneration (AMD)** is a degenerative ailment affecting the macula. It is defined by the presence of distinct clinical findings, including drusen and retinal pigment epithelium (RPE) changes, in the absence of another malady.

AMD is multifactorial in aetiology where age and heredity have a central place in the disease occurrence. Nearly 12% of people over 80 years old are diagnosed with AMD. In addition, smoking and obesity are associated with a higher prevalence of the disease. Modern classification divides AMD into two main types: non-exudative holding around 90% of diagnosed disease and exudative associated with more prompt progression of sight loss.

## Diagnostic clues

The patients often present with a gradual or sudden change in the quality of vision or that straight lines appear distorted, which may gradually turn into a dramatic loss of central vision.

The disease is diagnosed by Amsler grid test and funduscopy examination:

- multiple drusen - early AMD
- confluent drusen with significant pigment variations and accumulation - intermediate AMD

Non-exudative AMD: RPE often appears atrophic

Advanced exudative AMD: choroidal neovascularization, RPE elevation or haemorrhage

Nowadays, the golden standard for diagnostics are ocular coherence tomography (OCT) of the retina and ocular coherence tomography angiography (OCTA) of the retina.

## Prevention and current therapeutic approach

The prevention is essential for the non-exudative AMD, whereas the exudative AMD most commonly requires the active approach.

**Preventive efforts** include **exercising, balanced diet and no smoking**. Dietary supplements such as **carotenoids** and **omega-3 fatty acids** may slow the progression of the disease.

In the exudative form, intravitreal **anti-VEGF medication (ranibizumab, aflibercept** or off label – **bevacizumab**), or less ordinarily **laser**

**coagulation** (Argon Laser Photocoagulation/ Hot Laser Treatment) or **photodynamic therapy** (Visudyne Photodynamic Therapy/ Cold Laser Treatment) may decrease the disease progression (Fig 1).

The most recent disease control approach include **subretinal stem cell transplantation** and intravitreal injection of **ciliary neurotrophic factor, steroid inserts** and **neuroprotective drugs**, including brimonidine.



**Figure 1.** The OCT images show resolution of subretinal fluid in an 82-year old man with exudative AMD after intravitreal anti-VEGF therapy (aflibercept) on a monthly regimen. (source: Lim LS, Mitchell P, Seddon JM, et al. Age-related macular degeneration. Lancet 2012;379:1728–1738.)

## Conclusion

AMD is a degenerative malady affecting the elderly population. Along with glaucoma and diabetic ophthalmopathy, AMD is the most prevalent cause of visual loss in the developed world. Although the exact causes are still not widely known, the risk factors such as heredity, age, smoking and obesity are described. The prevention is crucial for the non-exudative AMD, whereas the exudative AMD most generally requires the active therapeutic strategy. The exudative AMD requires intravitreal anti-VEGF therapy which is considered as a golden standard. New approaches such as subretinal stem cell transplantation, intravitreal injection of ciliary neurotrophic factor, steroid inserts and brimonidine are still in the clinical trial phase and maybe the future therapeutic approach.