

Gerald J. Glasser Brain Tumor Center



Atlantic
Health System
Neuroscience



Inside Look

FALL 2021

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Hope & Healing

Each year, as many as 170,000 people battling cancer are diagnosed with metastatic brain tumors, which arise when cancerous cells travel to the brain from other parts of the body. Brain metastases are up to twice as common as primary brain tumors and pose unique challenges when it comes to managing and treating the disease.

In this issue of the Gerald J. Glasser Brain Tumor Center newsletter, learn about some of the newest advancements in metastatic brain tumor care – including novel treatments and insightful perspectives from leading oncologists. You can also read inspiring stories from our patients and get the latest on additional resources for all brain tumor patients from Atlantic Health System and our partners at Atlantic NeuroSurgical Specialists.

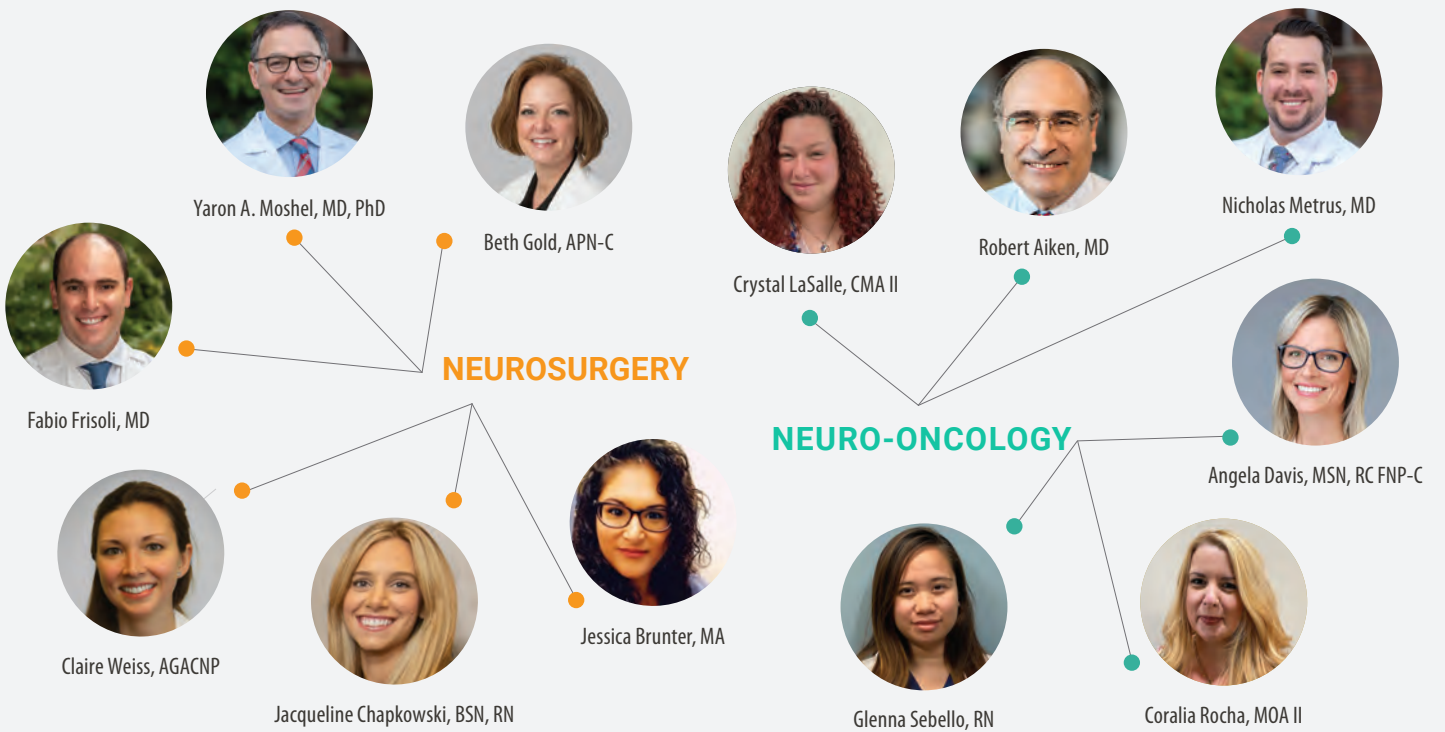
When it comes to delivering best-in-class, multidisciplinary care for brain tumors of all types, we are committed to leading the way.



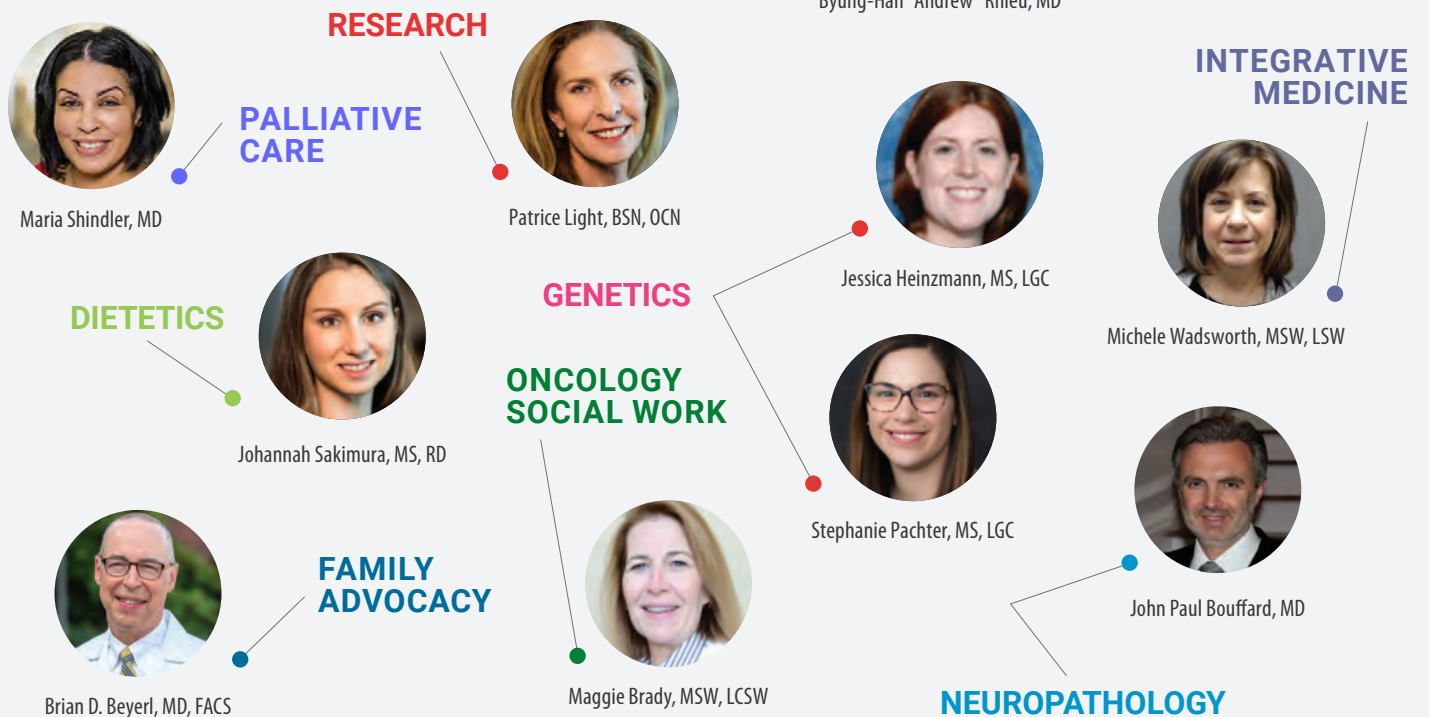
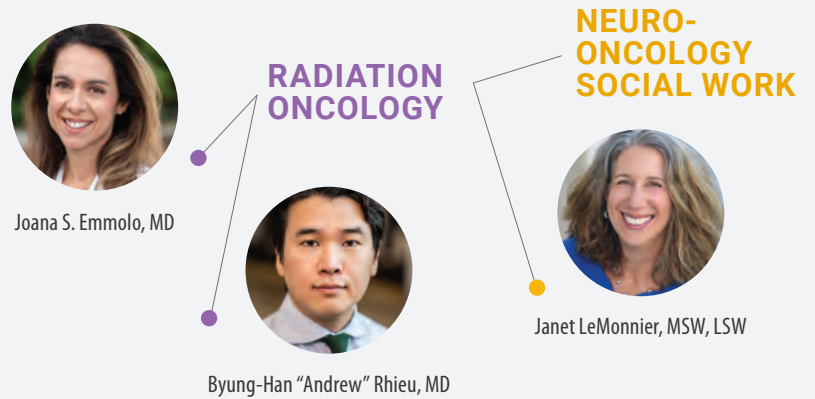
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OUR INTEGRATED CARE TEAM



Stereotactic Radiosurgery Is on the Rise:

Why a Growing Population of Patients with Brain Metastases Are Candidates for CyberKnife®



Radiation has long been a fundamental therapy to shrink or eliminate brain tumors ... and help prevent them from coming back. While traditional whole-brain radiation therapy remains an important tool – primarily for patients with a large number of lesions in the brain and aggressive systemic disease – a growing number of patients with brain metastases are now being treated with CyberKnife®, which delivers highly targeted stereotactic radiation with sub-millimeter precision. Read on to learn more.

Using CyberKnife to Safely Eradicate More Disease Targets

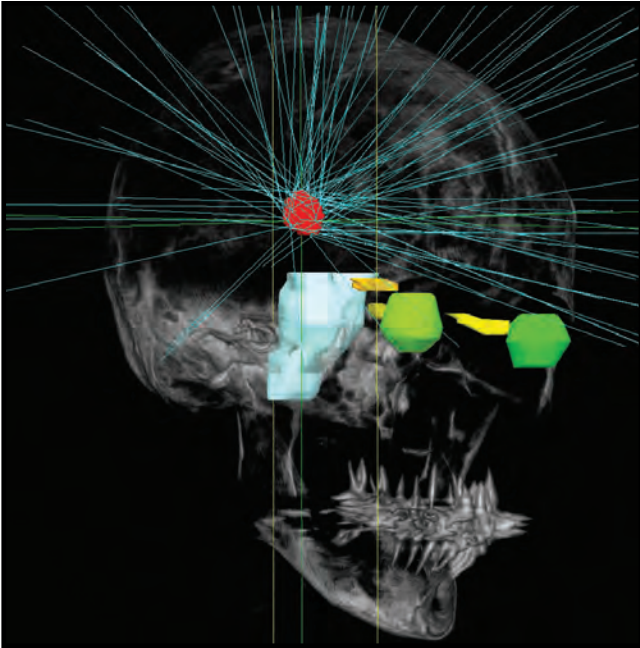
CyberKnife has completely changed the way metastatic brain tumors are treated by administering radiation only

where it's needed – and nowhere it's not. Not only is CyberKnife a highly effective therapy for the treatment of brain metastases, its precision spares healthy brain tissue from radiation exposure and the neurocognitive damage it can cause. This is a major advantage compared to whole-brain radiation, which was historically used as a standard of care first-line therapy.

“In the past we were highly selective about which patients to offer this treatment to, only targeting up to three or four areas. Now, with better systemic treatments and longer survival, we are pushing the envelope and safely eradicating many more disease targets, while significantly reducing risk for patients,” explains Joana S. Emmolo, MD, a board-certified radiation oncologist and director of

**DID
YOU
KNOW?**

The **CyberKnife® Radiosurgery Center** at Overlook Medical Center is the **largest and most experienced** CyberKnife program in New Jersey.



CyberKnife technology delivers radiation with pinpoint accuracy.

radiation oncology at Gerald J. Glasser Brain Tumor Center. "Overall, CyberKnife is helping our patients live longer and live better."

CyberKnife is often used postoperatively in patients who have metastatic lesions excised.

"After tumors are surgically removed from the brain, we often recommend CyberKnife as an additional course of treatment to help eliminate any residual tumor cells that are lingering around the margins, minimizing the chances of cancer recurring in that area," Dr. Emmolo continues.

CyberKnife is also used to treat patients who have previously had radiation therapy targeting the brain. Normal tissues have a "lifetime limit" of how much radiation they can safely see before damage occurs. In patients who have had previous whole-brain radiotherapy, the CyberKnife radiosurgery system can be used to safely treat new metastases that arise despite prior therapy. Additionally, CyberKnife is utilized to manage primary brain tumors that recur in patients who have previously seen high doses of radiation in the past.

"This allows us to offer patients an additional option for therapy in a location, and at a time, where few good options exist," adds Dr. Emmolo.

Outstanding Outcomes

While outcomes for individual patients vary depending on a number of factors, CyberKnife is more than 90% effective in treating targeted tumors. What's more, its pinpoint accuracy preserves cognitive function and for most patients, has little to no effect on their quality of life.

"CyberKnife is generally very well-tolerated by patients. For the most part, people tell me they go home after treatment feeling exactly the same way they did coming in," notes Dr. Emmolo. "Having that normalcy and enabling people to maintain their independence goes an incredibly long way."

CyberKnife® Benefits

Noninvasive with no incision

Pain-free with no anesthesia

Usually a single
outpatient treatment

No down time or recovery

Minimal side effects, if any at all

Highly effective with proven
positive outcomes

Comfortable, fast and flexible

Beating Metastatic Brain Cancer with Surgery and CyberKnife®

When kidney cancer spread to Edward Battaglia's brain, he turned to the multidisciplinary team at Gerald J. Glasser Brain Tumor Center for best-in-class treatment.

"You are disease-free in the brain." Hearing these words nearly a year after discovering kidney cancer had spread to his brain brought 56-year-old Edward Battaglia to tears. This triumph was his latest victory in a cancer journey that spans more than a decade.

In 2011, Ed discovered he had prostate cancer. Thankfully, it was caught early, and, with the removal of his prostate, he returned to his normal life. He went years without any signs of the cancer returning, so when the avid softball player's hip began bothering him in the summer of 2019, he didn't think much of it.

"I thought I might have pulled a muscle or stretched incorrectly, but by the end of the summer softball season, I was on crutches and eventually couldn't put any weight on my hip at all. I knew I had to get checked out," says Ed.

He got an ultrasound at an urgent care, saw an orthopedist and had an X-ray done, but everything came back clear. It wasn't until he got an MRI scan of his hip that doctors detected a mass in his kidney. A CT scan confirmed Ed had kidney cancer that had spread to the ball and socket joint of his hip. Within a few days, Ed had a hip replacement. After that, he began immunotherapy treatment under the care of Charles M. Farber, MD, PhD, a board-certified, fellowship-trained oncologist, which activated his own immune system to attack the cancerous cells in his body – and had his kidney removed in early 2020.

"After I recovered from the surgery, things were good," Ed recalls. "That summer I was down the shore living life – but one day I lost my balance, fell down and literally couldn't figure out how to get myself up."



Hearing he is disease-free in the brain brought Ed Battaglia, shown here with his daughter, to tears.

At the recommendation of Ashley Day, a physician assistant on Dr. Farber's team, Ed went in right away for an evaluation with his oncology team at Morristown Medical Center and had a full-body MRI. The scan detected two sizable masses in his brain. In 48 hours, he was in the operating room with Dr. Farber's colleague, board-certified, fellowship-trained neurosurgeon Yaron A. Moshel, MD, PhD, who is co-director of the Gerald J. Glasser Brain Tumor Center.

"The tumors in Ed's brain were large enough that we needed to remove them as our first order of business," notes Dr. Moshel. "We typically don't remove multiple

tumors at once, but sometimes that's the best course of action. Ed's was one of those situations, so we did a 'two for one' brain surgery. In one operation, we completely removed both tumors from different parts of the brain using a minimally invasive technique that reduced potential side effects and recovery time."

"To give Ed the best chance of being disease-free in the brain, we also treated the brain tumor resection margins with CyberKnife," adds Joana S. Emmolo, MD, a board-certified radiation oncologist and director of radiation oncology at the Glasser Brain Tumor Center. "This delivers highly targeted stereotactic radiation that eliminates any remaining microscopic cancer cells and helps prevent cancer cells from recurring in those problem areas."

To stay proactive in controlling the potential recurrence of the disease in the brain, Ed receives follow-up brain scans every four months. To control the cancer elsewhere in his body, Ed is also on an oral chemotherapy and has PET scans every three months.



An avid sports fan, shown here with his son, Ed is attending Mets Fantasy Camp this fall.

”*I tell everyone that when it comes to my brain cancer, it’s amazing how slowly I got bad, but how quickly I got better,” says Ed. “Aside from feeling the scars from surgery when I wash my hair, it’s like nothing happened. I really want people to know being diagnosed with cancer isn’t a death sentence. Medicine has come so far, and even with cancer, you can live a normal life.”*

Committed to living every day the best he can, Ed is attending Mets Fantasy Camp this fall and is planning a trip to Italy with his family next summer. He also believes everything happens for a reason.

“When I chose to be a bone marrow donor 20 years ago and was selected as a match for a 19-year-old girl I didn’t know, I went ahead with the transplant because I truly believe that what comes around, goes around,” he says. “I thought if I do this, if my kids or I needed something down the line, someone else would be there to take care of us. The phenomenal team at Morristown and Overlook medical centers has done that ... and so much more.”

The Impact of Immuno-Oncology on Melanoma Brain Metastases

New immuno-oncology drugs have drastically improved survival rates for patients with metastatic melanoma. This includes combination immunotherapy drugs that yield a 50% response rate for patients with melanoma brain metastases. Eric D. Whitman, MD, medical director of Atlantic Health System's oncology service line, explains why immuno-oncology treatment is typically the best first course of action.

How often does primary melanoma metastasize systemically – and how often does it metastasize to the brain?

Most melanomas are low risk and do not metastasize. One out of every 10 people with melanoma end up having metastatic melanoma. Of those with metastatic melanoma, about 20% go on to develop brain metastases. Interestingly, some melanomas are prone to metastasizing only in the brain.

How has immuno-oncology changed the course of treatment for melanoma and brain metastases associated with melanoma?

Melanoma is one of the most responsive types of cancer to immunotherapy – the newest kind of drugs that stimulate a patient's own immune system to kill cancerous cells. In fact, melanoma was one of the first cancers to respond consistently to immuno-oncology drugs and one of the first cancers the U.S. Food & Drug Administration approved the drugs for back in 1995. Since then, the drugs have only evolved and improved. Not only are they less toxic, they can now also target specific mutations, such as the common BRAF mutation that's present in 40% of melanomas.



Eric D. Whitman, MD

When it comes to patients with melanoma brain metastases, the most effective drug treatment available today is a combination of immuno-oncology drugs – OPDIVO® and YERVOY® – which yields a 50% response rate. However, there are also other effective treatment options, including surgery and radiation therapy, which can be given in sequence or even in parallel. With multiple options for treatment, it's best for patients to be evaluated by a multidisciplinary team of experts that can determine the best course of action for their individual case.

What are the survival rates for people with metastatic melanoma?

We are seeing huge improvements in the prognosis for patients with metastatic melanoma due to these immunotherapies. Currently the average survival rate is 50% at five years. Just 10 years ago, it was 50% at six months.

Why do melanoma survivors need to monitor neurologic symptoms?

First, they need to remember that melanoma can recur even years after being treated successfully. Even if you feel like you are doing well, it is important to keep that in the back of your mind. Second, anyone with a history of melanoma (or other cancers) needs to be particularly vigilant about monitoring neurologic symptoms as they could indicate the disease has returned and metastasized in the brain. Things to look out for are stroke symptoms such as weakness in an arm or leg, seizures or a severe headache that doesn't go away. If you have any symptoms or concerns, it is best to contact your oncologist and be proactive in protecting your health.



Mary Baker, APN



Insight into the Side Effects of Immunotherapy

Novel immunotherapies are changing the game for cancer treatment and patients with brain metastases – but be aware there are side effects. While some patients do not experience any symptoms, others may develop conditions that require short- or long-term care. Atlantic Health System's Mary P. Baker, APN, shares insight on what is important to know.

What are common side effects of immunotherapy?

Common side effects include:

- Rash and/or itchy skin
- Flu-like symptoms (e.g., fatigue, nausea, body aches)
- Diarrhea
- Shortness of breath
- Cough

Many of these can be treated with over-the-counter medications or steroid therapy.

What are other side effects to be aware of?

In some cases, immunotherapy can cause long-term conditions such as type 1 diabetes, thyroid dysfunction or myasthenia gravis, an autoimmune disease that causes double vision and speech difficulties. These and other conditions can surface at any time during, or after, the

course of immunotherapy treatment. That's why it's critically important for immunotherapy patients to vigilantly monitor any and all symptoms – and report them to their oncology team – to ensure they receive the proper care.

Who is prone to these side effects?

The side effects of immunotherapy vary based on a number of factors including the:

- Patient's overall health
- Type of cancer
- Stage of cancer
- Type of immunotherapy
- Dosage

An oncologist can provide more specific details about the potential risks of immunotherapy on an individualized basis.

How do the side effects of immunotherapy compare to chemotherapy?

While immunotherapy activates the immune system to target cancerous cells, chemotherapy attacks both cancerous and non-cancerous cells, affecting the body in different ways. Common chemotherapy side effects such as hair loss and anemia are not prevalent with immunotherapy – but both treatments cause side effects that need to be discussed and evaluated as part of a personalized treatment plan.

Immunotherapy in Action: Changing the Game for Cancer Survival



Andrew M. Bernstein, DO

Years ago, having brain metastases meant a patient might survive for six months. They would undergo radiation and get relief from their symptoms, but they ultimately would succumb to the disease in short order. Now with immunotherapy and targeted therapy, the game has changed

for a number of diseases. Medical oncologist Andrew M. Bernstein, DO, explains.

What is the difference between traditional chemotherapy, immunotherapy and targeted therapy?

Immunotherapy essentially enables a patient's immune system to recognize cancer cells as foreign. When cancer develops in the body and transcends the blood-brain barrier, the cells are "cloaked" and evade the natural immune system. Immunotherapy removes the cloak, so to speak, allowing the immune system to recognize that those cells don't belong and attack them.

Immunotherapy is very different from chemotherapy, which attacks actively dividing cells – both cancer cells and non-cancerous cells that are caught in the crossfire. That's why patients experience so many side effects with chemo, such as hair loss, gastrointestinal issues or feeling weak and tired. Thankfully, many of these side effects can be modulated with steroids.

Targeted therapy is used for treating cancers that have a specific genetic mutation. For example, specific subsets of lung cancer that spread to the brain have mutations that lend themselves to these oral therapies, which can cross the blood-brain barrier and provide very effective treatment.

Where is immunotherapy being used most effectively?

Renal cell cancer, a type of kidney cancer with a predilection to brain metastases, is the poster child for immunotherapy. Chemotherapy has never worked very effectively for this disease. Now, with a combination of immunotherapies – which has response rates as high as 71% – patients with renal cell cancer are living longer and better, even with advanced disease. In fact, one of the first patients I saw when I started at Chilton Medical Center over 15 years ago was a Stage 4 renal cell cancer patient. The disease had already gone to his bone, and he wasn't amenable to surgery. Thanks to immunotherapy, he is alive and well 15 years later.

What is "chemo brain" – and does it happen with immunotherapy?

"Chemo brain" is a term some people use to describe the brain fog associated with chemotherapy treatment. In addition to the underlying malignancy affecting the body, the chemotherapy can have a toxic effect and cause cognitive issues. We don't see this with immunotherapy.

How do you uplift your patients who are facing metastatic cancer?

I stress the advances we have made – and continue to make – in cancer treatment. We are no longer trying to get people to survive six months; we are now talking in terms of years. I also do my best to synthesize the many amazing experiences I have seen patients live through. This includes stories like one patient who had bladder cancer that had metastasized to the bone and was causing clots in his lungs. His urologist told him to get his affairs in order and had him headed for hospice. In the meantime, I treated him with chemotherapy. The tumor in his bladder melted away, his bone repaired itself and five years later, he is disease-free.



Zeroing in on Druggable Targets for Metastatic Breast Cancer

Bonni Lee Guerin, MD

Breast cancer is the second most common type of cancer to metastasize to the brain. In fact, 20% of women with metastatic breast cancer will ultimately develop central nervous system metastases. In the HER2-positive subset, that number is closer to 40 or 50%. Thankfully, targeted therapies are driving major advances in treatment and improving life expectancy from a number of months to a number of years. Oncologist and director of the Breast Cancer Treatment and Prevention Program at Overlook Medical Center Bonni Lee Guerin, MD, shares the latest.

How does genetic sequencing factor into breast cancer care?

Over the past decade, breast cancer treatment has undergone massive changes – particularly in the area of medical oncology thanks to advances in genetic sequencing. Historically we would separate breast cancers into two categories, slower-growing estrogen-positive breast cancers and faster-growing estrogen-negative breast cancers. With the ability to take a deeper dive into the genetic makeup of individual cancers, we are now able to not just look at what category into which they fall, but actually give these tumors signatures or fingerprints. This plays a significant role in steering how we deliver personalized care.

How is genetic knowledge being used to treat metastatic breast cancer in the brain?

Oncology has been getting better from the neck down. We can control disease in the lungs or liver, for example, because we have new treatments that can get to these

places through free exposure in the bloodstream. The painful irony is that cancer patients are now living long enough to develop metastases in the brain.

In this regard, the challenge is getting beyond the blood-brain barrier. The trick is using the genetic information we now have about the specific cancer types to our advantage and finding breakthrough therapies that can deliver targeted drugs across that barrier. This is particularly important for people with HER2-positive breast cancer, which has an inordinate predilection to metastasize in the brain.

What are the latest drugs being used to treat breast cancer brain metastases?

There are two drugs in particular worth talking about in the HER2-positive space. The first is ENHERTU®, which is an antibody and chemotherapy connected to each other. At the tail end of the antibody is a powerful chemotherapy. When connected to the antibody, it acts like a guided missile that can pass the blood-brain barrier. It can hunt out and latch onto the HER2-positive cells in the brain and then releases the chemotherapy. Clinical studies have shown a 60% success rate with ENHERTU and this Trojan Horse approach.

Tucatinib is another fascinating drug that works in a different way. Tucatinib interferes with the unique signals that cancer cells use to grow. In studies, patients who received Tucatinib as a pill as part of their treatment lived an average of 20 months compared to 11 months for those who did not receive the drug. That is still not enough time, but with new therapies continually being developed, it may be enough time to get them to an even more effective treatment.

Brain Tumor Support Groups

A Safe, Caring Environment to Connect, Share, and Foster Well-Being



Patients often feel so alone. "No one understands what I'm going through or how I feel." That's where our Brain Tumor Support Group helps.

A diagnosis of a brain tumor often leads patients to feel frightened and isolated. That is why, for nearly a decade, the Glasser Brain Tumor Center has hosted a monthly Support Group for patients and their family members.

The monthly hour-long group is currently held virtually, moderated by clinical staff including Janet LeMonnier, social work navigator, and Claire Weiss, nurse practitioner.

Dr. Brian Beyerl, a neurosurgeon and now a patient advocate, founded the group to create a safe space for patients to share: "The Brain Tumor Support Group ushers our patients into a safe, unique community. As they meet and talk, they naturally find strength and comfort within each other."

During the group, patients, often joined by a partner or friend, discuss their feelings, update each other on their lives, and ask the clinicians about treatment options or how to manage commonly shared symptoms. Guest speakers present an array of topics such as the science behind brain tumors, nutrition and exercise, diet, relationships, meditation and other alternative therapies.

For more information about the Glasser Brain Tumor Support Group approach and meeting times, please contact Janet LeMonnier, LSW, at janet.lemonnier@atlanticehealth.org or call 908-522-5159.



Clinical Trials

Investigational clinical trials are at the heart of innovation in brain tumor treatment.

At the Gerald J. Glasser Brain Tumor Center, we have a robust clinical trial research program. Atlantic Health System is the lead affiliate of the Atlantic Health Cancer Consortium (AHCC) - the only National Cancer Institute (NCI) Community Oncology Research Program (NCORP) based in New Jersey. Through our partnership with the Translational Genomics Research Institute (TGen) of Phoenix, Arizona, we have created the Breakthrough Oncology Accelerator to offer patients access to the most innovative and sophisticated therapies for cancer.

Currently, we offer novel treatments for:

- Low-grade gliomas
- Glioblastoma
- Other high-grade primary brain tumors
- Metastatic brain tumors
- Tumors that cause malignant cells to spread to the fluid surrounding the brain and spinal cord (leptomeningeal cancer)

To treat these challenging tumors, we are focusing on immunotherapies, oncolytic tumor viruses and other targeted therapies.

We have several new and developing clinical trials. For more information, please consult our clinical trial website at atlanticehealth.org/braintumorresearch or call us at 908-522-5768





The science of medicine.
The power of hope.

About Gerald J. Glasser Brain Tumor Center

The Gerald J. Glasser Brain Tumor Center brings the most comprehensive and innovative treatments to benign and malignant tumors of the brain, skull base, spine and spinal cord.

Our team of experts – including neurosurgeons from Atlantic NeuroSurgical Specialists – help patients and their loved ones navigate the journey from diagnosis through treatment. Every patient who visits the center has access to a panel of experts. The group meets regularly during a dedicated Tumor Board Review meeting to create a personalized treatment plan for all patients based on their clinical evaluation.

All this is possible thanks to the generous donation of the Glasser family's founding gift and support.

Gerald J. Glasser
Brain Tumor Center



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