CONQUERINGCANCER

advances in treating brain tumors

Several disciplines join in battling one of medicine's most stubborn foes

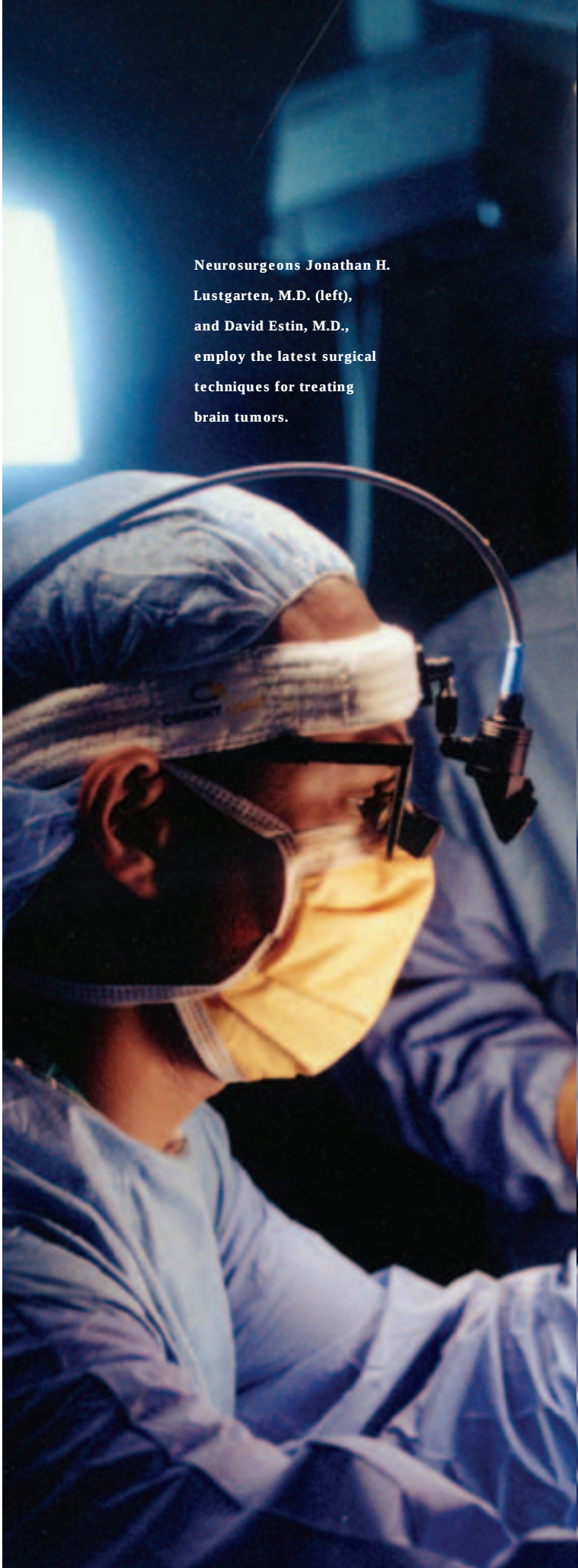
Since John Gunther wrote the affecting memoir *Death Be Not Proud* about his teenage son's struggle with a brain tumor, medicine has seen six decades of revolutionary change. But the prognosis for glioblastoma, the common type of brain cancer that took Johnny Gunther's life at 17, although improving, has remained poor.

That's one reason for the David S. Zocchi Brain Tumor Center, recently established at Monmouth Medical Center. The only such center in central New Jersey, it brings together neurosurgery, radiation oncology, neuro-oncology, neuropathology, medical oncology and psychiatry to provide the best possible outcomes for patients with brain tumors and other cancers invading the nervous system.

The goal of the Brain Tumor Center is to provide coordinated, comprehensive multispecialty care typical of that seen in top university hospitals—in a community teaching hospital setting. Top specialists trained at leading institutions for brain tumor treatment, such as the Neurological Institute of New York at Columbia University and the Memorial Sloan-Kettering Cancer Center, work together to provide and coordinate care for these often difficult-to-treat tumors. They also convene monthly meetings of a Neuro-oncology Tumor Board to discuss recent cases and devise individualized treatment plans.

A TOP-QUALITY TEAM

The neurosurgery program at Monmouth Medical Center, consisting of director Jonathan H. Lustgarten, M.D., and David Estin, M.D., recently recruited Ty J. Olson, M.D., from Columbia University Medical Center in New York City. Their close and ongoing affiliation with Columbia, where all three neurosurgeons maintain faculty appointments and operating privileges, allows them to remain on the cutting edge of their rapidly advancing field. In the last decade, under Dr. Lustgarten's



Neurosurgeons Jonathan H. Lustgarten, M.D. (left), and David Estin, M.D., employ the latest surgical techniques for treating brain tumors.

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leadership, these surgeons have brought numerous innovations to the Monmouth/Ocean county region. Among them: surgery guided by CT (computed tomography) and MRI (magnetic resonance imaging), in which computer manipulation of images permits neurosurgeons to biopsy or remove brain tumor tissue with remarkable precision. These techniques allow for smaller incisions and surgery that is both safer and more effective.

In other cases, specialized endoscopes and cameras have made possible minimally invasive tumor removal. In addition, the stereotactic radiosurgery program, in conjunction with the Department of Radiation Oncology, gives neurosurgeons the option of "incisionless" tumor treatment with highly focused radiation. This technique is very useful for deep tumors that were previously considered inoperable. Finally, the recent addition of brain mapping brings Monmouth Medical Center to the cusp of contemporary neurosurgical interventions.

Facts about brain tumors

- **Each year more than 200,000 people in the U.S. are diagnosed with brain tumors. Of these, some 40,000 are primary brain tumors (those that begin in the brain rather than metastasizing from elsewhere).**
- **There are more than 120 different types of brain tumors.**
- **Brain tumors are the second leading cause of cancer death in men ages 20 to 29, and the fifth leading cause of cancer death in women ages 20 to 39.**
- **Brain tumors don't discriminate by gender, ethnicity or socioeconomic station.**
- **Brain tumors' cause is unknown.**

SURGERY ON A WAKEFUL BRAIN

"Awake brain mapping," Dr. Olson explains, "is a technique in which the patient is actually awakened in the operating room while the brain is exposed so that his or her responses can guide the surgeon precisely to remove as much abnormal tissue as possible without harming vital brain functions such as speech. Because nerves that report pain are only present in the scalp and the lining of the brain, it is possible to perform a craniotomy [a surgical opening of the skull] with local anesthesia and minimal patient discomfort." This mapping procedure is used for "eloquent" areas of the brain, such as the left frontal cortex, which houses language function. "Anatomy gives us a good but relatively general map of where functions are located within the brain," says Dr. Olson. "Precise locations can vary greatly from person to person. By placing small electrodes directly on the surface of the brain, we can transiently deactivate an area of the brain to determine its role in the patient's ability to

Neuro-oncologist Sumul Raval, M.D. (right), evaluates patient Ariel Alcudia of Carteret.

speak or read. Awake brain mapping gives us the ability to operate more safely on brain tumors other surgeons may call unresectable."

COMPUTER-AIDED PRECISION

It isn't just surgery that requires extremely refined ways to differentiate malignant tissue from vital, healthy brain cells; radiation faces the same challenge. About two weeks after surgery, most patients begin treatments directed by radiation oncologists Mitchell Weiss, M.D., and Sang Sim, M.D..

"We can target brain tumor tissue with pinpoint accuracy," says Dr. Weiss. "Stereotactic radiosurgery, three-dimensional conformal, and intensity-modulated radiation therapy (IMRT) techniques let us treat tumors even when they're very close to critical structures in the brain."

IMRT was developed in the '90s, and Monmouth was one of its pioneers in central New Jersey. Its key feature, Dr. Weiss explains, is a process called inverse optimization, which uses a detailed reconstruction of areas in the patient's brain. This enables the physician to maximize the dose of radiation to the tumors while minimizing radiation to critical brain structures.

"It lets us use higher doses with minimal toxicity," says Dr. Weiss.

SETTING A NEW STANDARD

The Zocchi Center was established as a comprehensive brain tumor treatment center with the recent arrival of Sumul Raval, M.D., one of only two neuro-oncologists—specialists in the nonsurgical care of brain tumors—in New Jersey. When a patient begins radiation treatment, he or she also typically undergoes chemotherapy. And Dr. Raval is helping to pioneer the use of a new combination of chemotherapy agents that he believes will soon become the worldwide standard of care.

Introduced at a World Federation of Neuro-Oncology conference in Europe last year, the combination isn't yet approved by the Food and Drug Administration for brain-tumor treatment. It's a pairing of irinotecan, or CPT-11, which is FDA-approved for the treatment of several cancers, with bevacizumab (trade name Avastin), approved for colon cancer. Researchers at Duke University have published the data from their use of these drugs, and Dr. Raval's data are even more encouraging than Duke's.

"I'm very excited about this," says Dr. Raval. "I have one patient, a Manalapan resident, who was sent to me last August after being told by a leading oncologist that he had two weeks to live. One month after two cycles of chemotherapy, 90 percent of his tumor had been eliminated." As of early June, nine months after that grim prediction, 95 percent of the tumor was gone and he was working five days a week.

Other centers have been stymied by the expense of these medications. But Dr. Raval says he's spent the equivalent of two full weeks of office time on the phone with insurers, wheedling and demanding coverage for treatment that would normally be rejected as "investigational." And in several cases he has succeeded. "If you explain to them that this may give a patient a new life, there's a chance," he says.

Dr. Raval doesn't know how long this chemotherapy regimen can extend life. But given the grim prognosis, that uncertainty itself offers hope. *M*

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