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Article Link: <http://www.webmd.com/cancer/brain-cancer/malignant-gliomas>

## Brain Cancer Health Center



### Brain Cancer and Gliomas

Glioma is a broad category of brain and spinal cord tumors that come from glial cells, the main brain cells that can develop into tumors.

The symptoms, prognosis, and treatment of a malignant glioma depend on the person's age, the exact type of tumor, and the location of the tumor within the brain. These tumors tend to grow and infiltrate into the normal brain tissue, which makes surgical removal very difficult -- or sometimes impossible -- and complicates treatment.

The risk of these brain tumors increases with age, beginning at 20 and reaching a peak at ages 75 to 84. Usually low-grade versions of gliomas can occur in children. Brain tumors are slightly more likely to occur in males.

The only risk factor for malignant gliomas is prior radiation to the brain. Family history accounts for less than 5% of causes for developing these tumors. Some genetic disorders increase the risk of development of these tumors in children but rarely in adults.

There are no lifestyle risk factors associated with malignant gliomas. This includes alcohol, cigarette smoking, or cell phone use.

#### Are There Different Types of Gliomas?

While about 42% of all [brain tumors](#), even benign tumors, are gliomas, 77% of malignant brain tumors are gliomas.

Gliomas are named based on the specific type of glioma, or brain cell, affected. According to the American Cancer Society, there are three types of gliomas, including astrocytomas, oligodendrogliomas, and ependymomas. (A fourth type of glioma, contains more than one type of cell so is not a true glioma.)

**Ependymomas** make up less than 2% of all brain tumors. These tumors come from the ependymal cells and because they do not spread into the normal brain tissue, some ependymomas can be cured by surgery. They rarely spread outside the brain. But they do have a high risk of local recurrence and thus are considered malignant.

**Astrocytomas** make up about 35% of all brain tumors and start in brain cells called *astrocytes*. Most of these brain tumors cannot be cured because they spread all through the normal brain tissue. Astrocytomas are usually classified as low grade, intermediate grade, or high grade, depending on

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Childhood central nervous system atypical teratoid/rhabdoid tumor (AT/RT) was first described as a discrete clinical entity in 1987 [1] due to its pathologic and genetic characteristics. Prior to that, it was often misclassified as a medulloblastoma, primitive neuroectodermal tumor, or choroid plexus carcinoma. The World Health Organization began classifying it as an embryonal grade IV neoplasm in 1993.[2] Histologically, AT/RT contains sheets of rhabdoid cells against a background of primitive...

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criteria used by a doctor examining the [biopsy](#) under a microscope. Tumors that are low grade grow the slowest. Intermediate-grade astrocytomas grow at a moderate rate, while the highest grade, called glioblastomas, the most common adult malignant brain tumor, are fast growing.

**Oligodendrogliomas** make up about 4% of all brain tumors. These tumors spread in a similar manner to astrocytomas and usually cannot be cured with surgery. However, these tumors may be slow growing. With time, they may transform into a higher grade glioma.

## What Are the Symptoms of a Glioma?

Symptoms of a glioma are similar to those produced by other malignant brain tumors and depend on the area of the brain affected. The most common symptom is [headache](#) -- affecting about half of all people with a brain tumor. Other symptoms can include seizures, memory loss, physical weakness, loss of muscle control, visual symptoms, language problems, cognitive decline, and personality changes. These symptoms may change, according to which part of the brain is affected.

Symptoms may worsen or change as the tumor continues to grow and destroys brain cells, compresses parts of the brain, and causes swelling in the brain and pressure in the skull.

## How Are Gliomas Diagnosed?

If a brain tumor is suspected, a brain scan is typically done. This includes a [CT scan](#), an [MRI scan](#) (considered to be superior), or both. If the brain scan suggests a brain tumor, a biopsy is performed for diagnosis. A biopsy may be performed as a separate procedure or at the time the tumor is removed if surgery is a treatment option.

## How Are Gliomas Graded?

Gliomas are characterized by subtypes and by a numerical grading system. The grade of a tumor means how the cancer cells appear under a microscope. Grade I tumors grow slowly and are often removed by surgery, while grade IV tumors are fast-growing, aggressive, and difficult to treat.

According to the 2000 World Health Organization (WHO) scheme, perhaps the most widely accepted approach to tumor classification, malignant gliomas are classified and graded as follows:

Grade I gliomas are called pilocytic astrocytomas and are usually seen in children.

Grade II tumors are called diffuse fibrillary astrocytomas and are low grade.

Grade III gliomas are called [anaplastic astrocytoma](#). They're considered high grade.

Grade IV glioblastoma ([glioblastoma multiforme](#), GBM). (At least 80% of malignant gliomas are glioblastoma multiforme or GBMs.) These are considered high grade.

The oligodendroglial tumors are classified as follows:

Grade II or low grade oligodendroglioma

Grade III or high grade oligodendroglioma.

The ependymal tumors are classified as ependymoma and anaplastic ependymoma with the latter being

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more aggressive.

The low-grade tumors usually grow slowly but may transform into high-grade tumors with time.

## How Are Gliomas Treated?

Different treatment options are considered for malignant glioma, depending on the location of the tumor, type of glioma (cell type), and grade of malignancy. The patient's age and physical condition also play a role in determining treatment. Treatment for gliomas is multifaceted and may include:

Tumor removal by surgery is the mainstay of treatment. The patient should be otherwise relatively healthy, and brain function, speech, and mobility is able to be maintained. Imaging techniques such as CT scanning and functional MRI may be used to assist the surgeon in removing the tumor. The goal is to remove as much of the tumor as possible and obtain an accurate diagnosis. Recurrences of the tumor are frequent.

Radiation therapy uses high-energy X-rays or other radiation to kill the cancer cells.

Chemotherapy uses [drugs](#) to stop the cancer cell growth. This therapy may be taken by mouth or injected.

Supportive therapy to improve symptoms and neurologic function include corticosteroids to reduce swelling in the brain caused by the tumor and anticonvulsants to control or prevent seizures.

Clinical trials, performed to see if new cancer therapies are effective and safe, are another option.

## Treatment for Low-Grade Astrocytomas

The treatment for low-grade astrocytomas is surgery. However, because these tumors penetrate deep into the brain and grow into normal brain tissue, surgery is sometimes difficult. If surgery is not an option or if the tumor can't be completely removed, radiation is used. These tumors are thought to be resistant to chemotherapy.

## How Are Gliomas Treated? continued...

## Treatment for High-Grade Astrocytomas

Treatment for high-grade astrocytomas (Grade III anaplastic astrocytomas or Grade IV glioblastomas multiforme) is surgery, if possible. After surgery, radiation therapy, in conjunction with chemotherapy, is the next step. Sometimes surgery to remove the high-grade tumor is not possible. Then radiation and chemotherapy are used. If the tumor returns, the surgery may be repeated along with other forms of chemotherapy. Clinical trials may also be recommended to allow patients to use new therapies.

## Treatment for Oligodendrogliomas

For oligodendrogliomas, surgery is the first choice of treatment to help relieve symptoms and increase patient survival. Radiation with or without chemotherapy may be given after surgery. Also, chemotherapy or radiation maybe used to shrink a tumor before surgery. If surgery cannot be done, then chemotherapy with or without radiation therapy may be used.

## Treatment for Ependymomas and Anaplastic Ependymomas

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Ependymomas and anaplastic ependymomas do not pass into normal brain tissue as do other gliomas. Therefore, surgery may be highly effective if all of the tumor is removed. However, ependymomas may seed the cerebrospinal fluid so the entire spinal canal needs evaluation with MRI scanning. These tumors are highly responsive to radiation.

## What's the Prognosis for Those With Gliomas?

High-grade gliomas are fast-growing tumors. with a poor prognosis, especially for older patients. For patients with a Grade IV glioblastoma, the average survival time is approximately 12 months. With chemotherapy and radiation after surgery, the survival has been extended to approximately 15 months. Few patients with glioblastoma (Grade IV glioma) survive beyond three years with conventional treatment.

entity in 1987 [1] due to its pathologic and genetic characteristics. Prior to that, it was often misclassified as a medulloblastoma, primitive neuroectodermal tumor, or choroid plexus carcinoma. The World Health Organization began classifying it as an embryonal grade IV neoplasm in 1993.[2] Histologically, AT/RT contains sheets of rhabdoid cells against a background of primitive...

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### WebMD Medical Reference

#### SOURCES:

National Cancer Institute: "Adult Brain Tumors."

American Cancer Society: "What are Brain and Spinal Cord Tumors?"

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