

Corneal Ulcers

A corneal ulcer is a painful open sore on the cornea that can cause loss of vision and even blindness. A corneal ulcer appears as a grey to white cloudy or translucent area on the normally transparent cornea. Corneal ulcers may sometimes be too small to see without sufficient magnification and lighting. Corneal ulcers are included in the prescribed minimum benefits (PMB) level of care. This article focuses on the condition, and the relevant PMB that members are entitled to.

What is the Cornea?

The human eye consists of an anterior section (the front part that you can see when looking in a mirror) and the posterior section (the area behind the front part that is not visible to the naked eye).

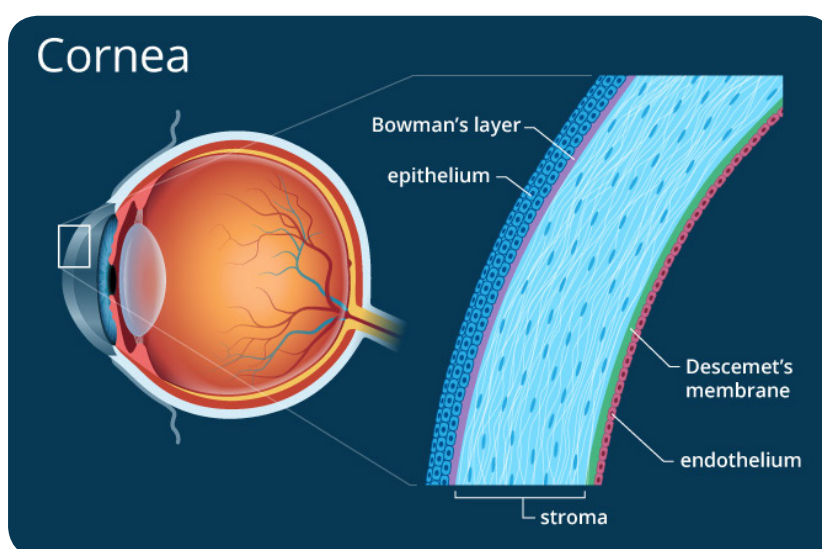
The anterior segment of the eye includes the following:

- Iris – the coloured part of the eye.
- Cornea – a transparent, protective layer over the iris, pupil and anterior section.
- Pupil – the round opening that is visible as the black circle and allows light to enter the eye.
- Sclera – the white part of the eye.
- Conjunctiva – a thin layer of tissue that covers the entire anterior area except the cornea of the eye.

The cornea is avascular (does not have blood vessels) yet it relies on elements in the blood to remain healthy. These elements are supplied by tiny blood vessels at the outer edge of the cornea and the end branches of the arteries that supply blood to the face and rest of the eye and face.

The cornea consist of five layers, each with a distinct function, namely the epithelium (absorbs oxygen and nutrients from tears), Bowman's layer (can form scar tissue if damaged), the stroma (gives the cornea its form, elasticity, and strength), Descemet's membrane (protects against injuries and infection) and the endothelium (serves to defend against fluid build-up in the stroma and keeps it transparent). The cornea itself helps protect the eye from harmful dust, germs, or other matter. It does this in conjunction with tears, the eyelid, the eye socket, and the sclera.

The main function of the cornea is to control and focus light that enters the eye. It provides 65 – 75% of the focusing power of the eye. The rest of the eye's focusing power is provided by the lens.



What is a Corneal Ulcer?

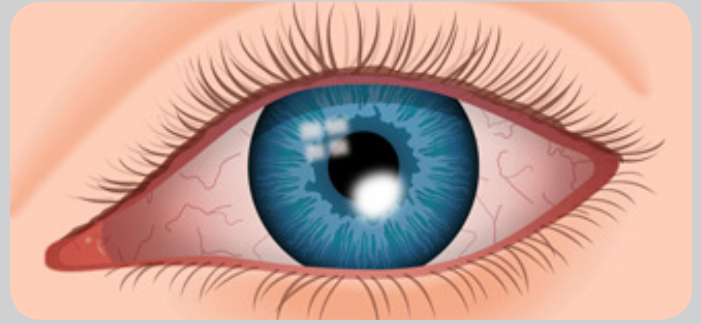
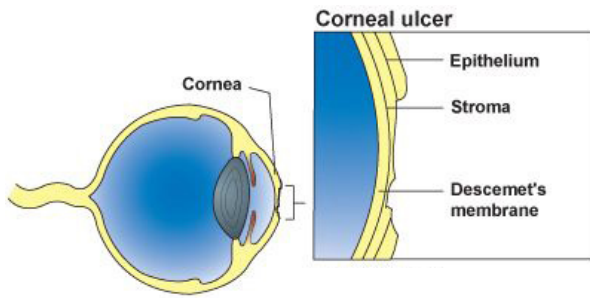
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Types and Causes of Corneal Ulcers

Corneal ulcers are divided into infectious and non-infectious ulcers.

Infectious corneal ulcers are most frequent and are usually caused by:

- Bacterial infections (infections caused by bacteria) – these are common in contact lens wearers, especially in those using extended-wear lenses.
- Viral infections (infections caused by a virus) – Herpes Simplex that causes cold sores and the Varicella virus that causes chickenpox and shingles can cause corneal ulcers. Stress, an impaired immune system and exposure to sunlight often trigger these attacks.



- Fungal infections (infections caused by a fungus) – fungal infections can be caused by the incorrect use of contact lenses, steroid eye drops and an injury that lets plant substances to enter the eye.
- Parasitic infections (infections caused by the parasite Acanthamoeba) – Acanthamoeba (known as amoeba) is a single-cell organism that is most often found in fresh water and soil. The organism can enter the eye and cause (keratitis) a serious infection.
- Tiny tears to the cornea may also cause corneal ulcers. These tears can come from direct trauma, scratches, cuts, or particles such as sand, glass, or small pieces of steel, and burns that become infected by bacteria.

Non-infectious corneal ulcers can be caused by:

- Dry eye syndrome – occurs when the tears are not able to provide adequate lubrication for your eyes. This may cause infections, corneal abrasion and subsequently corneal ulcers.
- Bell's palsy – the condition causes temporary weakness or paralysis of the facial nerve that controls, among others, facial expressions and eyelid movement. The muscle that opens the eye is controlled by a separate cranial nerve and the eye can easily open. The eyelid can, however, not be closed again. This results in a severe form of dry eye syndrome.
- Other conditions – autoimmune diseases, neurotrophic, toxic, allergic keratitis, chemical burns, as well as keratitis caused by entropion and blepharitis.

Symptoms of Corneal Ulcers

If the corneal ulcer is caused by an eye infection you may notice signs of the infection before you are aware of a corneal ulcer. Symptoms of an eye infection include:

- Itchy eye
- Watery eye
- Pus-like discharge from the eye
- Painful eye
- Burning or stinging sensation in the eye
- Red or pink eye
- Sensitivity to light

Symptoms of a corneal ulcer include the following:

- Redness of the eye

- Severe pain of the eye
- Tearing
- Discharge that may include pus
- Blurred or reduced vision
- Sensitivity to light
- Swelling of the eyelids
- A white spot on the cornea that may or may not be visible when looking in a mirror

If you suspect that you may have a corneal ulcer it is critical to visit your doctor right away. A general practitioner will refer you to an ophthalmologist (eye specialist).

Complications of Corneal Ulcers

Most complications from corneal ulcers occur when the ulcer has been left untreated. Complications that may occur include:

- Loss of vision
- Scarring on the cornea
- Perforated corneal ulcer
- Loss of the affected eye
- Spread of infection to other parts of the eye and the body.

Corneal Ulcer and Prescribed Minimum Benefits

Corneal ulcers are included in the PMBs in the Diagnostic Treatment Pair (DTP) 911B - Corneal ulcer; Superficial injury of the eye and adnexa. The treatment component is specified as conjunctival flap and medical management.

The most important part of the management of corneal ulcers is to obtain a diagnosis and treatment as soon as possible.

Diagnosis

The ophthalmologist will perform a test called a fluorescein eye stain. A drop of orange dye is placed on a thin piece of blotting paper which is transferred to your eye by touching the paper to the eye surface. The ophthalmologist use a slit-lamp (microscope with a special violet light) to look for damaged areas on the cornea. If your ophthalmologist thinks that an infection has caused your corneal ulcer, they may take a tiny tissue sample. Local anaesthetic eye drops are placed in the eye before the ulcer is gently scraped. Examination of this sample by a pathologist will identify if an infection is present and if it is caused by bacteria, a virus or a fungus.

Treatment

Corneal ulcers caused by infections are treated with antibiotic, antiviral or antifungal eye drops. Antifungal tablets may be prescribed as well. If your eye is inflamed and swollen, you may have to use anti-inflammatory or corticosteroid eye drops but this needs to be done under close supervision of the ophthalmologist. Pain medicine (analgesics) are often prescribed as the condition is quite painful.

Conjunctival flap surgery is stated in the PMB treatment component but is currently not the general level of care in the state sector. The conjunctival flap very often becomes opaque (cloudy) and cause vision loss. As such it is used in older patients who already suffer from vision loss, or in blind patients. The conjunctival flap is performed to provide comfort and decrease the pain experienced by the patients.

Conjunctival flap surgery is also clinically appropriate in patients who suffer from an infection that does not respond to medicine management. The conjunctiva flap is seldom removed as it may cause damage and there is a high risk of further infection. The opacification and subsequent vision loss are serious complications that may arise.

Corneal transplants are clinically the most appropriate surgical treatment for corneal ulcers. The transplant is carried out when the corneal ulcer does not respond to other treatments, or where the cornea has been perforated. A corneal transplant restores vision and is the treatment of choice in both the state sector and the private sector, even though the procedure is not specified in the PMB regulations.

Regulation 15H (c) states that provision must be made for appropriate exceptions where a protocol has been ineffective or causes, or would cause harm to a patient.

Since the stipulated PMB treatment component, namely conjunctival flap surgery, may cause harm in the form of vision loss, corneal transplants can be considered as PMB level of care.

In cases where the corneal ulcer is severe, and the cornea has been perforated, emergency transplants are carried out. The rejection rate of donor corneas is in patients receiving the transplants is fairly slim, and therefore chronic anti-rejection medication is not required. Should signs of a possible rejection occur your ophthalmologist will admit you to hospital for 24 hours of high dose, intravenous steroid treatment.

Care after a corneal transplant

Patients who received a corneal transplant are followed up very closely to ensure that no complications occur, and frequent consultations with the ophthalmologist are required. The consultations are of critical importance to prevent cas-

es of further infection, and to reduce the rate of unsuccessful transplants.

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WHAT ARE PRESCRIBED MINIMUM BENEFITS?

Prescribed Minimum Benefits (PMBs) are defined by law. They are the minimum level of diagnosis, treatment, and care that your medical scheme must cover – and it must pay for your PMB condition/s from its risk pool and in full. There are medical interventions available over and above those prescribed for PMB conditions but your scheme may choose not to pay for them. A designated service provider (DSP) is a healthcare provider (e.g. doctor, pharmacist, hospital) that is your medical scheme's first choice when you need treatment or care for a PMB condition. You can use a non-DSP voluntarily or involuntarily but be aware that when you choose to use a non-DSP, you may have to pay a portion of the bill as a co-payment. PMBs include 270 serious health conditions, any emergency condition, and 25 chronic diseases; they can be found on our [website](#)

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