

Glaucoma

Glaucoma is an eye disease that is characterised by an increased intraocular pressure (within the eye) that may cause damage to the optic (eye) nerve.

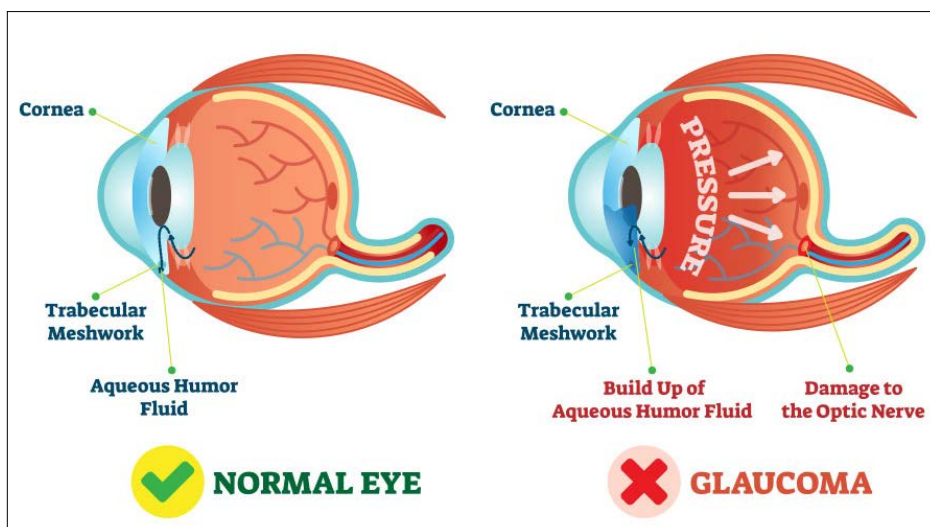


Figure 1: A normal eye and one with Glaucoma

What is Glaucoma?

The optic nerve is a nerve that connects the eye to the brain. In the eye, there is a clear fluid known as the aqueous humor which fills the front chamber of the eye. In a healthy eye, small amounts of this fluid are released through a drainage angle to control the intraocular pressure. If the flow of the aqueous humor slows down or is blocked, pressure builds up in the eye resulting in optic nerve damage. Damage to the optic nerve may result in progressive vision loss thus affecting the ability to perform daily activities, leading to a reduction in the quality of life.

Glaucoma may also result in blindness. There are however people that have raised intraocular pressure but never develop glaucoma.

How common is Glaucoma?

Glaucoma affects more than 70 million people in the world and a person may be unaware of the condition until

the condition is severe. It is estimated that Glaucoma will affect almost 80 million people by 2020 and 111.8 million people by 2040, affecting more people in Asia and Africa.

Almost 200 000 people in South Africa are currently suffering from Glaucoma, with a prevalence of around 5 to 7% in the black population and 3 to 5% in the white population. Glaucoma is the second most common cause of blindness in the world after Cataracts.

Types of Glaucoma and symptoms

Glaucoma can be classified into 2 broad categories, which are Open-Angle Glaucoma and Closed-Angle Glaucoma.

1. Open-Angle (chronic) Glaucoma is the most common type of Glaucoma. Although the cause is unknown, this type of Glaucoma tends to run in families and is mostly found in people of African descent. It is characterised by an increase in eye pressure that occurs slowly over time resulting in slow damage to the person's vision. The eyes may appear normal when you look in the mirror and to family and friends. Pain is usually absent and visual field loss (side vision loss) is not a symptom until late in the course of the disease.
2. Closed-Angle (acute) Glaucoma occurs when the exit of the aqueous humor fluid is suddenly blocked. Some medicines can unfortunately lead to or trigger the blockage of exit of the aqueous fluid. These include common medicines such as some eye drops

used to dilate (enlarge) the pupil, tricyclic antidepressants, and some medicines that treat allergies or stomach ulcers.

- Ocular surgery may also trigger Glaucoma
- Pre-existing raised intra-ocular pressure
- Use of systemic or topical corticosteroids

Signs and symptoms include rapid onset of severe eye pain, headache, nausea and vomiting, and hazy or blurred vision. This type of acute glaucoma is considered a medical emergency. Blindness can occur in a few days if the condition is not treated. If one eye is affected, the risk of an attack in the second eye is high. The eye specialist will probably prescribe treatment to prevent the other eye from being affected.

There are also other types of Glaucoma that are of importance:

1. Secondary Glaucoma has an identifiable cause of increased eye pressure that might have been caused by eye diseases such as Uveitis (inflammation of the middle layer of the eye); systemic diseases like Diabetes Mellitus; or trauma or injury to the eye.
2. Congenital Glaucoma is commonly seen in babies. It often runs in families and is caused by abnormal development of the angle of the eye. Because of this abnormality, the intraocular pressure increases as the aqueous humor cannot flow out normally. Congenital Glaucoma signs include severe photophobia (light sensitivity), blepharospasms (twitching of the eyelid), and lacrimation (secretion of tears).

Glaucoma screening

There is currently no cure for Glaucoma. Vision loss from the condition is irreversible. Therefore, early detection is important to limit visual impairment and to prevent disease progression. Glaucoma screening for the general population is desirable. However, population-based Glaucoma screening is currently not cost-effective. Screening may be beneficial and cost-effective when it is done for high-risk populations. High risk populations include family history of Glaucoma, Diabetes Mellitus, Hypertension and Hyperthyroidism.

High risk factors

A number of risk factors are known to be associated with Glaucoma, and include the following:

- A family history of Glaucoma, especially seen in patients diagnosed with juvenile Open-Angle Glaucoma
- The general risk for Glaucoma increases after the age of 60 years, with the exception of r Angle-Closure Glaucoma which increases after the age of 40
- Co-morbid conditions such as Diabetes Mellitus
- Pre-existing eye conditions, including eye tumours, retinal detachment or lens dislocation

Diagnostic tests

Several tests may be used to make a diagnosis of Glaucoma. During the tests, eye drops may be given to dilate (widen) the pupil to allow the doctor to have a better view inside the eye. The following tests may be performed:

- A visual acuity test: to determine the smallest letter a person can read on a standardised chart (Snellen chart).
- An eye pressure test: to measure the pressure in the eye. It is done using a tonometer.
- An ophthalmoscopy: to examine the interior of the eye using an ophthalmoscope.
- A visual field test: to check for missing areas of vision. In this test you are shown a sequence of light spots and asked which ones you can see. Some dots will appear in the peripheral vision (around the sides of your eyeball), which is where glaucoma begins. If the spots in the peripheral vision cannot be seen, it may indicate that glaucoma has damaged your vision.
- A gonioscopy: to examine the front outer edge of your eye, between the cornea (the transparent, dome-shaped window covering the front of the eye) and the iris (the coloured part of the eye). This is the area where the fluid should drain out of your eye. The test can help to determine whether this angle is open or blocked.
- An optic nerve assessment: to assess whether glaucoma has damaged the optic nerve.

Treatment and care

Slowing the disease progression and preserving quality of life are the main goals for glaucoma treatment. Medication choice may be influenced by cost, dosing schedules and potential adverse effects.

- Open-angle Glaucoma responds well to medical or pharmacological intervention. The first-line treatment options are considered to be monotherapy (the treatment of a disease with a single drug) with either Beta-blockers or prostaglandin analogues. Treatment should follow a step-wise approach. Surgery may be required in certain cases.
- Closed-angle Glaucoma is an emergency condition and requires immediate treatment. When medical treatment does not adequately reduce intraocular pressure, laser or incisional surgeries are indicated. Sometimes surgery is presented as a first-line treatment option in severe cases, in poorly responding patients.

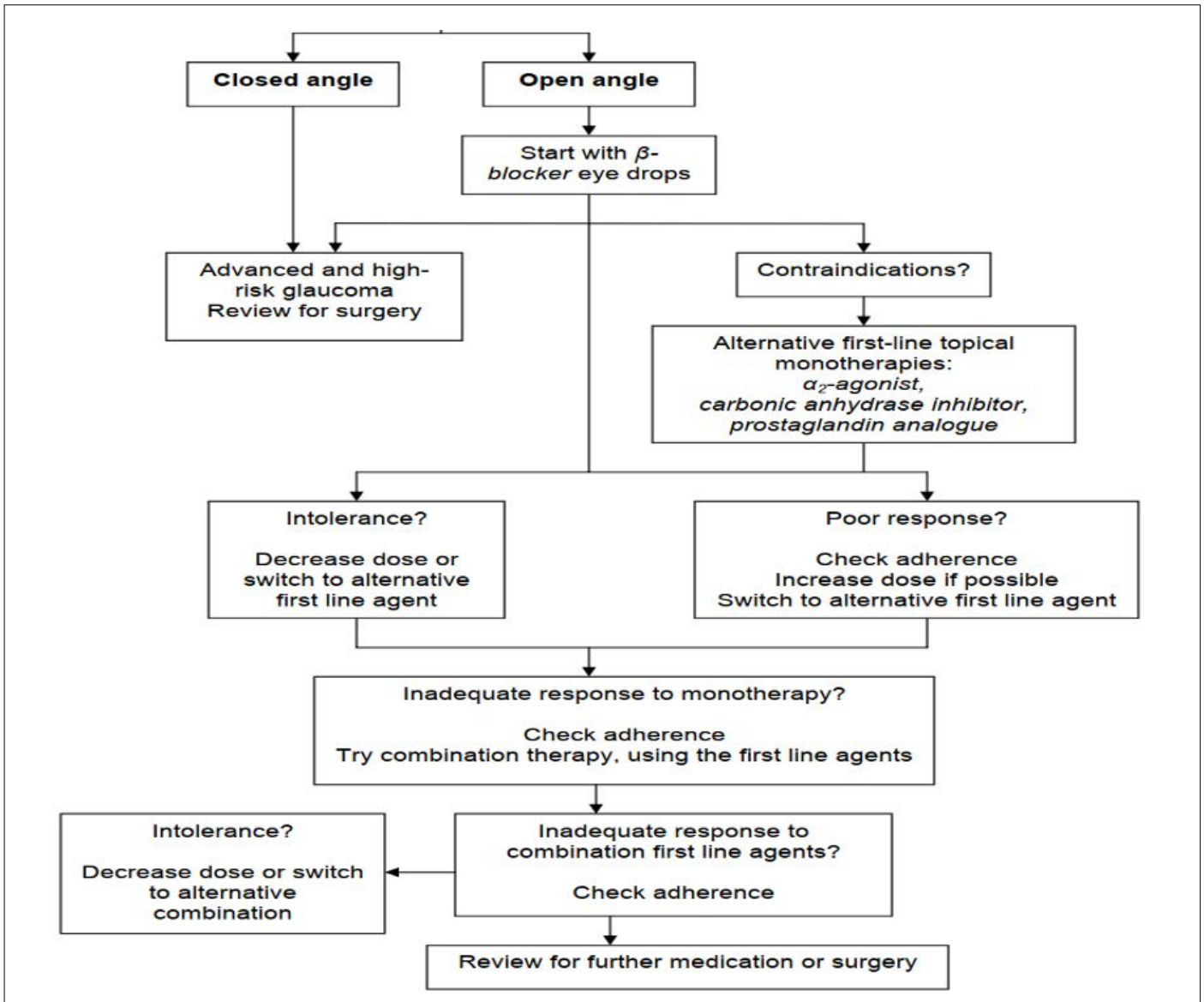
Prescribed Minimum Benefits (PMB)

Glaucoma is a PMB condition, which means that all medical schemes are required by law to pay for the diagnosis, treatment, and care of glaucoma regardless of the member’s benefit option. Treatment and care of Glaucoma is explained in terms of the PMB Regulations.

- Glaucoma as a condition under the Chronic Disease List (CDL)
- Treatment component for Glaucoma as a CDL is specified as medical management which is provided for in the treatment algorithm as follows:

despite using the medicines correctly, the doctor may increase the dosage, change to another class of medicines, or use a combination of different eye drops. If there is still no response, the doctor may add another class of medication using the scheme’s list of medicines or recommend surgery.

- Regarding Closed-angle Glaucoma, the doctor should also start with Beta-blocker eye drops. In case of advanced and high risk cases, surgery must be considered.



- In terms of treating Open-angle (chronic) Glaucoma, the CDL algorithm specifies that the doctor should prescribe Beta-blocker eye drops first. If these are contra-indicated or do not work, the doctor may prescribe other first-line agents such as adrenergic agonists, carbonic anhydrase inhibitors, or prostaglandin analogues. If the response to treatment is poor

Diagnosis and Treatment Pair (DTP) codes

- Angle-closure Glaucoma is a PMB condition under DTP code 394B. Treatment component specified for this DTP according to the PMB Regulations is “Iridectomy; laser surgery; medical and surgical management.” Iridectomy refers to the surgical removal of an iris.

- Scientific evidence indicates that, if pressure remains high after surgery, long-term medical treatment (including topical beta-blockers, adrenergic agonists, carbonic anhydrase inhibitors, and prostaglandin analogues) can be instituted, such as when you medically treat Open-angle Glaucoma.
- Primary and Open Angle glaucoma with failed medical management is a PMB under DTP code 407B. Treatment component specified for this DTP according to the PMB Regulations is “Trabeculectomy; other surgery.”
- The PMB Regulations does not specify the type of surgery to be funded as an alternative to Trabeculectomy. On the other hand, scientific evidence indicates that when medical treatment does not achieve adequate intraocular pressure reduction, laser or incisional surgeries are indicated. Glaucoma Drainage Implant (GDI) surgery can be used in cases that will not benefit from Trabeculectomy. Various devices are available for GDI surgery and these should be funded taking into consideration the clinical effectiveness, cost-effectiveness and affordability of the device needed.

References

1. Aref, A.A., Gedde, S.J. & Budenz, D.L. (2017). Glaucoma Drainage Implant Surgery. *Development Ophthalmology*, 59:43-52. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4523637/pdf/nihms709852.pdf> [Accessed 14 April 2020].
2. Boyd, K. & McKinney, J.K. (2019). What is a glaucoma drainage implant? Available from: <https://www.aao.org/eye-health/treatments/glaucoma-drainage-implants> [Accessed 14 April 2020].
3. Council for Medical Schemes. (2013). CMScript: Glaucoma. Available from: https://www.medicalschemes.com/files/CMScript/CMScript7Of2012_2013.pdf [Accessed 14 April 2020].
4. Health24. How common is glaucoma? Available from: <https://www.health24.com/Medical/Eye/Glaucoma/how-common-is-glaucoma-20180412> [Accessed 14 April 2020].
5. Schellack, N., Schellack, G., Bezuidenhout, S., Malan, L. & de Klerk, H. (2017). Glaucoma: A brief update for 2017. *South African Family Practice*, 59(6):5-10. Available from: [www.ajol.info > index.php > safp > article > download](http://www.ajol.info/index.php/safp/article/download) [Accessed 14 April 2020].
6. South Africa. (2003). *Chronic disease list algorithms*. Pretoria: Government Printer.
7. Department of Health South Africa. (2020). *World glaucoma week 2020*. Available from: <https://www.gov.za/WorldGlaucomaWeek2020> [Accessed 14 April 2020].
8. Weinreb, R.N., Aung, T. & Medeiros, F.A. (2014). The Pathophysiology and Treatment of Glaucoma: A review. *The Journal of American Medical Association*, 311(18): 1901–1911. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4523637/pdf/nihms709852.pdf> [Accessed 14 April 2020].
9. World Health Organization. (2004). Glaucoma is second leading cause of blindness globally. Available from: <https://www.who.int/bulletin/volumes/82/11/feature1104/en/index1.html> [Accessed 14 April 2020].
10. Figure 1: Glaucoma. Available from: <https://www.net-meds.com/health-library/post/glaucoma-causes-symptoms-and-treatment> [Accessed 5 February 2021]

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Contact information:

information@medicalschemes.co.za

Hotline: 0861 123 267

Fax: 012 430 7644

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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](#).