

# Brain cancer patients live longer wearing electric cap designed to zap tumors

After decade of stalled treatment improvements, cap is a modest, pricey step forward.

BETH MOLE – FOR MED EXPO



An electric skull cap designed to zap cancer cells trying to grow in the brains of wearers proved useful at improving patient survival in a [five-year clinical trial](#).

When combined with standard chemotherapy, the cap more than doubled five-year survival rates of brain cancer patients—from 5 percent to 13 percent—researchers reported Sunday at the [annual meeting of the American Association for Cancer Research](#) being held in Washington, DC. The trial involved 695 patients newly diagnosed with an aggressive form of brain cancer called glioblastoma multiforme.

The modest survival improvement is exciting for such a nasty form of cancer, researchers said. “Glioblastoma is the deadliest primary malignancy of the central nervous system for adults,” Dr.

Roger Stupp, professor of neurological surgery at Northwestern, said in [a press release](#). "The last time any form of treatment was shown to improve survival for patients with this disease was more than 10 years ago."

But it comes with a steep price—around \$700 a day, [the AP reports](#). Most US insurers are covering the caps, which have already gained FDA approval. The company behind the trial and the device, Novocure, is covering those on Medicare, Novocure CEO Bill Doyle said.

## Charged treatment

The cap, called the Optune, works by sending [alternating, intermediate-frequency \(200kHz\) electrical fields](#) into the brains of cancer patients. The idea is that the electrical fields disrupt cell division, preventing cells from properly lining up their chromosomes during a cellular split. This disruption, the company says, is fatal to cells. But because cancer cells make up the majority of the cells dividing in the brains of adult cancer patients, the treatment is more harmful to tumors than the brain.



Patients are supposed to wear the cap for at least 18 hours every day, as well as stay on a standard chemotherapy, called temozolomide. The Optune has strips of electrodes connected to a small generator that patients can carry around in a bag. The electrical fields cause mild warming, but otherwise they don't disrupt normal daily life. And patients can wear a hat over their futuristic-looking medical caps.

In [the five-year, phase III clinical trial](#)—from July 2009 to November 2014—466 glioblastoma patients were randomly assigned to try out the Optune with their temozolomide treatment, while 229 others took just temozolomide.

The median overall survival jumped from 16 months among patients on the standard chemotherapy to 21 months for those also using the Optune, researchers found. In the first two

years, the Optune seemed to boost patient survival rates from 31 percent to 43 percent. At three years, survival went from 16 percent to 26 percent. And at four years, standard treatment patients had an 8 percent survival rate, while cap-wearers had a 20 percent rate. At five years, survival rates jumped from 5 to 13 percent.

“You cannot argue with them—they’re great results,” Antonio Chiocca, neurosurgery chief at Brigham and Women’s Hospital in Boston, told the *AP*. (Chiocca was not involved with Novocure or the Optune.) He added that the effects were unlikely to be due to placebo effect.

Novocure is working on treating other forms of cancer with the electrical fields, including [advanced pancreatic cancer](#).



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