

The Truth About Sen. John McCain's Glioblastoma Brain Cancer

An aggressive brain tumor called glioblastoma multiforme made headlines recently, when it was discovered in Sen. John McCain. In this exclusive article and video, a top neurosurgeon and brain cancer pioneer explains the disease, how long patients survive, and why it's so difficult to cure...

Seeing Sen. John McCain back at work, you'd never know that he has an aggressive, incurable brain tumor called glioblastoma multiforme. It was discovered – and excised – during surgery to remove a blood clot above his left eye on July 14.

The 80-year-old senator and Congressional maverick said he plans to keep working – and fulfill scheduled duties - while undergoing “a standard post-surgical regimen of targeted radiation and chemotherapy” at the Mayo Clinic in Phoenix, AZ.

It's not unusual for people with glioblastoma to resume normal activities shortly after the initial surgery, says Keith Black, MD, chairman of the Department of Neurosurgery at Cedars-Sinai Medical Center in Los Angeles.

“It's very common for patients to function at a very, very high level after surgery,” Dr. Black says. “It's really quite remarkable.”

More than 12,000 new cases of glioblastoma are diagnosed in the US each year, according to the American Brain Tumor Association.

Unlike other types of brain tumors, however, glioblastoma can take different forms, shapes and characteristics. That's one reason it's so difficult to treat.

Most patients die within 2 years of being diagnosed with this tumor, the same type that killed McCain's colleague, [Sen. Ted Kennedy](#), in 2009. Some may survive 5 years or longer, but that's less common.

Although there's no cure for glioblastoma, doctors are researching new therapies to improve prognosis, Dr. Black says.

In this exclusive Lifescript interview, Dr. Black, a pioneer in the field of brain cancer research, explains glioblastoma and what Sen. McCain and others with the tumor can expect.

What are the warning signs of glioblastoma?

The symptoms can be anything that the brain controls. Seizures and headaches are very common. Other [symptoms] might be a new onset of weakness, vision [problems] or speech difficulty.

How can a doctor tell it's not a different disease with similar symptoms?

If a patient has a seizure for the first time, [glioblastoma] is very high on the list of possibilities, especially for

an adult.

If a patient has a headache that's "not the type that I normally get," it might alert their physician to look into [their condition] in more detail.



[And] when a patient [says], "I'm not able to communicate with my family in the way that I was," or "I'm not quite seeing things correctly" or "I'm stumbling when I walk," that could [indicate] a stroke or other possibilities. But a tumor is one of the things physicians should put high on the list.

Is glioblastoma curable?

The general view of a glioblastoma in the medical community is that it's currently not curable.

Now, that's not to say that some patients can't have a very long life expectancy. I've had patients with this tumor who've greatly exceeded the data on the expected survival [range]. They've gone on for 10 or 20 years, then died from something else. But that's not the most common scenario.

What's the current treatment for glioblastoma?

Standard treatment is surgery, radiation therapy and chemotherapy. [It's what] we've used for many decades. We've made some progress, but it hasn't been as rapid and as great as we'd like. I think there's a lot more progress to come.

Why has progress been limited?

That's because surgery is limited. Even if we get out all of the tumor we see on the MRI, we know there are still microscopic cells that the MRI cannot detect. So, some of the tumor is left – and they may be dispersed

throughout the brain.

Radiation therapy has been around for many, many decades. It's effective but, again, not curative.

The standard [chemotherapy](#) for this tumor type is a drug called temozolomide. It's taken as a pill and well tolerated. Patients don't get sick, [as they do] with other types of chemotherapy.

This drug is more effective in patients whose tumors have a particular molecular characteristic, [which it targets more effectively]. And, it can improve survival, but, again, it's not curative.

Sen. McCain flew from Arizona to Washington, DC, and returned to work shortly after his surgery. In your experience, is that extraordinary?

We've made tremendous progress in our ability to do surgery on these types of tumors.

The brain has no sensation, so it's not a painful operation. Most patients can be out of the hospital, walking and functioning within 2 or 3 days.

The treatment is typically radiation therapy. That's usually done once a day, 5 days a week, for about 7 weeks, so that sort of ties the patient down.

But both the radiation therapy and chemotherapy are well tolerated. Patients can function [well] afterward.

Would you support one of your patients traveling and going back to work so soon?

Yes – if there's no evidence of swelling or increased pressure in the brain after surgery, it's absolutely safe to fly. It takes about 3 or 4 weeks before patients have 100% of their energy back.

Seizure is a risk in the first few weeks after surgery, so typically we put them on anti-seizure medication.

It's very safe and common for patients to [return to normal activities] – and we encourage it.

We're trying to let patients live a high-quality and enjoyable life. [We want them to] keep doing what's important to them for as long as they can.

Are treatment advances on the horizon?

We're making a lot of progress in our research on these types of tumors. As a result, the prognosis is improving.

But let me put this tumor in context. This is one of the most difficult cancers to treat, for the following reasons:

[First] as the name [glioblastoma multiforme](#) implies, it takes multiple shapes and forms. This is not just one homogeneous, uniform type of tumor. It may be made up of 15 or 20 different clones of cells, which are molecularly different and have different sensitivities (or resistance) to different types of treatment.

Half of the cell clones may respond to one type of therapy, while 10% may be totally resistant. That resistant 10% will continue to grow, despite 90% of the cells responding to therapy.

[Second], we also know that whatever therapy we give will cause a tumor to change over time. [For example], when we give chemotherapy, the tumor that recurs [afterward] is now resistant to chemotherapy.

How is that different from other cancers?

[In] some cancers – like leukemia or lymphoma – all the cells are the same. When we do targeted therapy on those tumors, we can have a very good response.

[But] with this tumor – where you have 15 or 20 different types of cells – it's very difficult to do a targeted response.

Is there a more effective treatment approach?

We need to find the one thing in common among all glioblastoma tumor cell types and begin to attack that. Or, develop a therapy that doesn't rely on one particular target. [That's how we'll make] significant headway treating this type of cancer.

Immune therapy has been one of the exciting areas [of research] over the past 10 to 15 years. Therapy that harnesses the immune system doesn't rely on one particular type of cell to have a response; it can attack multiple clones of cells.

We've made some progress in this area, but it has been very difficult.

How is it that some patients, like former President Jimmy Carter, do well after brain cancer surgery, while others, like Sen. Kennedy, don't survive?

President Carter had [melanoma](#), which is a type of skin cancer, according to what has been in the public domain. It started outside the brain and then spread to the brain. Tumors that spread to the brain [from elsewhere] are about 10 times more common than glioblastoma multiforme.

President Carter, as I understand, also had a new form of therapy that activates the immune system against melanomas. New advances for his tumor type have shown great promise.

Sen. Kennedy had the same type of tumor as Sen. McCain. According to my recollection, Sen. Kennedy passed away about 15 months after his diagnosis. And, he had the best available therapy at the time.

That was a number of years ago and we've made some improvements. But it shows how devastating this tumor is, and how complicated it is to treat.

How important is early detection of a glioblastoma?

The earlier glioblastoma is detected, the better it can be treated – because the tumor has not spread to other [important] areas of the brain. That's one thing that can affect prognosis.

With some tumors, like breast cancer, if you detect it early there's a possibility for a cure. With this type of tumor, even early detection cannot give us a cure. But it can certainly make the outcome better.

Has the expected time of survival with glioblastoma been extended?

[It has increased] from about 15 months to about 24 months with current therapy.

[Survival time can be seen as] a bell-shaped curve – you have patients who don't survive to that median point and others patients who do much better.

We have a number of patients who've lived 5 or 10-plus years.

How does a patient's age affect their survival?

Age can affect the prognosis greatly. A patient under age 40 has a better prognosis with this type of tumor than one who's 70 or 80.

We're not entirely clear as to why, but it's probably [because] younger patients have a stronger immune system. They're able to mount an immuno-response against the tumor [that will] assist the other types of therapies.

Should a patient with glioblastoma consider [clinical trials](#) for therapies that aren't yet approved?

In general, [we suggest that] patients with this diagnosis first get the best standard therapy available.

Then, we can look at clinical trials [of treatments] that are unproven, but may have some theoretical basis for promise.

[There] are still things to consider based on the patient's tumor type and risk-benefit profile. But if that's of interest, [we] at least give them the option.

I'm sure that Sen. [McCain] will have access to incredible medical care. We certainly wish him all the best in terms of a recovery and prognosis.

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