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## **Central Nervous System Tumors - Childhood - Latest Research [1]**

This section has been reviewed and approved by the **Cancer.Net Editorial Board [2]**, 05/2014

**ON THIS PAGE:** You will read about the scientific research being done now to learn more about this CNS tumors and how to treat them. To see other pages, use the menu on the side of your screen.

Doctors are working to learn more about CNS tumors, ways to prevent them, how to best treat them, and how to provide the best care to children diagnosed with this disease. The following areas of research may include new options for patients through clinical trials. Always talk with your child's doctor about the diagnostic and treatment options best for your child.

**New medications.** Doctors are examining new types of drugs that may better control tumor growth.

**Improved imaging techniques.** Imaging techniques are being developed and refined that help surgeons pinpoint the tumor's location, to reduce or prevent tissue damage to the healthy parts of the brain during treatment.

- Functional MRI (fMRI) is an imaging technique that identifies the parts of the brain that control speech, hearing, vision, touch, and movement. The specific locations of these functions are slightly different in every person, so fMRI allows surgeons to plan surgery around these areas.
- Image-guided stereotaxis allows surgeons to visualize and operate on the brain using three-dimensional outlines of the brain and the tumor. Along with specialized software, these images help guide the surgeon to the tumor. Many tumors that were once considered inoperable can now be removed with this technique.
- Magnetic resonance spectroscopy (MRS) and positron emission tomography (PET) scans [3] are also being used to examine tumor metabolic activity. Whether these techniques will improve a doctor's ability to predict how a tumor will grow and spread is still being researched.

**Improved methods of delivering radiation treatment.** Doctors are experimenting with new

techniques for delivering radiation therapy to certain types of tumors. These methods make detailed, three-dimensional maps of the brain and tumor, so doctors can focus the radiation on the tumor and avoid damage to the nearby healthy tissue. This can reduce a child's exposure to radiation and lessen the long-term side effects.

**Targeted therapy** [4]. Recent research has found specific genes, proteins, and other factors unique to different types of CNS tumors. Treatments aimed at these factors, called targeted therapy, are now being studied. Targeted therapy is a treatment that targets the tumor's specific genes, proteins, or the tissue environment that contributes to its growth and survival. This type of treatment blocks the growth and spread of tumor cells while limiting damage to healthy cells.

**Immunotherapy** [5]. Immunotherapy, also called biologic therapy, is designed to boost the body's natural defenses to fight the tumor. It uses materials made either by the body or in a laboratory to improve, target, or restore immune system function. Researchers are studying how well these drugs work and how safe they are for children with CNS tumors.

**Supportive care.** Clinical trials are underway to find better ways of reducing symptoms and side effects of current CNS tumor treatments in order to improve patients' comfort and quality of life.

### Looking for More About the Latest Research?

If you would like additional information about the latest areas of research regarding childhood cancers, explore these related items that take you outside of this guide:

- To find clinical trials specific to your child's diagnosis, talk with your child's doctor or [search online clinical trial databases now](#) [6].
- Visit ASCO's [CancerProgress.Net](#) [7] website to learn more about the historical pace of research for childhood cancer. Please note this link takes you to a separate ASCO website.

*The next section addresses how to cope with the symptoms of the disease or the side effects of its treatment. Use the menu on the side of your screen to select Coping with Side Effects, or you can select another section, to continue reading this guide.*

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#### Links:

[1] <http://www.cancer.net/cancer-types/central-nervous-system-tumors-childhood/latest-research>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/24648>

[4] <http://www.cancer.net/node/24729>

[5] <http://www.cancer.net/node/24726>

[6] <http://www.cancer.net/node/24878>

[7] <http://www.cancerprogress.net/timeline/pediatric>