CONDITION

Age-related macular degeneration

Learn how age-related macular degeneration affects central vision, how dry and wet AMD differ, and what monitoring and treatments may help protect sight.

WHAT IT IS
Age-related disease of the central retina

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Blurred central vision, wavy lines, central blind spot, trouble recognizing faces

WHAT CAUSES IT
Aging, inherited traits, environmental factors

HOW IT IS DIAGNOSED
Comprehensive dilated eye examination

MAIN TREATMENT
Monitoring, eye injections, selected supplements, vision rehabilitation

CAN IT BE CURED?
No, treatment cannot reverse all damage

IS IT AN EMERGENCY?
Sometimes, curtain-like shadow or many new floaters

LONG-TERM OUTLOOK
May progress to permanent central vision loss

Overview

Age-related macular degeneration, or AMD, affects the macula, the central part of the light-sensitive retina at the back of the eye. The macula provides the detailed vision needed for reading, recognizing faces, driving, and seeing objects directly ahead.

AMD usually develops later in life. It can affect one or both eyes and may progress at different rates in each eye. It does not usually cause complete blindness because peripheral, or side, vision often remains. However, central vision loss can make daily activities difficult.

There are two main forms:

Dry AMD may remain stable, worsen gradually, or develop into wet AMD. Early AMD may cause no noticeable symptoms, so regular eye examinations are important. Although treatment

cannot reverse all damage, monitoring, lifestyle measures, supplements for selected people, injections, and vision rehabilitation may help preserve sight and independence.

- Dry AMD , also called nonexudative AMD, is more common and usually progresses gradually. Deposits called drusen may collect under the retina. Advanced dry AMD is called geographic atrophy, in which areas of retinal tissue waste away.
- Wet AMD , also called neovascular or exudative AMD, occurs when abnormal blood vessels grow beneath the retina and leak fluid or blood. It can cause scarring and rapid vision loss without treatment.

Symptoms

Early AMD often has no symptoms and may first be detected during a dilated eye examination. As it progresses, symptoms can include:

Wet AMD often causes more sudden changes. Door frames, blinds, or lines of text may appear curved, and a central blind spot may enlarge over days or weeks. Changes in one eye can be difficult to notice because the other eye compensates, so check each eye separately if advised.

Contact an eye care professional promptly, preferably the same day, for new central distortion, a new dark area, or a sudden decrease in vision. These symptoms may indicate wet AMD or another condition requiring timely assessment.

A sudden shower of floaters, flashes of light, or a curtain-like shadow is not typical of AMD. It may indicate a retinal tear or detachment and requires emergency eye care.

- Blurred or hazy central vision
- Needing brighter light to read
- Difficulty adjusting from bright to dim light
- Reduced contrast or fine detail
- Colors appearing less bright
- Trouble recognizing faces
- Straight lines appearing bent, wavy, or broken
- A dark, blurry, or empty area in central vision

Causes and risk factors

AMD results from a complex combination of aging, inherited traits, and environmental factors affecting the retina and its blood supply.

Age is the strongest risk factor, with risk increasing after age 50. Other factors include:

Smoking is an important modifiable risk factor and is associated with both AMD development and progression. Supporting cardiovascular health may also support eye health: avoid smoking, stay physically active, eat a balanced diet, and work with a clinician to manage blood pressure and cholesterol.

Reading, screen use, and close work do not cause AMD. Blue-light filtering glasses have not been shown to treat it.

- A close relative with AMD
- Smoking or exposure to secondhand smoke
- High blood pressure or other cardiovascular conditions
- Higher body weight
- Diets low in leafy vegetables, fruit, and fish
- Long-term cumulative sunlight exposure
- AMD in the other eye
- Certain genetic variants
- White racial background, although AMD can affect anyone

Diagnosis

AMD is diagnosed through a comprehensive eye examination. An ophthalmologist or optometrist will ask about symptoms, medical and family history, smoking, medicines, and supplements.

Testing may include an eye-chart assessment and dilating drops so the retina and optic nerve can be examined. The clinician looks for drusen, pigment changes, bleeding, fluid, or retinal thinning.

Optical coherence tomography, or OCT, is a painless scan that creates cross-sectional retinal images. It can identify fluid, swelling, abnormal blood vessels, and tissue loss and is often used to monitor treatment.

If wet AMD is suspected, further imaging may include fluorescein angiography, in which dye is injected into a vein before retinal photographs are taken. OCT angiography can map blood flow without injected dye.

AMD may be classified as early, intermediate, or late. Late AMD includes geographic atrophy and wet AMD. The stage guides monitoring, treatment, and supplement discussions.

An Amsler grid may be recommended for home monitoring. While wearing usual reading glasses, cover one eye and look at the central dot, then repeat with the other eye. Report new waviness, missing lines, or blank areas promptly. Home checks do not replace scheduled examinations.

Treatment and management

Treatment depends on the type and stage of AMD. The goals are to preserve useful vision, identify progression early, and support independence.

Early and intermediate dry AMD

No medicine removes drusen or cures early dry AMD. Management generally includes regular dilated examinations, home monitoring, avoiding smoking, and managing cardiovascular health. A diet containing leafy and colorful vegetables, fruit, fish, and unsaturated fats may support overall eye health.

The Age-Related Eye Disease Studies found that a specific antioxidant and mineral combination, called the AREDS2 formula, can reduce progression to advanced AMD in certain people with intermediate AMD or advanced AMD in one eye. It has not shown the same benefit for people without AMD or with early AMD.

AREDS2 supplements are not ordinary multivitamins and may interact with medicines or be unsuitable for some people. Formulas containing beta-carotene are generally avoided by current or former smokers because beta-carotene supplements have been linked to increased lung cancer risk in these groups. Ask an eye care professional whether AREDS2 is appropriate before taking it.

Geographic atrophy

Geographic atrophy is advanced dry AMD. Intravitreal medicines that block part of the complement immune pathway are available for some patients. Pegcetacoplan and avacincaptad pegol are injected into the eye.

These medicines may slow the growth of atrophy but do not restore lost vision or stop progression completely. Treatment requires repeated injections. Risks include infection inside the eye, inflammation, increased eye pressure, retinal detachment, and development of wet AMD. Discuss the expected benefit, schedule, treatment burden, and risks with a retina specialist.

Wet AMD

Wet AMD is usually treated with anti-vascular endothelial growth factor, or anti-VEGF, medicines. These reduce the growth and leakage of abnormal blood vessels. Medicine is injected into the eye after its surface is numbed and cleaned.

Several anti-VEGF medicines are available. Bevacizumab is commonly used off-label, meaning its regulatory approval was originally for another condition. The medicine and schedule depend on retinal findings, response, health factors, and access to care.

Treatment often involves an initial series of injections followed by continued monitoring and further injections. Vision may improve, remain stable, or decline more slowly. Delaying treatment can allow permanent retinal damage.

Mild irritation or a small red patch may occur after an injection. Severe or increasing pain, marked redness, light sensitivity, discharge, or worsening vision requires urgent contact with the treating clinic because infection inside the eye is uncommon but serious.

Vision rehabilitation

Low-vision rehabilitation can help when glasses are not enough. Options include magnifiers, electronic readers, improved lighting, contrast adjustments, screen-reading software, mobility training, and home-safety changes. Rehabilitation can be used while medical treatment continues.

Complications

AMD can cause permanent central vision loss. Wet AMD may lead to bleeding, retinal scarring, and rapid loss of detailed vision. Geographic atrophy may gradually enlarge until it affects the central point used for reading and recognizing faces.

Vision loss can interfere with driving, cooking, medication management, and navigation and may increase fall risk. Occupational therapists and low-vision specialists can recommend practical adaptations.

Anxiety, isolation, frustration, and depression may also occur. Discuss persistent low mood or loss of interest with a healthcare professional. Rehabilitation and support groups may help.

Eye injections carry small risks, including infection, inflammation, bleeding, retinal detachment, and a temporary rise in eye pressure. Follow the treating clinician's instructions about symptoms requiring immediate assessment.

Follow up

Follow-up depends on the AMD stage, symptoms, imaging, and treatment plan. Early or intermediate dry AMD may be monitored through routine dilated examinations, while geographic atrophy and wet AMD often require more frequent visits and imaging.

Keep appointments even if vision seems unchanged because OCT may detect changes before symptoms develop. Between visits:

New central distortion or sudden vision loss requires urgent assessment. Severe pain, redness, light sensitivity, or worsening sight after an injection also needs urgent care. Flashes, many new floaters, or a curtain over the vision is an eye emergency.

- Check each eye separately as instructed.
- Use an Amsler grid if recommended.
- Report new distortion, a central blind spot, or sudden vision change promptly.
- Continue prescribed injections and monitoring unless your clinician advises otherwise.
- Bring an updated medicine and supplement list to appointments.

Sources

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