[MUSIC PLAYING]

JOON UHM: Clinical trials are all about investment into the future for our patients. We think that we're doing better. We are doing better. But do we want to remain with the status quo? No. We have to always continue to advance. The only way to do that is to take new drugs coming down the pipeline, new therapies, and test them.

Even though we think this might help the patient, the only way to really prove it is to ask the question, does it actually work in the patient setting? Is it safe? Is it working and is it worth FDA approval? So today's research, tomorrow's cure.

JAN BUCKNER: Immunotherapy is a very promising new treatment for patients with cancer. The goal of immunotherapy is to take an intervention that activates the person's own immune system to attack the cancer. Immunotherapies are still experimental for patients with brain tumors. But we are working here in the realm of clinical trials to develop better immunotherapies that will be effective.

Targeted drug therapy usually means identifying an abnormality in the tumor cell that is a weakness in that cell that can be directly attacked by a particular type of drug therapy. These usually are more specific, and more effective, and sometimes with fewer side effects.

One of the most common side effects is fatigue. So we're looking at ways to minimize the impact of treatment in causing more fatigue. We're also doing clinical trials to reduce the risk of memory loss as a result of treatment of the brain tumor. There is a new type of immunotherapy developing called CAR T-cells, which stand for Chimeric Antigen Receptor T-cells.

This is a new technology in which a person's immune cells are removed from the body. They're infected with a gene that allows that immune cell to go directly to the tumor, but not to the rest of the body. And so directly attack the tumor in that way.

CAR T is a way of thinking of targeted immunotherapy, so putting them both concepts together. There are clinical trials that are being developed at Mayo Clinic that will actually help make immunotherapy more specific.

NADIA LAACK: Immunotherapy is starting to be used in pediatric tumors, similar to adults. It's more commonly used for liquid tumors like leukemias or lymphomas. But there are certainly studies ongoing now looking at immunotherapy for brain tumors as well. I think that immunotherapy is an area of interest and heavy research right now.

And I think it won't be long that there'll be more and more indications. But it's not very commonly used yet in most pediatric brain tumors. Targeted drug therapy is definitely being used in pediatric tumors. We have a long history of collaboration in the pediatric world, because the research is so limited and tumors are so rare, of working together with other centers, with national groups to share our tumor samples.

And then here at Mayo, we have been leaders in developing some of the markers that determine responses to different chemotherapy agents, which tumors are going to respond to certain agents better than others. So we do those kinds of genetic testing regularly on our tumor samples to be able to pick the most targeted, accurate, effective treatment and therapy for our kids that come as well as the adults that come with brain tumors.