

# Doctors unleash new weapon to fight pediatric neuroblastoma

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Emil Abbasov, now 6, participated in a clinical trial to combat his hard-to-treat neuroblastoma. Credit: University of Michigan Health System

For seven months, three-year-old Emil Abbasov underwent chemotherapy to fight the tangerine-sized, cancerous tumor growing in his abdomen. But each time, the tumor resisted harder. Each time, he felt more side effects.

Surgery helped remove some of the [tumor](#), but not enough. So doctors at University of Michigan's C.S. Mott Children's Hospital took a new approach, combining the forces of immunotherapy and chemotherapy in a nonconventional way.

After 17 rounds of the combination treatment, Emil's tumor was completely gone.

The now-kindergartner is among a group of patients with hard-to-treat [neuroblastoma](#) who responded so well to the novel treatment combination in a Children's Oncology Group international clinical trial that researchers plan to expand the study to include more [children](#). C.S. Mott pediatric oncologist Rajen Mody, M.D., who led the research, presented the preliminary findings at the American Society of Clinical Oncology meeting.

Neuroblastoma is the third most common type of cancer in children, usually starting in the kidneys, spreading throughout the body and primarily affecting children younger than five. When standard therapies don't work like in Emil's case, or the cancer returns, the battle against the disease is grim—less than 5 percent of these young patients survive.

After the first year of receiving the novel treatment combination in the COG trial, 9 out of 17 children with relapsed or resistant neuroblastoma saw either a complete or partial remission—a 53 percent response rate compared to the typical 10 to 12 percent response rate from chemotherapy or biologic therapy alone.

"The outcomes for relapsed neuroblastoma are dismal, and treatment options are limited," Mody says. "We found that in more than half of patients receiving this new combination therapy the tumor either shrunk or completely disappeared, which we consider an extraordinary success. Our study was small, but the results are so striking they warrant further

research to study the biological basis of why this combination of immunotherapy and chemotherapy works so well."

The phase II COG trial involved 35 patients, but researchers are planning to open a larger form of the trial soon.

## **How it works**

Neuroblastoma is a solid tumor caused by uncontrolled or abnormal cell growth in nerve cells. Doctors think the cancer cells in patients whose bodies resist treatment against neuroblastoma have found a way to keep immune cells from doing their job and fighting the cancer cells.

Typically, patients with neuroblastoma undergo one of two types of therapy—chemotherapy, which uses drugs to stop or slow the growth of cancer cells, or immunotherapy, which stimulates the immune system to work harder or smarter to attack cancer cells. The two treatments have typically always been used on their own, however, not simultaneously.

The COG trial provided patients with a novel combination of chemotherapy and immunotherapy drugs to re-engage the [immune cells](#) to recognize and attack the [cancer cells](#). The combination has been used successfully in other diseases, such as lymphoma.

Emil's mother Feruza Alishanova recalls watching her son "get weaker every day while the cancer got stronger," and the disease seeming "unbeatable" with every chemo treatment. She says she's thankful he responded to the new therapy and hopes more research helps other children, too. Emil, now six years old, graduates from kindergarten in June in Okemos, Michigan.

Neuroblastoma affects about 700 people a year in the U.S. and accounts for 6 percent of all childhood cancers in the country. The disease

sometimes forms before birth, but is most often discovered later in life as the tumor grows and affects the body.

"What we are learning through this research could revolutionize [treatment](#) for children with [relapsed or hard to treat](#) neuroblastoma," Mody says. "We hope this is the beginning of a path to learning how to cure cancer in more children facing this devastating disease."

The new research comes on the heels of additional major findings in the area of precision oncology released by U-M in 2015 involving genome sequencing to help determine best [treatment options](#) for children with rare, aggressive and advanced cancer.

Provided by University of Michigan Health System

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