



# INJECTABLE TREATMENTS FOR RETINAL DISEASES

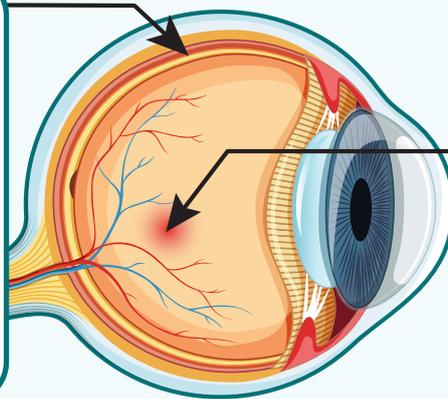
## What are retinal diseases?

**Retinal diseases** refer to a group of disorders that affect the cells in the back of the eye (retina) causing **vision problems** or even vision loss. They have different causes, but common risk factors include:

- **Older age**
- **Long-term health conditions** (such as diabetes and high blood pressure)
- **Lifestyle choices** (such as smoking, poor nutrition or excessive alcohol consumption)

The back of the eye is lined with a thin layer of tissue known as the **retina**.

It captures light and sends signals to the brain to create visual images that we see.



**A normal eyeball**

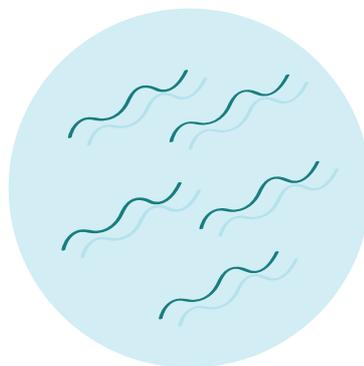
The **macula** is a small area in the centre of the retina that controls what we see straight ahead (**central vision**).

It enables us to see **fine details and colour** in our daily activities.

Symptoms of retinal diseases usually include:



**Blurred central vision**



**Wavy lines**



Some of the vision-threatening retinal diseases seen in Singapore include:

## 1. Diabetic macular oedema

Uncontrolled high blood sugar levels in people with diabetes can damage the blood vessels in the retina, allowing fluid and blood to leak into the macula and cause swelling (**oedema**). This is known as **diabetic macular oedema**. One or both eyes can be affected.<sup>1</sup>

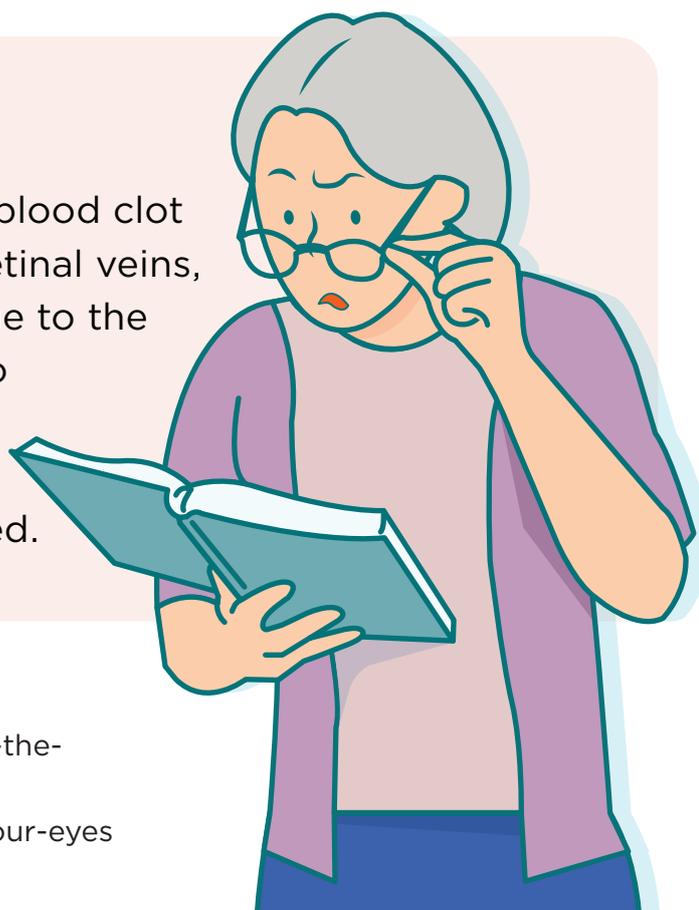
## 2. Age-related macular degeneration

Age-related macular degeneration happens when the **macula** breaks down (degenerates) with age. It typically affects people **aged 50 years or older**. There are two forms of age-related macular degeneration — wet (neovascular) or dry (non-neovascular).

The **wet form** occurs when blood vessels behind the retina start to grow under the macula, causing blood and fluid leakage and **rapid** central vision loss. The **dry form** occurs when the macula thins over time, **gradually** blurring central vision. The dry form is more common, and it progresses more slowly than the wet form.<sup>2</sup>

## 3. Retinal vein occlusion

Retinal vein occlusion happens when a blood clot or blockage (**occlusion**) occurs in the retinal veins, causing reduced blood flow and damage to the retina. Blood and fluid can also leak into the macula, causing **macular oedema**. It mostly occurs in people **aged 60 years or older**. Usually, only one eye is affected.



### Sources

1. [www.healthhub.sg/live-healthy/too-much-eye-candy-the-growing-concern-of-diabetic-retinopathy](http://www.healthhub.sg/live-healthy/too-much-eye-candy-the-growing-concern-of-diabetic-retinopathy)
2. [www.healthhub.sg/live-healthy/keeping-an-eye-on-your-eyes](http://www.healthhub.sg/live-healthy/keeping-an-eye-on-your-eyes)

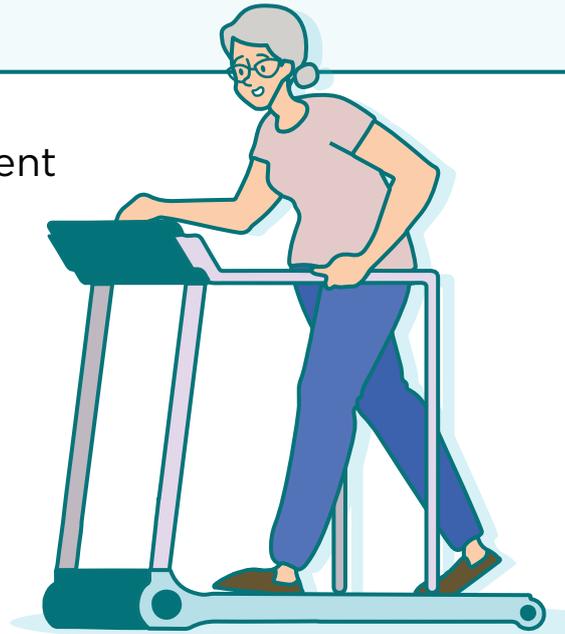
## How are these retinal diseases treated?

**Early detection** and **treatment**, usually with anti-vascular endothelial growth factor (**anti-VEGF**) drugs, can preserve or improve vision in patients with **diabetic macular oedema**, **wet age-related macular degeneration** or **macular oedema following retinal vein occlusion**.

Laser treatment, steroid injections or surgery may be needed for some patients. Nutritional supplements can also be used to help prevent progression from dry to wet age-related macular degeneration.

Other things that you can do to help prevent these conditions from worsening include:

- eating a healthy diet
- exercising regularly
- quitting smoking
- maintaining normal blood sugar, blood pressure and cholesterol levels

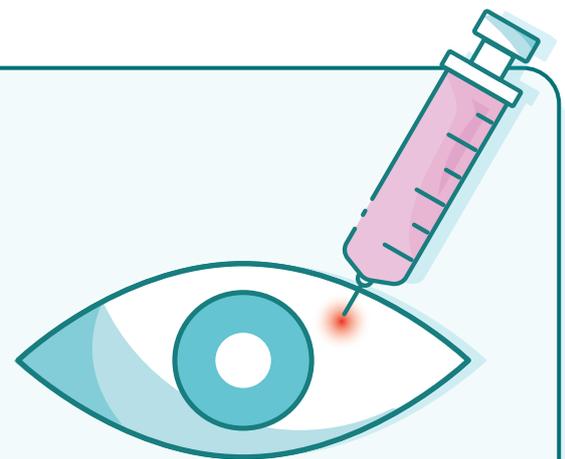


## Anti-VEGF treatments

Anti-VEGF treatments are used to **prevent** the **growth of abnormal blood vessels** in the eye and reduce **swelling** of the macula. This helps to improve or stabilise vision.

Anti-VEGF treatments are given as **injections directly** into the eye by a trained doctor or nurse. This allows the drug to be delivered **closer** to the retina and work more effectively than oral drugs or eye drops.

**Aflibercept**, **faricimab** and **ranibizumab** are anti-VEGF drugs which have been approved to treat some retinal diseases in Singapore. Although bevacizumab has not been approved for use in eyes, it is commonly used in Singapore as it has been shown to be effective in clinical studies.



**Injection into the eye**

Drug name	Approved in Singapore for treating adults with visual impairment due to:		
	Diabetic macular oedema	Wet age-related macular degeneration	Macular oedema following retinal vein occlusion
Aflibercept	✓	✓	✓
Faricimab	✓	✓	✗
Ranibizumab	✓	✓	✓

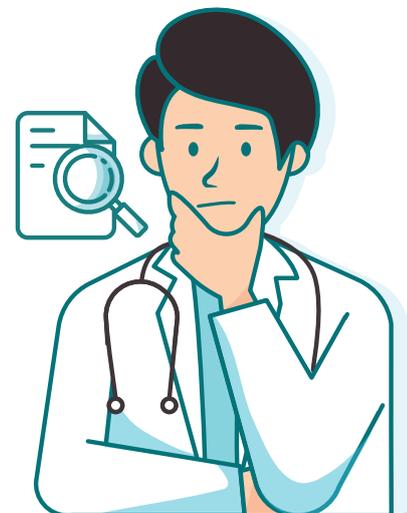
Your doctor will assess your vision, symptoms, treatment preferences and medical history, and advise which treatment is suitable for you.

### What does the evidence from clinical studies say?

ACE reviewed all available clinical evidence and received clinical advice from doctors about each treatment. ACE also negotiated prices with the companies.<sup>3,4</sup>

**Aflibercept, bevacizumab, faricimab** and **ranibizumab** are safe and likely to be **as effective as each other** in improving vision for patients with diabetic macular oedema and wet age-related macular degeneration.

**Aflibercept, bevacizumab** and **ranibizumab** are also safe and effective treatment options for macular oedema following retinal vein occlusion.



#### Sources

3. ACE Technology Guidance on Anti-vascular endothelial growth factors for treating diabetic macular oedema and age-related macular degeneration, 2024
4. ACE Technology Guidance on Ranibizumab for treating age-related macular degeneration, diabetic macular oedema and retinal vein occlusion, 2022

## Subsidised treatments

Most patients require regular anti-VEGF injections every four weeks or sometimes longer apart, to manage their condition. This table shows the **cash** or **MediSave** payment needed for **10 injections** after subsidy and MediShield Life for a **middle-income patient** receiving treatment at **public hospitals\***:

### Subsidised

- ✓ Bevacizumab (\$200 to \$300)
- ✓ Ranibizumab (\$200 to \$300)
- ✓ Faricimab<sup>#</sup> (\$700 to \$1,500)

Treatment costs are subsidised by **40% to 75%** for eligible patients



### Not Subsidised

- ✗ Aflibercept (\$9,500 to \$10,500)

Aflibercept was not subsidised because its benefits do not justify its cost at the price offered by the company.

## Key messages

**Bevacizumab**, **faricimab** and **ranibizumab** are subsidised for treating diabetic macular oedema and wet age-related macular degeneration. Bevacizumab and ranibizumab are also subsidised for treating macular oedema following retinal vein occlusion.

The treatment that you need will depend on different factors such as your vision, symptoms, side effects, preferences, medical history and any other medicines that you are taking. **Discuss** with your **doctor** which treatment is suitable for you. You can also speak to a **medical social worker** if you need further financial assistance for any treatment.

<sup>#</sup>For diabetic macular oedema and wet age-related macular degeneration only.

\*For subsidised drugs, expenses have been calculated using prices proposed by the companies. For non-subsidised drugs, prices at public healthcare institutions when this factsheet was developed were used. Expenses include administration charge but do not include other costs for doctor consultations, medical tests, etc.

A deductible of \$1,500 to \$2,000 per policy year applies before the MediShield Life payout starts. MediShield Life will pay up to \$340 per injection or 90% of the bill, whichever is lower.

MediSave withdrawal is capped at \$350 per injection for these treatments.

Source: Ministry of Health, Table of Surgical Procedures, 1 Jan 2024



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