

**Brain tumours are included in the Prescribed Minimum Benefits (PMB) regulations as one of the Diagnostic Treatment Pairs. This article will provide information on the condition and treatment types and ends with a brief general guide on how treatment will be funded according to the PMB Regulations.**

## Brain Tumours

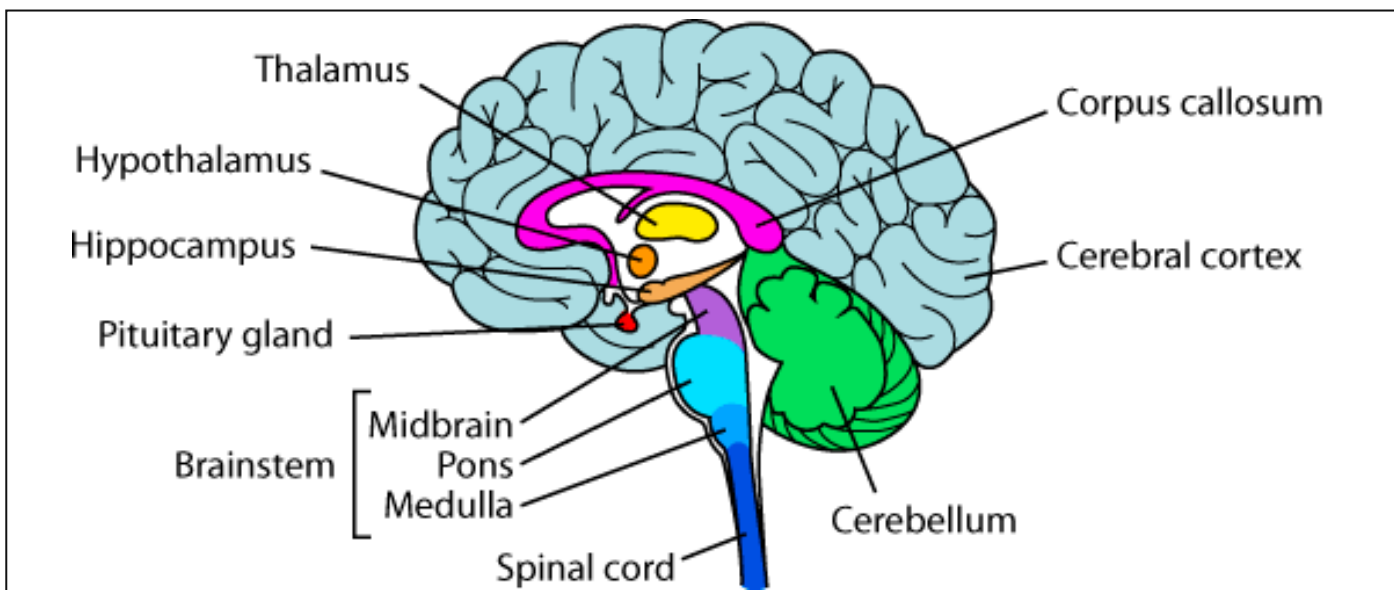
Primary brain tumours can be malignant (contain cancer cells) or benign (do not contain cancer cells). A primary brain tumour begins in the brain. If a cancerous tumour which starts elsewhere in the body sends cells that ends up growing in the brain, such tumours are called secondary or metastatic brain tumours. This discussion is focused on primary brain tumours.

## Cause of brain tumours

The precise cause of brain tumours are not clear and currently there are several studies investigating possible causes of brain tumours.

## Symptoms of brain tumours

Brain tumours have a wide variety of symptoms and not all symptoms may occur at the same time. The symptoms



Both benign and malignant tumours are included in the PMB regulations. Malignant tumours spread to adjacent brain structures and rarely to other organs outside the cranial cavity, whilst benign tumours have clearly defined borders and usually are not deeply rooted in brain tissue

## Types of brain tumours

There are a wide variety of types of brain tumours. They are generally named after the type of cell they developed from or the area in the brain where the tumour is growing. Most brain tumours develop from the cells that support the nerve cells of the brain called glial cells.

The most common types of primary brain tumours in adults include astrocytoma, meningioma and oligodendroglioma. The most common types of primary brain tumours in children include medulloblastoma, grade I or II astrocytoma, ependymoma and brain stem glioma.

for malignant (cancerous) and benign (non-cancerous) tumours are similar. The symptoms are dependent on the size of the tumour, the area where the tumour is situated and the type of tumour.

Symptoms may be caused when a tumour presses on a nerve or specific brain structure. It may also be caused when the tumour blocks the flow of fluid through and around the brain. This can cause the brain to swell due to the build-up of fluid and pressure.

Common symptoms of brain tumours include:

- Headaches that does not respond well to normal treatment
- Seizures
- Changes in smell, taste, speech, vision or hearing
- Balance problems
- Problems with walking
- Numbness or tingling in the arms or legs

- Memory problems
- Personality changes
- Problems and inability to concentrate
- Weakness and paralysis in a specific part of the body
- Mood changes

These symptoms can be caused by a number of other diseases therefore if you experience any of these it does not necessarily mean that you have a brain tumour.

### **Diagnosis of brain tumours**

As with most illnesses the diagnosis of brain tumours start with the doctor taking a detailed personal and family history. The doctor will ask a range of questions about your symptoms. A physical examination including a neurological examination will be performed.

A neurological examination includes checks of your vision, hearing, smell and taste, alertness, muscle strength, coordination, and reflexes. The doctor will also examine your eyes to look for swelling caused by a tumour pressing on the nerve that connects the eye and the brain.

The initial examination may be performed by a general practitioner who will refer you to a neurosurgeon if he/she suspects that you may have a brain tumour.

A CAT (CT) scan will be done first and if there is evidence of a tumour the neurosurgeon will order a MRI scan. A MRI scan provides more detail on soft tissue and will give the neurosurgeon a clearer picture of the tumour.

The doctor may perform a spinal tap also called a lumbar puncture. During this procedure a small amount of spinal fluid (the fluid surrounding the spinal cord) is removed. The laboratory will check for any cancer cells that may occur in the spinal fluid as this fluid surrounds the brain and spinal cord.

If there is evidence of a tumour the neurosurgeon will probably decide to do a biopsy. During this procedure a small part of the tumour is removed and sent to the laboratory where it will be checked for cancer cells. A biopsy is the only definitive manner to diagnose a brain tumour. Biopsies can be performed separately or as part of the treatment.

This means that the neurosurgeon may either do the biopsy first and then decide on treatment or decide to surgically remove the tumour and send all the tissue that was removed to the laboratory. If the tumour is situated in a part of the brain that is not easily accessible or where surgical removal can damage other areas of the brain e.g. the brain stem, the neurosurgeon will depend on the MRI and other investigation results.

The provider may also do an angiogram where dye is injected into an artery and a series of x-rays is taken as the dye flows through the blood vessels of the brain. Angiogram investigations are however rarely used.

### **Grading of malignant brain tumours**

#### **Grade I (low-grade)**

The tumour grows slowly, has cells that look a lot like normal cells, and rarely spreads into nearby tissues. Grade I brain tumours may be cured if they are completely removed by surgery.

#### **Grade II**

The tumour grows slowly, but may spread into nearby tissue and may recur (come back). Some tumours may become a higher-grade tumour.

#### **Grade III**

The tumour grows quickly, is likely to spread into nearby tissue, and the tumour cells look very different from normal cells.

#### **Grade IV (high-grade)**

The tumour grows and spreads very quickly and the cells do not look like normal cells. There may be areas of dead cells in the tumour. Grade IV tumours usually cannot be cured.

### **Treatment of brain tumours**

The prognosis and treatment options for primary brain tumours depend on the following:

- The type and grade of the tumour
- The area in the brain where the tumour is located
- If the tumour can be removed by surgery
- If a part of the tumour or any cancer cells remain after surgery
- If the cancer is newly diagnosed or if it is a recurring tumour
- Patient's general health

The treatment options available for the treatment of brain tumours include watchful waiting, surgery, radiation therapy, chemotherapy and targeted therapy. Many people get a combination of treatments.

Watchful waiting involves close monitoring of a patient's condition but no active treatment is provided. Neurosurgeons see these patients regularly to determine how the tumour is growing. In case of benign tumours, if surgery is not viable, medication like steroids maybe prescribed to assist with decreasing the swelling of the brain.

Surgery is used in both the diagnosing and treatment of brain tumours. During surgery the skull is opened and the tumour is removed. If the tumour is situated in an area that is difficult to reach it may not be possible to remove the entire tumour. In this case the patient receives further care i.e. chemotherapy and/or radiation therapy.

Even in cases where the entire tumour that can be seen at the time of the surgery is removed patients may receive further chemotherapy and radiation therapy to kill any remaining cancer cells.

Radiation therapy uses high-energy x-rays and other types of radiation to kill cancer cells or to prevent the tumour from growing further. Two types of radiation exist viz. external beam radiation therapy and internal radiation therapy.

During external beam radiation, the radiation is sent to the body from a machine that is situated outside of the body. During internal radiation however the radiation is provided as radioactive substances that are implanted in the form of seeds that are placed into the cancer tumour. The type of radiation is determined by the type of tumour and where it is situated in the brain.

Radiation can be delivered in ways that cause less damage to the healthy tissue around the tumour. These types of radiation include 3-dimensional conformal radiation therapy, intensity-modulated radiation therapy (IMRT) and stereotactic radiosurgery.

Chemotherapy is treatment provided with drugs or medicine that stop the growth of the cancer cells. This is done by either killing the cancer cells or stopping the cells from dividing and multiplying. Chemotherapy can be provided in the form of tablets taken by mouth, injections into a blood vessel (vein) or into the muscle, or it can be delivered directly into the cerebrospinal fluid (fluid that surrounds the spinal cord).

Chemotherapy can also be delivered in other forms i.e.:

- A wafer that dissolves and deliver an anticancer drug directly to the tumour
- Intrathecal where the drug is injected into the fluid-filled space that surrounds the brain and spinal cord

New forms of targeted therapy is available i.e. monoclonal antibody therapy (biological medicine). The therapy uses antibodies that can differentiate between substances on cancer cells versus normal cells. The antibodies attach to the substances on the cancer cells and kill, block the growth or keep the cells from spreading.

Tyrosine kinase inhibitors blocks the action of a specific enzyme called tyrosine kinases. This prevents the cancer cells from growing.

### **What is covered by the PMBs?**

We already indicated that brain tumours are included in the PMB regulations. This means that your medical scheme must fund the cost of the diagnosis, treatment and care of your condition.

It is however important to understand that the PMBs specify the absolute minimum that medical scheme must fund. The Regulations to the Medical Schemes Act 131 of 1998 specify that all PMB treatment must be cost effective and affordable. As such not all the treatments for this condition forms part of the PMB level of care.

It is important that members who are diagnosed with a brain tumour discuss the detailed treatment plan with their medical scheme to ascertain if their treatment qualifies for funding.

Very few complaints with regards to brain tumours are received at the Council for Medical Schemes. Cases that are received are adjudicated on a case by case basis to ensure fair treatment of all medical scheme members.

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## **PMBs**

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 by accessing the link provided ([www.medicalschemes.com/medical\\_schemes\\_pmb/index.htm](http://www.medicalschemes.com/medical_schemes_pmb/index.htm)).

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