CONDITION

Diabetic macular edema

Diabetic macular edema is swelling in the central retina caused by leaking blood vessels damaged by diabetes.

WHAT IT IS
Fluid swelling in the central retina

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Blurred central vision, distortion, faded colors, reading difficulty

WHAT CAUSES IT
Diabetes-related damage makes retinal blood vessels leak

HOW IT IS DIAGNOSED
Dilated eye examination and optical coherence tomography

MAIN TREATMENT
Anti-VEGF eye injections, sometimes laser or steroids

CAN IT BE CURED?
Sometimes - swelling resolves, but recurrence remains possible

IS IT AN EMERGENCY?
Sometimes - sudden severe vision loss needs emergency assessment

LONG-TERM OUTLOOK
Early treatment often protects or improves central vision

Overview

Diabetic macular edema can affect people with type 1 or type 2 diabetes. It happens when damaged blood vessels in the retina leak fluid.

The retina is the light-sensitive layer at the back of the eye. Its central area, called the macula, provides the sharp vision needed for reading, driving, recognizing faces, and seeing detail. Fluid collecting in the macula makes it swell and can disturb central vision.

Diabetic macular edema develops as part of diabetic retinopathy, which is retinal blood vessel damage caused by diabetes. It can occur at different stages of diabetic retinopathy.

The condition may not cause symptoms at first. Regular diabetic eye screening or dilated retinal examinations are therefore important even when your sight seems normal.

Treatment can reduce swelling and protect vision. Some people regain lost vision, while treatment mainly prevents or slows further loss for others. Results are usually better before lasting retinal damage develops.

Symptoms

Diabetic macular edema usually affects central vision. It may involve one or both eyes, sometimes to different degrees.

Possible symptoms include:

Symptoms may develop gradually and fluctuate. Details may remain unclear even after changing your glasses.

Macular edema does not usually affect side vision first. Other forms of diabetic retinopathy may cause floaters, larger areas of vision loss, or more widespread problems.

A lack of symptoms does not rule out the condition. Eye imaging may detect swelling before you notice a change.

- Blurred or hazy central vision
- Straight lines appearing bent or wavy
- Difficulty reading or recognizing faces
- Colors looking faded or less vivid
- Dark, blank, or washed-out areas in central vision
- Needing brighter light or stronger contrast for close work

Causes and risk factors

Diabetes can damage small blood vessels throughout the body. In the retina, weakened vessels may allow fluid, fats, and proteins to leak into nearby tissue. Diabetic macular edema develops when this leakage affects the macula.

Longer exposure to high blood glucose increases the chance of damage, but the condition is not a sign that you have failed to manage diabetes. Complications can occur despite careful management.

Factors linked with higher risk include:

Pregnancy can make existing diabetic retinopathy progress more quickly. This differs from gestational diabetes, which develops during pregnancy and has different eye-screening

considerations.

Rapid improvement in blood glucose can occasionally be followed by short-term worsening of diabetic retinopathy. Better glucose control remains beneficial overall. Plan treatment changes with the healthcare professional managing your diabetes.

- Having diabetes for many years
- Blood glucose remaining above the agreed target
- High blood pressure
- Abnormal cholesterol or other blood fat levels
- Diabetes-related kidney disease
- More advanced diabetic retinopathy
- Pregnancy in someone who already has diabetes

Diagnosis

Diabetic macular edema is diagnosed through an eye examination and retinal imaging. A routine glasses test cannot confirm it.

During a dilated examination, drops widen your pupils so an eye specialist can examine the retina. Your vision is also measured with an eye chart.

Optical coherence tomography, or OCT, is the main imaging test. It uses light to create cross-sectional pictures of the retina, showing thickening and collected fluid. It is non-invasive and usually takes only a few minutes.

Edema may be described as center-involving if it affects the central macula. This is more likely to affect sharp vision and may influence treatment.

Fluorescein angiography is sometimes used to identify leakage or poor blood flow. A fluorescent dye is injected into a vein, usually in the arm, while photographs track it through the retinal vessels. It is not needed for everyone.

Examinations may also check for cataracts, glaucoma, bleeding, or abnormal new blood vessels.

Treatment and management

Treatment depends on the swelling's location, its effect on vision, and whether it is changing. If central vision remains good, observation with repeat examinations and OCT scans may

sometimes be appropriate.

The main treatment for vision-affecting diabetic macular edema is an injection of anti-VEGF medicine into the eye. VEGF is a protein that promotes blood vessel leakage and abnormal vessel growth. Blocking it can reduce fluid and improve or stabilize vision.

The eye is numbed before the injection, and its surface is cleaned to reduce infection risk. The procedure is brief. Several injections are often needed initially, followed by treatment or monitoring at intervals based on the response.

Mild irritation, redness, or a small blood patch on the white of the eye can occur afterward. Rare serious complications include infection inside the eye, retinal detachment, and a significant rise in eye pressure. Your clinic should explain which symptoms need urgent attention.

Other options include:

Managing diabetes, blood pressure, cholesterol, and kidney health supports eye treatment but does not replace treatment for existing vision-threatening swelling.

- Steroid injections or implants: These reduce inflammation and leakage. They may be considered if anti-VEGF treatment has not worked well, cannot be used, or is difficult to continue. Steroids like prednisone or hydrocortisone can raise eye pressure and speed up cataract formation.
- Laser treatment: Small laser burns treat selected leaking areas. Laser is used less often for center-involving swelling but may help with certain leakage patterns or alongside other treatment.
- Vitrectomy surgery: This removes the clear gel inside the eye and may be considered when gel or scar tissue is pulling on the macula.

Complications

Persistent fluid can damage the macula's light-sensing cells, causing lasting loss of detailed central vision even if the swelling later improves.

Scarring, deposits of leaked fats, or reduced macular blood flow may also limit recovery. Diabetic macular edema does not usually remove all vision by itself, and side vision often remains. However, severe diabetic retinopathy can cause bleeding, retinal detachment, or glaucoma that threatens more of your sight.

Treatment also has risks. Repeated injections carry a small risk each time, steroids may cause cataracts or raised eye pressure, and laser may leave small blind spots. Follow-up

examinations help detect complications early.

Prevention

Diabetic macular edema cannot always be prevented, even with careful diabetes management.

Keeping blood glucose and blood pressure within agreed targets can lower the risk of diabetic eye damage or slow its progression. Managing cholesterol, avoiding smoking, and attending kidney and cardiovascular reviews also support blood vessel health.

Regular diabetic eye screening can find retinal changes before vision is affected. If you already have diabetic retinopathy, follow the examination schedule set by your eye service, which may be more frequent than routine screening.

Do not stop or change diabetes medicines because you are worried about your eyes. Discuss major planned changes in glucose management with your diabetes care team, especially if you have advanced retinopathy.

Living with it and what to expect

Diabetic macular edema may require care over months or years. Swelling can settle after treatment, remain stable, or return. Some people need frequent injections initially and fewer later; others need longer-term treatment or a different approach.

Improvement may be gradual. OCT may show reduced fluid before you notice a difference. If damage occurred before treatment, the main benefit may be preserving existing vision rather than restoring all lost detail.

Keep appointments even when your sight feels unchanged. OCT scans help determine whether treatment should be delayed, continued, or restarted.

Between visits, you can compare each eye separately while reading or looking at straight lines. This may help you notice new changes, but home checks do not replace scheduled examinations.

Brighter lighting, magnification, larger text, high-contrast displays, and accessibility settings may make daily tasks easier. Low-vision services can help with equipment, work, education, travel, and independence.

Driving depends on meeting local legal vision standards, not simply on having the diagnosis. Ask your eye clinic about testing if driving has become difficult.

When to get medical help

Arrange a prompt eye assessment for new or worsening central blur, distortion, faded colors, or reading difficulty. These symptoms have several possible causes and require examination.

Contact your eye clinic promptly if symptoms worsen while you are waiting for treatment or between visits. Continue routine follow-up even when your sight seems stable.

Seek urgent or emergency eye care for:

These are not typical signs of slowly developing macular edema. They may indicate infection, retinal detachment, bleeding, or another condition needing rapid assessment.

- Sudden, severe loss of vision
- A dark curtain or shadow moving across your sight
- A sudden burst of new floaters or flashing lights
- Severe eye pain, marked redness, or rapidly worsening vision
- Increasing pain or vision loss after an eye injection

Common questions

Can diabetic macular edema go away?

Swelling can resolve with treatment and may remain settled for long periods, but it can return. Continued monitoring is important, and permanent retinal damage may limit recovery.

Will I go blind from diabetic macular edema?

It can cause serious central vision loss if it remains active, but it does not usually remove all side vision by itself. Early monitoring and treatment improve the chance of preserving useful sight.

Are eye injections painful?

Numbing drops or gel are used first. You may feel pressure, a brief scratch, or mild irritation, but the injection is usually quick. Tell the clinic about significant discomfort during or after treatment.

Can glasses fix the blurred vision?

Glasses can correct focusing problems but cannot remove fluid from the macula. Your prescription may seem unstable while swelling changes and may be more useful once the condition is stable.

How many injections will I need?

There is no single number. Further injections depend on your vision, OCT results, treatment response, and whether fluid returns.

Can I drive with diabetic macular edema?

Some people can drive safely and legally; others cannot because central vision is reduced. You must meet the standards where you live. An eye examination can assess this.

Sources

- American Academy of Ophthalmology Retina/Vitreous Panel. Diabetic Retinopathy Preferred Practice Pattern . Ophthalmology. 2020;127(1):P66-P145.
- National Institute for Health and Care Excellence. Diabetic retinopathy: management and monitoring . NICE guideline NG242. 2024.
- National Eye Institute. Diabetic Retinopathy . National Institutes of Health.
- Schmidt-Erfurth U, Garcia-Arumi J, Bandello F, and colleagues. Guidelines for the Management of Diabetic Macular Edema by the European Society of Retina Specialists . Ophthalmologica. 2017;237(4):185-222.
- Wells JA, Glassman AR, Ayala AR, and colleagues. Aflibercept, Bevacizumab, or Ranibizumab for Diabetic Macular Edema . New England Journal of Medicine. 2015;372:1193-1203.
- Baker CW, Glassman AR, Beaulieu WT, and colleagues. Effect of Initial Management With Aflibercept vs Laser Photocoagulation vs Observation on Vision Loss Among Patients With Diabetic Macular Edema Involving the Center of the Macula and Good Visual Acuity . JAMA. 2019;321(19):1880-1894.