Eleven years ago, Overlook unleashed a powerful new weapon in the fight against cancer when it became the first hospital in the northeast to introduce CyberKnife®, a breakthrough technology that empowered physicians to destroy tumors with precisely targeted doses of radiation in ways never seen before. Patients with tumors that previously would have required invasive surgery—even patients with tumors that previously would have been considered inoperable, or with tumors beyond the reach of other radiosurgery systems—suddenly had reason to feel hopeful. With CyberKnife®, we gained the ability to perform noninvasive surgery that is highly accurate and painless, without an incision or blood loss and with virtually no recovery time.

In the 11 years that have passed, Overlook physicians have used CyberKnife® to treat more than 1,000 patients with tumors and lesions in the brain, and hundreds more with tumors and lesions of the spine, lung, liver, pancreas, and prostate. Doctors from all over the world have turned to our CyberKnife® team for advice and instruction. Now, Overlook is further demonstrating its commitment to this technology and to our patients by acquiring the next generation of CyberKnife®, CyberKnife M6™. “The new machine allows us to treat patients faster, with even greater precision, and opens the door to treating much larger tumors, up to 10 centimeters,” says Louis Schwartz, M.D., Chair of Radiation Oncology and Director of the CyberKnife Center at Overlook Medical Center. “We will be able to help a new population of patients reach survivorship.”

This is a reflection of Atlantic Health System’s creation of a Trusted Network of Caring™—our promise to our communities that anyone who enters Atlantic Health System will receive the right care, at the right quality, at the right time, at the right place, and at the right cost. What particularly sets Overlook apart from CyberKnife® programs at other hospitals is experience and expertise. “Everyone always asks, ‘How many patients have you treated?’” says Schwartz, who has been with Overlook’s CyberKnife® program since its inception. “That’s an important question, and that’s where we stand apart from the rest. We were first in the northeast to offer CyberKnife®, we have treated more than 1,000 brain tumor patients, and we have treated the second-most prostate cases in the world. Anyone can have a machine, but you have to know how to use it. You have to know the radiation that is safe to deliver, and how to protect surrounding tissue. You have to know how to operate for the benefit of the entire patient.”
How it works

CyberKnife® combines image guidance and robotics to deliver high doses of radiation with pinpoint accuracy. Image-guided cameras locate the exact position of a tumor inside the body. Then, using a robotic arm that directs CyberKnife's® radiation source, surgeons direct multiple highly focused beams of radiation onto a tumor or lesion from many targeting positions and angles to deliver a cumulative dose of radiation large enough to control cancer cells. The radiation beam is shaped to match the exact shape of the tumor, thereby delivering the radiation where it is needed most and sparing surrounding healthy tissue.

Neurosurgeon Yaron Moshel, M.D., Co-Director of the Brain Tumor Center of New Jersey at Overlook Medical Center, offers the following description in helping to describe the machinations of CyberKnife®: “Traditionally we’re talking about a little round beam of radiation, like a pencil. Now imagine I told you to take a flashlight and use the beams to reconstruct the shape of the tumor—that’s hard to do. But CyberKnife® uses laser beams to create a hologram, so we can shape the beam to match the exact shape of the tumor. We can live-track the tumor in a 3-D state, make adjustments, and even pause if necessary.”

Each treatment (there are usually five) is approximately an hour to two hours in duration, and is usually done on an outpatient basis; patients are able to return to their normal activities right away. Treatments generally are delivered on consecutive days, but can be fractionated over several days. The latter is especially helpful if a tumor is large or close to a critical structure. “This tremendously improves safety of treatment,” says Moshel.

Indeed, adds Schwartz, “Nothing is resistant to radiation. So in treating tumors, it’s a matter of whether we can deliver a high enough dose safely. With CyberKnife®, we are able to deliver higher doses more precisely in a manner that is safer. In the past, we had to surround lymph glands and tissues with radiation. But the precision of CyberKnife® minimizes radiation exposure to surrounding tissue, which enables a higher dose of radiation to be used on the tumor itself. This improves the effectiveness of the treatment.”

We have used CyberKnife® to treat more than 1,000 patients with tumors and lesions in the brain, and hundreds more with tumors and lesions of the spine, lung, liver, pancreas, and prostate. Doctors from all over the world have turned to us for advice and instruction.”

Louis Schwartz, M.D. Chair of Radiation Oncology and Director of the CyberKnife Center at Overlook Medical Center

The ability to spare healthy tissue is essential to preserving quality of life, especially when treating brain tumors, says Moshel. “In many places, radiating the entire brain is still the standard of care for treating brain tumors, but this often leads to dementia and other problems. By sparing healthy brain tissue, we’re able to avoid these issues. It makes a huge difference in quality of life. What’s the point of surviving cancer if you can’t feed yourself or drive a car because of radiation damage to the brain? This is a question we never asked 15 years ago, but we realize cancer treatment isn’t just about physical survival—it’s about having quality of life.”

The frameless nature of CyberKnife® further elevates its clinical efficiency. In conventional frame-based radiosurgery, like Gamma Knife, the accuracy of treatment delivery is dependent upon
connecting a rigid frame to the patient; the frame is anchored to the patient’s skull with screws. CyberKnife® is the only radiosurgical device that does not require such a frame for precise targeting.

“This changes radiosurgery in a big way,” says neurosurgeon Brian Beyerl, M.D., of the Brain Tumor Center of New Jersey at Overlook. Like Schwartz, Beyerl has been treating patients through Overlook’s CyberKnife® program from its start 11 years ago. “The frameless nature of CyberKnife® allows us to treat parts of the body beyond the brain, and allows us to do so in a manner that is comfortable for the patient.”

Who we’re helping

At Overlook, we are using CyberKnife® for the successful treatment of tumors and lesions in the brain, spine, lung, liver, pancreas, and prostate. This applies to cancerous and non-cancerous tumors, primary and metastatic tumors (cancer growth that has spread to other parts of the body), and also to recurrent tumors (new cancer in the same part of the body as the first cancer). “With the focused radiation of CyberKnife®, we are able to treat the cavity that is left behind when a tumor is removed,” explains Beyerl. “This can decrease the likelihood of recurrence or arrest the growth of tumors, which is often the goal of treatment. We also can treat multiple metastases.”

Overlook’s use of CyberKnife® for spine tumors is especially novel, adds Moshel. “Not many places do it. The diameter of the body is small, the spine is small—a lot of doctors don’t have the experience or confidence to use radiation in this way and it takes a long time to get that level of expertise, but CyberKnife® lets us perform separation surgery in the case of metastatic disease, as in the case of lung cancer that has spread to the spine. Instead of a big operation where we resect the spine, radiate part of it, and do surgery on the other part, we can take a less invasive approach. In the past, we had to crack the patient’s chest in the front and open them from the back and put in screws and rods—it was debilitating and invasive. With CyberKnife®, we avoid that surgery to the front and concentrate just on the back. It’s still invasive, but instead of facing two big operations, the patient recuperates from only one operation.”

“CyberKnife® is a brilliant technology,” continues Moshel. “Others are catching up, but we’ve been doing CyberKnife® for more than a decade, and I don’t know of anyplace else that has this kind of experience with the CyberKnife® platform. Very few places in the country can match Overlook’s experience and volume. Knowing we have CyberKnife® in our armamentarium empowers us to change our approach to care, and that benefits patient outcomes.”

Adds Schwartz, “I think the future of radiation treatment is this pinpoint, high-dose, precise treatment. And at Overlook, we’re delivering the future now.”

At Overlook, a multidisciplinary team of physicians—including a radiation oncologist, thoracic (lung) surgeons, urologists, hepatic (liver) physicians, a neuro-oncologist, and neurosurgeons—carefully reviews each patient’s condition to determine whether CyberKnife® is an appropriate option. We are using CyberKnife® for the treatment of:

- Intracranial and extracranial tumors and lesions
- Spine cancer and spinal cord tumors
- Malignant tumors (primary and metastases)
- Lung
- Liver
- Pancreas
- Benign tumors
- Acoustic neuromas
- Schwannomas
- Meningiomas
- Pituitary adenomas
- Arteriovenous malformations (AVM)
- Trigeminal neuralgia

For more information about the CyberKnife Center at Overlook Medical Center, visit ck.atlantichealth.org, or call the CyberKnife Center coordinator at (908) 522-5624.
Over the past 11 years, Overlook Medical Center has used CyberKnife®—a revolutionary radiosurgical device—to deliver swift, painless, and noninvasive high-dose radiation to more than 1,600 patients with cancerous and non-cancerous tumors of the brain, prostate, spine, lung, liver, and pancreas. These patients are men and women, young and old, from near and far, with cases as diverse as their backgrounds. But what they all have in common is that they turned to the CyberKnife Center at Overlook for treatment, and found new reasons to feel hopeful about life.

Writing the Rules

“I couldn’t be better if I wrote the rules,” says 77-year-old Deane Driscoll of Montville. It’s an expression he began using on his first day of work as a salesman nearly 60 years ago, and it’s one he continues to use with exuberance. “It means, ‘I don’t let anything bother me,’” he says. In fact, not even prostate cancer was formidable enough to get him down.

In 2009, an annual physical with his family physician, Thomas Jackson, MD, in Summit, revealed a PSA level that was climbing faster than normal. Jackson referred him to urologist Thomas Gianis, MD, also in Summit. The imaging studies that Gianis ordered helped confirm what Jackson had suspected: Driscoll had prostate cancer.

A cancer diagnosis raises questions—chief among them: What now? With prostate cancer, there are several options: active surveillance, surgery, chemotherapy, implantable radioactive seeds, and more. While Driscoll was researching each option, he heard a radio commercial for CyberKnife®. “I Googled it, and it offered me what I was looking for—a solution and the best recovery,” he says. “I saw Overlook was the first in the northeast to offer CyberKnife®, and I learned Overlook had the most experience in the region with CyberKnife®. At least two or three other doctors said to me, ‘The guy you need to see is Dr. Louis..."
So that’s exactly what Driscoll did. Within days, he had an appointment with Louis Schwartz, MD, Chair of Radiation Oncology and Director of the CyberKnife Center at Overlook Medical Center. “He explained CyberKnife® and I was able to see what CyberKnife® is,” says Driscoll. “He spent a lot of time with me, and I was impressed with his explanation and the props he used. He exuded confidence. If you spend time with Dr. Schwartz, you realize he has a tremendous amount of compassion and knowledge. This solidified my decision to choose CyberKnife® and to choose Overlook.”

As is typical of CyberKnife®, Driscoll’s treatment involved just six visits: One for planning, and five times for the high-radiation therapy that destroyed his tumor. “I would just lay there, relaxed and comfortable, listening to Jimmy Buffett and to the Beach Boys,” he says. “My eyes would trace the CyberKnife® machine as it floated around the room and I would try to anticipate its movements. After treatment, I would just say good-bye and walk out. There was never any pain. There was no medicine, no after-effects or side effects—nothing.”

He doesn’t hesitate to share his experience with others. “There are around ten guys I play golf with and pal around with.”
says Driscoll. “We eat breakfast together Saturday mornings. Occasionally the conversation turns to prostate cancer. I hear about the issues people have had after other treatments, but I had none of those. When people ask, ‘What did you do, Deane?’ I jump on it. I tell them CyberKnife® is the solution and Overlook is where I went. I would like to think I’m a walking commercial for Dr. Schwartz, Overlook, and the solution: CyberKnife®. CyberKnife® gave me 100 percent success.”

What it also has given him is time—time to enjoy his wife and kids and 17 grandchildren (the doting grandfather can be found babysitting some of them in Summit at least twice a week), time to follow Villanova athletics, and time to serve as the full-time Director of the Montville Township Food Pantry, which he co-founded five years ago. “I’m a very lucky person,” he says. “Did I experience cancer? Yes; it’s something I learned to live with. But I feel very fortunate. Like I say, I couldn’t be better if I wrote the rules.”

A Priceless Experience

When Tim Mertz, 52, experienced a terrible headache in May 2014, he told his wife, Laura, “The last time I had a horrible headache like that was when I had the brain tumor.” Concerned, she told him to see his doctor.

Back in 1996, Tim had been diagnosed with a meningioma, a non-cancerous tumor of the brain that was removed through traditional surgery. Then, in 2003, Tim was successfully treated for throat cancer. He continued to see his doctors over the years and carefully monitored his health. But 18 years after his brain tumor had been removed, it had reappeared.

The Bridgewater resident, who works in finance at Merck, says he didn’t immediately make an appointment with a doctor because “the really bad headache stopped, so I didn’t think there was anything to worry about.” A few weeks later, when he did see a doctor, an MRI proved him wrong. It showed a very large tumor that he later learned was about the size of a large orange or small grapefruit. Laura explains that Tim’s neurosurgeon, Yaron Moshel, MD, Co-Director of the Brain Tumor Center of New Jersey at Overlook Medical Center’s Atlantic Neuroscience Institute, classified the tumor as a “grade II, atypical meningioma, because it came back.”

While considering their options, she says, “Dr. Moshel told us, ‘Our goal is to go in, remove it completely, and have everything work out 100 percent. If we can’t, we will go in and remove as much as possible surgically and then “clean up” the area with CyberKnife® and follow up more closely with MRIs.’ ”

On September 18, 2014, Tim had an angiogram in which Overlook Medical Center neurosurgeons embolized the blood supply and developed a road map of Tim’s brain. The next day, Moshel removed the brain tumor surgically. By September 23, Tim was out of the hospital and started rehabilitation. “I walked out two weeks later with the aid of a walker,” he says. He was back at work in mid-December and continued to participate in out-patient rehabilitation.
This past March, Tim had CyberKnife® treatments over five days—and worked four of the five days. He says he had scheduled Friday off because his radiation oncologist, Louis Schwartz, MD, Chair of Radiation Oncology and Director of the CyberKnife Center at Overlook Medical Center, cautioned that he may feel fatigued as the week went on, “but I actually felt fine and tolerated it very well.”

Tim is feeling fine today and is helping others who are going through similar experiences. “I work for Merck and they are aware of the illnesses I have. They have asked my permission to have other employees speak to me about my experiences.”

Both Tim and Laura sing the praises of Overlook, its surgeons, and the CyberKnife Center staff. “They educated us, answered our questions ... and we were always able to reach out to someone to get an answer to any question that we had,” says Laura. “Everyone was extremely helpful and very accessible.”

Adds Tim, “The staff, including the surgeons, are unbelievably compassionate. They go above and beyond and give you as much time as you need to make you feel comfortable. It’s like the commercial that talks about ‘priceless.’ The whole experience was priceless, well beyond all our expectations.”

The Optimist

Angelina Zuzuro, 18, of Denville, was diagnosed with a craniopharyngioma in September 2014, by neurosurgeon Yaron Moshe, MD, Co-Director of the Brain Tumor Center of New Jersey at the Atlantic Neuroscience Institute of Overlook Medical Center. These are benign (non-cancerous) brain tumors that grow near the pituitary gland.

Following a ten-hour brain surgery performed by Moshe, Zuzuro was transferred to Overlook’s Neuro-Intensive Care Unit where her recovery was complicated, but things looked good. Then, in July, doctors found the same type of tumor next to the site of the original one; this time, it was inoperable—but not hopeless. “The doctors talked about CyberKnife®,” says Zuzuro’s mother, Cathy. Moshe introduced them to Joana Emmolo, MD, a radiation oncologist and specialist at Overlook’s CyberKnife Center, which is part of the hospital’s Atlantic Neuroscience Institute and Carol G. Simon Cancer Center. “The new tumor was blocking the flow of spinal fluid, which led to very bad pressure on the brain,” explains Cathy.

Angelina had five CyberKnife® treatments. “At first it’s scary hearing you will be getting radiation treatments, but once I got in there, the nurses at the CyberKnife Center were so nice.... It wasn’t that bad,” she says. Last June, she graduated from Morris Knolls High School. “She graduated with honors and did what she wanted to do: walk onto the football field with her class,” says Cathy.
Today, Cathy drives Angelina to Fairleigh Dickinson University in Madison, where she is a freshman with an academic scholarship. Angelina takes medication prescribed for complications from the surgery (thyroid medications because her thyroid doesn’t work, and other medications because her pituitary gland is severely damaged), and some for the tumor.

“You’ve got to not think about it,” she says. “When I heard the word tumor, I was scared, but when the doctor explained what it was—that it wasn’t malignant—after surgery, I tried to go on with my regular life.” She recently had an MRI to see how the tumor was doing. It has stopped growing, which is good. The spinal fluid is still blocked, so doctors are preparing to do surgery to help relieve the pressure on her brain.

“You can’t just dwell on everything,” says Angelina. “I have to move on, day by day, and take it one day at a time.”

Keeping Pace

For Mendham’s Doug Clark, life is a series of strides, sprints, and marathons. The 46-year-old avid runner and triathlete—known as the Triathlon Bloke, in a nod to his native U.K.—is no stranger to competition or pushing his body to the limit. He has won 46 triathlons and won his age division at the National Triathlon Championships a record seven consecutive years.

But these days, he is focused on a race of a different kind: staying a step ahead of a recurrent brain tumor with the help of his “teammates” at Overlook Medical Center.

Last winter, he was working in his home office when his wife, Hillary, heard a loud thud. What she found was Doug having a grand mal seizure so severe it dislocated his shoulder and broke it. The seizure was the first sign that something was wrong; CT and MRI imaging soon revealed that a lesion on the brain had triggered the seizure. Though the lesion “looked benign at the time and wasn’t acting like a malignant tumor,” says Doug, the risk of additional seizures prompted neurosurgeon Yaron Moshe, MD, Co-Director of the Brain Tumor Center of New Jersey at the Atlantic Neuroscience Institute of Overlook Medical Center, to retract the tumor during a five-hour surgery and get a closer look.

A biopsy and pathology report revealed that Doug’s benign-looking lesion was actually a grade III astrocytoma that would require aggressive treatment.

Moshe—together with an Overlook team of specialists that included radiation oncologist Louis Schwartz, MD; neuro-oncologist Michael Gruber, MD; and epileptologist Jeffrey Politis, MD, FRCP(C)—guided Doug through a protocol of radiation and chemotherapy last winter. A follow-up MRI of the
brain this past March was clear, Doug reports, but another in May revealed a new tumor. This time, the team recommended CyberKnife® to prevent the tumor from advancing. And under the care of oncologist Neil Morganstein, MD, Clark is also receiving infusions of a PD-1 inhibitor every two weeks. This is a new class of drug that uses the immune system to fight tumors.

“We’re attacking this with everything we can,” says Hillary, “and the entire Overlook team has been phenomenal. Coming from an athletic background, we truly appreciate that team approach—it makes us feel very comfortable.”

Adds Doug, “It’s not just the medical staff at Overlook that have been incredible. Administrators too have gone beyond the call of duty—for example, frequently making calls to expedite certain processes while on vacation or late in the evening.”

“Doug is going to persevere,” says Hillary. “One of his goals is to survive so he can help other people. He already inspires people every day by getting up, doing what he’s doing, and he just keeps going. Doug is a fighter.”

“We’re attacking this with everything we can, and the entire Overlook team has been phenomenal. Coming from an athletic background, we truly appreciate that team approach.”