

Seizing the

# Seizures

EXPERT NEUROPHYSIOLOGIST RECRUITED TO LEAD EPILEPSY CENTER AND DIVISION AT UH NEUROLOGICAL INSTITUTE

By Ann Bungo



Hans O. Lüders, MD, PhD

When challenged by a chronic medical condition, you want an A+ team of specialists to help you lead an active, healthy life.

That's what Shaker Heights fifth-grade teacher Lee Appel learned after he found himself having 10-second "out-of-body" experiences in which the classroom got louder and his voice grew softer. At first, he thought it might be just another stressful day teaching. He didn't connect it with the epilepsy he had suffered from since age 19. But as his medication was no longer effectively controlling his condition – with grand mal seizures leaving him unable to drive – his family insisted that he seek help from the epilepsy experts at University Hospitals.

"It's a credit to this team that I'm alive today," says Appel, a married father of two, who lives in Beachwood. Not only did his doctor determine that the episodes were really auras – distinctive sensations or visual disturbances that may signal the beginning of an epileptic episode – but Epileptologist and Adult Epilepsy Director Mary Ann Werz, MD, PhD, also discovered a tumor that required surgery. Moreover, in testing prior to surgery, it was determined that Appel has hemophilia, requiring extra precautions to avoid excessive blood loss.

In December 2003, he underwent surgery conducted by Neurosurgeon Robert Maciunas, MD, to bring his seizures under control, as well as remove the tumor. Today, he remains seizure-free. "This is a team that nailed it head on," he says. "They didn't leave any stone unturned."

Appel is among the estimated 25 percent of the 2 million Americans with epilepsy who have an intractable form of the disease, experiencing frequent seizures that do not respond to medication. For these individuals, state-of-the-art neurological mapping and monitoring techniques at University Hospitals Case Medical Center (UHCMC) offer hope of regaining control of their lives.

In January, UHCMC recruited one of the world's leading authorities on epilepsy, Hans O. Lüders, MD, PhD, to lead the Epilepsy Center in the Neurological Institute. Dr. Lüders also will be chief of UH's Division of Epilepsy in the Department of Neurology. He previously chaired the Cleveland Clinic Department of Neurology.

Dr. Lüders pioneered the use of brain electrodes to evaluate patients with epilepsy. Together with the Epilepsy Center's multidisciplinary team, which includes Drs. Maciunas and Werz, Epileptologist Mohamad Koubeissi, MD, Pediatric Neurosurgeon Shenandoah Robinson, MD, Pediatric Epileptologist Monisha Goyal, MD, Neuroradiologist Barbara Bangart, MD, Nuclear Radiologist Peter



Robert Maciunas, MD

Faulhaber, MD, Psychiatrist John Sanitato, MD and Neuropsychologist Michael Schoenberg, PhD, he plans to develop new methods of measuring brain activity and develop innovative surgical techniques for epilepsy patients at UH.

“Dr. Lüders’ expertise in this area will put us in the forefront of treating these complex cases,” says Warren Selman, MD, director of the Neurological Institute, home of the level IV Epilepsy Center, the highest designation recognized by the National Association of Epilepsy Centers. UH’s Epilepsy Center has provided the highest quality care for patients since its inception in 2000. The Center plans to double its surgical volume this year and triple its number of adult epileptologists by summer 2007. Recruitment of additional pediatric epileptologists is also underway.

Dr. Lüders will lead the epilepsy center’s multidisciplinary team in its evaluation of patients with intractable epilepsy to determine whether they are surgical candidates – currently about 5 to 10 percent of epilepsy patients.

Some of UH’s strengths, Dr. Lüders says, include a 24-hour EEG video monitoring unit and an excellent MRI center with high-resolution “quad coil” imaging that allows the team to record images with greater precision and potentially pinpoint lesions causing the seizures. Its team also is utilizing a full suite of stereotactic radiosurgery techniques that allow its experts to more accurately define both the seizure’s sources as well as regions critical to language, motor or visual areas, and thus lessening the risk for neurological deficits.

“Our program unites expertly skilled surgeons with the tools needed, such as interactive MR rooms where neuropsychology testing can be carried out on patients in an awakened state,” Dr. Lüders says. “This gives surgeons immediate feedback and allows increased accuracy and improved effectiveness of surgical resections.”

The Epilepsy Center’s goal, adds Dr. Maciunas, is for patients to be seizure-free. “The difference between occasional seizures and seizure-free is the difference between not being able to drive, or in some cases hold a job, and being an independent member of society.”

Many people still don’t understand that people die from epilepsy, he says. But, in fact, those who suffer from continued seizures are at an increased risk of sudden death.

For pediatric patients, educational and social development are also of utmost concern, adds Dr. Robinson. “Some children with poorly controlled epilepsy drop several IQ points every few years – so it is far from a benign problem to continue having seizures.”

At Rainbow, the Epilepsy Center’s multidisciplinary team works with families to develop individualized care plans for patients, says Dr. Goyal, Pediatric Epilepsy Director.

“We recognize that seizures can be frightening for parents and often hard to understand,” Dr. Goyal says. “We work closely with families to determine the best testing and treatment plans that will



## A new childhood. seizure-free

Shirley deGraphenreed and Shirley Booth



Monisha Goyal, MD



Shenandoah Robinson, MD

Shirley deGraphenreed sensed something was seriously wrong when her 9-year-old granddaughter started staring off blankly into space.

Granted, most children daydream or occasionally pretend not to hear you. This was different.

"I would be talking to her and it was like she wasn't listening. But then she'd snap back into it like nothing happened," Shirley recalls. "You know a child and can tell when something just isn't like them. So, when she came back to herself I asked her, 'Did you hear me?'"

It was her response that frightened her grandmother, who has raised her since she was an infant: "I heard everything you said," replied her granddaughter, also named Shirley. "But I just couldn't answer you."

In the emergency room, her grandmother learned that Shirley's strange blanking out was actually a seizure – and that it likely wasn't her first. The rapid rate at which her newly diagnosed epilepsy progressed confirmed the suspicion.

Soon thereafter, the young girl began hitting things with her hand during seizures and needed to wear pull-ups to avoid wetting herself.

"Her life changed almost instantly," says her grandmother, who sought help from Rainbow Babies & Children's Hospital's team of epilepsy experts. Neurologist Nancy Bass, MD, helped Shirley bring her seizures relatively under control for about a year with medications. But, in the spring of 2004, her seizures became unrelenting. So Rainbow Epileptologist Monisha Goyal, MD, suggested a week's stay at Rainbow to stop the seizures through intravenous treatment and monitoring.

Upon her return home, however, the seizures escalated. She fell down a flight of stairs. She also fell backwards in the bathtub. At school, she needed someone with her at all times to ensure her safety.

Back at Rainbow, Dr. Goyal suggested surgery to identify and remove the seizure-producing areas of her brain.

"I was afraid," her grandmother says. "But I wanted her to have a normal life." In June 2004, little Shirley underwent an operation conducted by Neurosurgeon Shenandoah Robinson, MD, that successfully located and resected the problem areas.

Young Shirley returned home following a month's stay at Rainbow and has since been seizure-free. At school, she's now a Merit Roll student, a tutor and also on the basketball team. She wants to one day go off to college and be able to live on her own – things that would have proved impossible had she continued having seizures.

"She went from wearing diapers and falling down to being a normal girl," her grandmother says. "She's a completely different little girl. She's got her life back."

"I feel so much better," agrees Shirley, who just turned 13. "Now, I can hang at my friends and nobody has to look at me differently."

“When she came back to herself I asked her, ‘Did you hear me?’”

Shirley deGraphenreed

eliminate or control seizures. This is truly a collaborative process among all members of the team to ensure the best possible outcomes.”

About 75 percent of children can achieve excellent seizure control with medication. For the remaining 25 percent, finding a solution is a significant issue that should be pursued aggressively, says Dr. Robinson. Recent advances in imaging have opened the door for many children who were previously thought not to be candidates for surgery.

Dr. Goyal stresses the importance eliminating seizures, when possible. “Often, children with epilepsy are at increased risk for academic difficulties and problems with social interactions, especially with their peers,” she says. “Good outcomes with surgery can dramatically enhance their quality of life.”

Whether pediatric or adult, Dr. Maciunas emphasizes that UH’s Epilepsy Center treats each patient as unique, with an approach as individual as their disease. “No two people have the same epilepsy,” he says. “They don’t have the same cognitive wiring, the same pathology or the same social effects from their epilepsy. There are some general rules, of course, but our team is committed to developing tailor-made plans for the individual patient.”

The multidisciplinary team that works with each patient includes experts in neurology, neurosurgery, neuroradiology, neuro-oncology, neuro-ophthalmology, neurotology, neuro-pathology, neuro-psychology and other related specialties. This team meets jointly to review each patient’s evaluation results, says Dr. Lüders, and together makes a decision about the best treatment.

“Surgery is no longer a treatment of last resort,” Dr. Lüders says. “In fact, those with temporal lobe epilepsy, in which seizures arise in one or both temporal lobes located at the sides of the brain, do very well with surgery.” Doing a temporal lobectomy can lead to complete seizure control, adds Dr. Werz. “In the right patient, we can have 80 to 90 percent long-term seizure-free rate.”

A team of epileptologists, neurosurgeons and researchers from UH and Case also have recently formed a group to study higher cortical function, or conscious mental activities such as thinking, remembering, reasoning, speaking, carrying out movements and processing information, Dr. Lüders says. This team will use information gathered during the comprehensive epilepsy surgery evaluation and do research, which should lead to a better understanding of human higher cortical function.

Both Drs. Lüders and Maciunas agree that there is a tremendous amount of excitement in basic science research. This, in turn, may continue to change the way epilepsy is treated.

“It is possible that in the future, we may be speaking of surgery to place electrodes that predict seizures and abort them before they happen – whether through medication or electrical stimuli,” says Dr. Maciunas, who is actively working on clinical research on improved electrodes with Drs. Werz and Koubeissi.

In the meantime, Dr. Maciunas says it is important to get the message across that treatment plans for seizures are available. “When it comes to optimal care of epilepsy, seizure-free is the goal.”

For more information on the Epilepsy Center at UH, call 216.844.2724.