Raymond Sekula Jr. leads department’s efforts in cranial neuralgia surgery

The University of Pittsburgh Department of Neurological Surgery has a storied tradition of treating cranial nerve and other brainstem disorders, and the Center for Cranial Nerve and Brainstem Disorders continues to offer innovative care under the new leadership Raymond F. Sekula Jr., MD. In his first six months since joining the faculty, Dr. Sekula has performed over one hundred operations for patients with trigeminal neuralgia, geniculate neuralgia, glossopharyngeal neuralgia, hemifacial spasm, and tumors and other abnormalities involving the cranial nerves.

The center joins experts in a variety of medical disciplines including neurosurgery, neurology, neurophysiology, neuroradiology, neuroanesthesia, neuro- oncology, neuro-ophthalmology and neurootology with the intent of providing the most advanced care for a variety of brain disorders. The goal of the center is to provide the very best outcomes for patients in the most minimally invasive manner. The collective experience of this team is supported by two nurse care coordinators (Ann Wilkinson, RN, and Lois Burkhardt, RN) with more than forty years of combined experience caring for patients with cranial neuralgias.

Of particular recent interest to the center has been the use of preoperative imaging to aide in the diagnosis and surgical planning for patients suffering the effects of neurovascular compression. Cranial neuralgias are nearly always caused by arterial compression of the centrally myelinated portion of the affected cranial nerve.

Although magnetic resonance imaging (MRI) was historically too low in resolution to provide information about vascular compression of the cranial nerves, recent technological advances have renewed clinicians’ interest in the use of imaging for diagnosis and surgical planning. Dr. Sekula and his neuroradiology colleagues—including Barton F. Branstetter, MD, and Marion Alicia Hughes, MD—have recently completed two studies demonstrating the sensitivity and specificity of thin-slice T2-weighted MRI in the detection of neurovascular compression in patients with hemifacial spasm (HFS) and trigeminal neuralgia (TN).

Only a small subset of TN and HFS sufferers includes patients lacking a compressive vessel, and the prognosis for this cohort is less favorable. While a clinical diagnosis alone can suggest a high probability of a neurovascular conflict, this method is not definitive. The team’s studies demonstrate that while MRI has moderate specificity for detecting neurovascular compression, the sensitivity is extremely high. This makes it ideal for identifying the small number of patients without a compressive blood vessel despite a classic clinical presentation and preventing them from undergoing a futile surgical exploration of the nerve.

An emphasis on preoperative and intraoperative electrophysiologic testing—overseen by Jeffrey Balzer, PhD, Donald Crammond, PhD, Miguel Habeych, PhD, and Partha Thirumala, PhD, from the Center for Clinical Neurophysiology—has resulted in improved outcomes and fewer complications. A measure of the utility of this clinical service can be seen in the preservation of hearing in 99% of patients undergoing microvascular decompression for all cranial neuralgias in the center.

For more information on the Center for Cranial Nerve and Brainstem Disorders, please call (412) 647-3920.

Dr. Sekula in the operating room performing a microvascular decompression.

Fig. 1: Sagittal view of the superior cerebellar artery (A) impinging on the centrally myelinated portion of the trigeminal nerve (B). Microvascular decompression treats this pathology directly. Fig. 2: Axial view showing the source of this patient’s facial pain: a loop of the superior cerebellar artery (A) compressing the centrally myelinated portion of the trigeminal nerve (B).
The Affordable Care Act and the incidental finding in neurovascular disease

We are in the midst of an extremely important period in the history of our subspecialty and of medicine in general. Intrinsic and extrinsic factors pose critical challenges and provide important opportunities for the delivery of care to patients with cerebrovascular disorders. Now, more than ever, we must align our strategy to not only provide state-of-the-art care but at the same time advance the science and technology associated with cerebrovascular disease.

The dawn of a new era in medicine in America is upon us with the implementation of the Affordable Care Act. The changes due to the implementation of a new paradigm in health care delivery are at this point unpredictable. What is clear is that we are entering an era when we are asked to deliver more with fewer resources. We are entering a “New Normal.” A challenge in developing a plan of action is the temporal confluence of critical factors affecting our ability to execute changes. These factors include the staggering pace of technical advances, the unchecked threats of medical-legal liability, the ever-accumulating unfunded regulatory mandates, and all this in the face of reduced reimbursements and increased insurance restrictive oversight. With these great challenges, what is at risk is our ability to propose and execute change.

We must be prepared to predict what the broad spectrum of changes in health care delivery will mean for patients with cerebrovascular disease. Given that a significant proportion of what we treat is incidental, will the time come when the government and/or insurance companies will dictate how we manage incidental findings? In an era when the value of health care will be increasingly scrutinized, we must understand the value of the services we provide. Do we know what is the real benefit of treating asymptomatic vascular disease? We must understand how we measure benefit. Benefit to whom? Benefit to the patient, their family, society, their insurance carrier or the government? As physicians we have taken an oath to “above all do no harm.” There is no question that no harm must be to our patient who is in front of us. In the management of an incidental finding, “do no harm” is a more complex proposition. In many cases it is not black or white. It is gray, and there are many shades of gray. Will the insurance companies dictate the plan when we are facing a gray decision?

The rate of increase of health care costs is not sustainable. There is no gray in that state-

(continued on page 7)
Moossy, Monaco provide state-of-the-art care at VA Pittsburgh Healthcare System

The veterans Health Administration—or the VA, as it is commonly known—is America’s largest integrated health care system serving 8.76 million veterans each year. The University of Pittsburgh Department of Neurological Surgery has a two-decade affiliation with the VA through the VA Pittsburgh Healthcare System, proudly helping the VA fulfill its mission of providing the highest quality care to this country’s veterans.

John J. Moossy, MD—chief of neurosurgery at the VA Pittsburgh Healthcare System—and Edward A. Monaco III, MD, PhD, currently perform more than 300 neurosurgical procedures annually and see more than 2,000 outpatients annually at the system’s University Drive campus, located just north of the Petersen Events Center in the Oakland section of Pittsburgh.

Drs. Moossy and Monaco take pride in the fact that the neurosurgical practice at the VA is able to provide the same world-class care that residents of western Pennsylvania have come to expect from UPMC.

Dr. Moossy has been with the University of Pittsburgh Department of Neurological Surgery since 1986 and has maintained the VA as part of his practice for nearly as long. Dr. Monaco is one of the newest members of the department and, upon his arrival, specifically sought out an opportunity to share his neurosurgical expertise with veterans.

Dr. Moossy’s clinical practice includes nearly all aspects of neurosurgery with a special interest in the surgical management of medically intractable pain syndromes. Dr. Monaco’s practice is also one of general neurosurgery with a special interest in stereotactic neurosurgery and neuro-oncology.

Although the bulk of their practice involves the management of degenerative spinal conditions, they also offer veterans access to surgery for primary tumors or metastatic disease of the brain or spine, minimally invasive and percutaneous spinal procedures, neurosurgical trauma care, functional procedures for medically intractable pain syndromes, peripheral nerve surgery, management of hydrocephalus, and stereotactic radiosurgery for select brain and spine conditions.

In the operating room, the VA provides the same advanced technologies available at UPMC, including CT- and MRI-based intraoperative image guidance, intraoperative fluoroscopy, neurophysiological monitoring, and minimally invasive instrumentation.

An e-consult system is available to health care providers at VA facilities outside the immediate Pittsburgh metropolitan area, whereby physicians can remotely review cases to determine their appropriateness for outpatient evaluation.

A teleconferencing consultation system has recently been put into place with the Columbus, Ohio, VA Hospital where neurosurgical coverage is not immediately available. This system provides veterans residing in the Columbus area access to advanced neurosurgical care and gives Drs. Moossy and Monaco the opportunity to talk to patients and even perform neurological exams remotely.

Additionally, the VA University Drive service is an accredited training site within the highly regarded neurosurgical residency program at the University of Pittsburgh. Each year, three senior-level residents rotate through the VA practice and have the opportunity to work closely with veterans.

Over the years, the affiliation between the Department of Neurological Surgery and the VA Pittsburgh Healthcare System has matured into an irreplaceable asset for both entities. Drs. Moossy and Monaco are committed to growing the VA practice and expanding veterans’ access to quality, state-of-the-art neurosurgical care.

The Veterans Health Administration and the VA in Pittsburgh

The Veterans Health Administration has its origins from the Civil War era as a network of federal facilities to house and care for former members of the Union army. In the Pittsburgh area, the first VA hospital was constructed in the 1920s in the suburb of Aspinwall and eventually became known as the H.J. Heinz campus. The facility that now serves as the primary acute care facility for the VA in Pittsburgh was formally opened at University Drive in the Oakland section of Pittsburgh in September 1954. The University Drive campus underwent extensive renovations beginning in 2007. A new five-story, $78 million Consolidation Building opened in 2012, providing additional state-of-the-art outpatient, administrative and psychiatric services. The campus also now includes a Fisher House, a 10-bedroom “home away from home” providing a place for visiting families to stay, free of charge, while their loved ones receive inpatient medical care. In addition, a new $32 million research office building was constructed. The VA Pittsburgh Healthcare System serves the veteran population of Pennsylvania, Ohio and West Virginia with the University Drive campus utilizing 146 beds shared among surgical and medical services.
For nearly two decades, the Department of Neurological Surgery has had a relationship with several hospitals in Africa to supply neurosurgical equipment, manpower, and training. A. Leland Albright, MD, the former chief of neurosurgery at Children’s Hospital of Pittsburgh of UPMC, currently serves as the chief of neurosurgery at the AIC Kijabe Hospital in Kijabe, Kenya. Over the past decade, faculty, residents, and students have had the opportunity to visit and work in Africa, providing much-needed neurosurgical care. Below, we share the personal thoughts and experiences of three young doctors during recent rotations to hospitals in Tanzania, Uganda, and Kenya.

Christopher Bonfield, MD, is a chief neurosurgery resident at the University of Pittsburgh who spent an entire semester working in three hospitals in Tanzania. His work was supported by Madaktari Africa and a grant from Stryker. He has also provided similar care in Peru. Next year, he will complete a fellowship in pediatric neurosurgery.

Practicing neurosurgery in Tanzania is a very difficult proposal. In the sub-Saharan region of the east coast of Africa, more than 40 million people make Tanzania home. Currently, there are only four trained neurosurgeons in the entire country. All four are based in Tanzania’s largest city, Dar es Salaam. They all completed their residencies outside of Tanzania, where some were required to learn a new language before even beginning their program, and many had to leave their families behind for the duration. At the country’s largest government hospital, Muhimbili, these neurosurgeons work to take care of all of the patients who are lucky enough to have the resources and the stability to make the trip. In areas of Tanzania away from Muhimbili, without specialized neurosurgical coverage, other practitioners (general surgeons, orthopedic surgeons, and even pediatricians) must perform the basic neurosurgical procedures necessary.

Through the Madaktari Africa organization, I had the opportunity to live in Tanzania for a summer in order to learn from, collaborate with, and share my knowledge with the local surgeons. I experienced a range of Tanzanian medical care, from a very large urban hospital (Muhimbili in Dar es Salaam, 1,400 beds), to a smaller city hospital (Bugando in Mwanza, 900 beds), and a remote rural hospital (Haydom Lutheran in Haydom, with 350 beds). Without use of the modern technology and conveniences that I have become accustomed to in the United States (such as electric drills, neurosurgery-specific instruments, MRI, or ICU care), we faced numerous adult and pediatric cases including cranial trauma (intracranial hemorrhage evacuation, skull fracture repair), brain tumor resection, shunts, encephalocele and myelomeningocele repair, spine trauma (fusion and closed reduction), degenerative spine (decompression, disectomy, fusion), and spine tumor resection.

The hospital was crowded, the temperature was not controlled, and the conditions were what we would consider unsanitary here. All of these factors contribute to a high infection risk. It is hard to coordinate and obtain operating room time, and money for new equipment is extremely limited. However, the situation certainly is not hopeless. The majority, if not all surgeons—both neurosurgical and others—are amazingly creative, resourceful, and very adept at getting the most out of their available equipment and skills. The patients are also well deserving of amazing recognition. They are, on the whole, extremely appreciative, patient, and most of all, very trusting of the doctors.

After I returned to my residency program in Pittsburgh, I looked back on my time in Tanzania and the differences seem even more pronounced. When you are in the throes of the commotion that Tanzania has to offer, you begin to operate from a new baseline.

My time in Tanzania could not have been duplicated in the United States. I now have colleagues, whom I also consider friends, across the world, and we continue to collaborate and discuss old and new cases. I hope I may continue this contact and that others will join me to seek out the opportunity for similar experiences. Over the past few years, international meetings and organizations have increased the spread of knowledge and spurred education both for the Tanzanian medical staff and surgeons, as well as educating those of us outside of Tanzania about their circumstances. I have been fortunate enough to be able to share my experiences with other colleagues as well. For the first time, this year Tanzania has its own neurosurgery residency program. Doctors in training will no longer need to move abroad, learn a second or third language, and live away from their families for years just to be able to further their much-
needed contributions to the discipline. I, like many others, cannot wait to see how this grows and develops with their innate hard work and dedication. I only hope to be a part of it.

Stephanie Chen, BS, is a third-year medical student at the University of Pittsburgh who spent a summer providing neurosurgical care as well as performing research in hydrocephalus at the CURE Children’s Hospital in Mbale, Uganda. Her experience was supported by a stipend from the University of Pittsburgh School of Medicine Alumni Summer Enrichment Program Award.

Sandwiched between two Ugandan men on the back of a small motorcycle, we interrupted the picturesque scenery with billows of dust as we made our way past blindingly brilliant green fields. My destination was a shady clearing decorated with an assembly of little round huts capped with straw. Upon arrival, a small child crawled out from his family’s mud hut (a perfectly round edifice of no greater than seven feet in diameter), took one look at me, and disappeared to find the chief of the village. Shortly thereafter, the child reemerged through the mango trees accompanied by a tall and slender, young man. He greeted us with a pleasant smile and asked the child to gather a few stools for a meeting that felt strangely formal. I asked the chief if he knew of a child named Elijah. The chief confirmed that he knew of this child, and that the child had passed away last year. I probed further about the circumstances of the child’s death, and he replied, “The child died shortly after returning from the hospital.”

My research project was to track down patients who had been previously treated for hydrocephalus with an endoscopic third ventriculostomy in order to measure the efficacy of a surgical scoring system. This seemingly simple endeavor was a complicated series of disconnected phone numbers, confused conversations, and circuitous trips to vanishing villages. Most of the patients remained unfound. Of the families I managed to locate, some were convinced to return for follow-up care if I could assist with their transportation costs, while others had similar outcomes to Elijah, succumbing to infections, trauma, or their neurological disease.

Working outside the operating room, within the confines of a neurosurgery hospital in Uganda, provided unique insight into the conditions flanking surgery. The majority of pediatric hydrocephalus in east Africa is a result of infection, implicating the lack of prenatal care and poor birthing conditions. Despite the large success of this surgery in preventing mortality, many children live with persistent neurological deficits given the late interventions following a lack of parental understanding and inability to access care. After surgery, these children have difficulty obtaining follow-up care or rehabilitative training. Thus, I spent many nights in my hostel, wondering about the futility of neurosurgery in this context. How can a life of persistent infancy be enough? Can one really fault a mother for allocating more of her family’s resources to the children that will be able to work in the field and provide for the family? Perhaps all of these efforts would be better served addressing women’s health, building obstetric facilities, distributing antibiotics, and providing clean water wells.

However, near the end of my trip, I accompanied a few of the clinicians to distant cities in northern Uganda for traveling clinics. I was astounded by the sheer volume of women with their babies who lined up outside the hospital waiting for neurosurgical care everyday. Some came for post-operative care, others for evaluation, and others simply for respiratory infections and diarrhea. On one morning, a four-year-old girl named Cinderella was plopped into my lap. One year after her hydrocephalus surgery, she was grossly developmentally delayed on examination. Nevertheless, she examined me back, poking and grabbing, delightfully unaware of all our superficial differences. She was an infectiously happy child, and it dawned on me that perhaps it was enough, that this problem is one that can be transected at multiple points. Cinderella needs treatment as much as the next unborn child needs prevention.

Everyday I was struck by the beauty of my surroundings juxtaposed against the ubiquitous lack of adequate nutrition, clean water, education, and basic health care. I had expected to spend time in the operating room, to be inspired by definitively curative acts of a surgeon.

(continued on next page)
Out of Africa

(continued from previous page)

But instead, I spent time in the clinic, in the ICU, in the office, in the kitchen, and on the make-shift soccer field, observing and understanding a troubled community of resilient grace and happiness; enlightened by an appreciation for Uganda that necessarily preceded any possible conceptions of progression and change.

Kim Foster, MD, is a sixth-year resident in our department who spent a semester working with A. Leland Albright, MD, providing pediatric neurosurgical care at AIC Kijabe Hospital in western Kenya. She has also provided similar care in Vietnam. She plans to pursue a career in pediatric neurosurgery with an emphasis on international care.

Kijabe now sits 60 kilometers behind me, just over the Ngong Hills and somewhere along the dusty path winding into the Great Rift Valley. I arrived a month ago, equipped with my Pittsburgh training. Residency thus far has given me endurance, reminded me to be fearless.

The local neurosurgeons will wake every day before the sun, make rounds, perform surgery, and love each child as if he or she were their own. My theater team—our chai breaks, scrub caps and jokes—will remain in my memory long after I have left theirs. My presence and absence will be of little consequence here; poverty and disease will continue to occupy the minds of these strong, noble people.

Dr. Leland Albright served me home-cooked pasta and hot cookies. Quiet evenings were spent discussing patients at his small table in Kenya. When he spoke, every word was precisely selected. When he entered the theater, the whole world resided in calm balance. He showed me there was little glory in the dirty, small walls of our hospital, only humility around every corner.

Having worked in Africa and Asia before, the confines of developing world surgery are not new to me. Nonetheless, in the short three years since my last visit, there has been tremendous growth in Kijabe. Dr. Albright has procured a microscope, intraoperative ultrasound, tumor resection tools, and a stockpile of supplies, ranging from shunts to artificial dura. Anesthesia and critical care have improved, and while the ICU remains limited to five beds and ventilators, decisions of resource allocation involve careful multidisciplinary input. Volunteer radiologists, pathologists and anesthesiologists are available year-round, and there are now round-the-clock laboratory and microbiology services. The hospital functions as a teaching institution, with students from around Africa. Dr. Albright offers a full pediatric neurosurgery fellowship and a three-month rotation to all residents from the fledgling neurosurgical residency in Nairobi.

In Kenya, my rotation afforded me a glimpse into every aspect of neurosurgery, from hydrocephalus to spinal cord tumors to severe head injury. I gained experience in oncologic surgery, removing two thalamic tumors in children and performing six adult craniotomies for various tumor pathologies. I encountered third-world infections and rare neural tube defects, vastly different disease entities than what I could ever see in the Valley. I arrived a month ago, equipped with my Pittsburgh training. Residency thus far has given me endurance, reminded me to be fearless.

Upon my return, I will show my colleagues images from our endoscopy cases, and we will discuss the nuances of shunts and neural placodes. They will hear how my nervous hands applied a clip to a ruptured anterior communicating artery aneurysm, praying the dwindling light on the microscope would not run out. We will talk of medulloblastoma resections. I will boast of triumphs, of my independence, of emergent saves and inevitable deaths under the east African moon. Finally, I will remind them of our legacy, of the opportunity to find our Pittsburgh, halfway around the globe.

Sports injuries: What have we learned so far?

(continued from back page)

coaching and physical conditioning have led to a significant drop in the number of football-related cervical spine injuries seen in the U.S. Although even one catastrophic spinal cord injury is too many, prevention—along with rapid EMS stabilization and helicopter transport, well-equipped trauma centers and specialized neurosurgical training—has fortunately made sports-related spinal cord injuries a very rare event.

Unfortunately, the same decreasing trend has not yet occurred with sports-related concussion. In fact, concussion in sports appears to be reaching a modern-day record incidence over the last five to 10 years. A study tabulating the incidence of concussion in high school sports published in 2011 looked at more than 25 school systems in the U.S. It found an overall of incidence of 24 concussions per 100,000 athletic exposures. Boys’ sports accounted for 75% of all concussions. Football accounted for more than half of all concussions and had the highest incidence rate (60 per 100,000). Girls’ soccer had the most concussions among the girls’ sports (35 per 100,000) and the second-highest incidence rate of all 12 sports studied. They found the concussion rate increased 4.2-fold over the 11 years (15.5% annual increase) they had collected data. (See figure 1 below.)

Conjecture as to why the incidence of sports-related concussion appears to skyrocket—not only at the high school level, but also in youth sports, college and the professional levels—has been the subject of numerous media and expert opinions over the last several years. The UPMC Sports Medicine Center hosted the largest ever concussion conference this summer attended by more than 400 experts from around the world. Increased participation in sports, greater concussion awareness, and increased reporting and education of signs and symptoms were some of the numerous reasons proposed for this increase.

Just as we saw with spinal cord injuries—with better research resulting in better prevention and education—I also hope to see the same decreasing trends in the incidence of concussion over the next several years. With the work of the UPMC Concussion Center and our own department’s outreach efforts, concussion can be studied, managed and prevented in a scientific way to bring about real change.

Fig. 1: Concussion rates from 1998 to 2008 for boys, girls and overall.
Representative Rothfus Visits UPMC

U.S. Rep. Keith J. Rothfus (R-Pa.) visited UPMC Presbyterian, September 24, in an effort to learn more about the health system’s advanced neurological services, including cognitive care, neurology, neurological surgery and telemedicine.

Included in his visit—organized by Partha Thirumala, MD, of the Center for Clinical Neurophysiology—was a tour of a state-of-the-art UPMC Presbyterian operating room where he had a first-hand view of a clipping of a brain aneurysm. Department of Neurological Surgery chairman Robert Friedlander, MD, explained the procedure and pointed out the many advanced tools and technology that help make the procedure accurate and safe (see photo below).

Doctors and administrators also pointed out to the congressman the value of face-to-face patient-doctor interaction and the importance of timely patient access to a neurology specialist.

The Affordable Care Act and the incidental finding in neurovascular disease

In the News

- Peter Gerszten, MD, was interviewed for the online journal eCancerTV, July 30, regarding spine radiosurgery.
- R. Mark Richardson, MD, PhD, and Donald Crammond, PhD, were featured on Al Jazeera’s medical show “The Cure,” September 22, in a segment that focused on deep brain stimulation.
- Joseph Maroon, MD, was a guest on the KDKA Radio Morning News show, September 24, talking about his training for the Hawaii Ironman competition. Dr. Maroon was also quoted in the Pittsburgh Post-Gazette, September 9, in an article dealing with the use of antibiotics in the treatment of lower back pain.
- The high definition fiber tracking lab work of Juan Fernandez-Miranda, MD, was featured on the October 2013 cover of Cerebral Cortex magazine.
- L. Dade Lunsford, MD, was quoted in an ESPN.com article, September 6, that focused on the recovery of a high school athlete from AVM surgery.
- Mandep Tamber, MD, PhD, was interviewed in a WPXI-TV feature, September 24, reporting on a rare surgery for preventing pediatric epileptic seizures.

A June 25 U.S. News & World Report article reported on a study by Stephanie Greene, MD, and Christopher Bonfield, MD, showing children with ADHD were more likely than children without the disorder to suffer a moderate disability after sustaining a mild TBI.

The questions are simple:

- How likely is an incidental finding to cause a problem?
- How likely is it that the treatment of the incidental finding is more malignant than its natural history?
- What is the cost of treating the incidental finding?
- What is the cost of not treating the incidental finding?

Securing accurate answers to these questions is a daunting proposition. Too much is at stake to be passive. We must think about these questions carefully and work collectively toward a solution.

Robert Friedlander, MD
Chairman, Department of Neurological Surgery
Walter E. Dandy Professor of Neurological Surgery
Sports-related neurological injuries: What have we learned so far?

by Joseph C. Maroon, MD

In the late 1970s while vice chairman of the University of Pittsburgh Department of Neurosurgery, I became increasingly concerned about the number of high school football-related spinal cord injuries being treated here at then-Presbyterian University Hospital. Young men from across the western Pennsylvania area were being seen for catastrophic cervical spine injuries. Despite our best efforts, too many were leaving the hospital in wheelchairs or worse.

Frustrated and knowing something needed to be done, in 1981 I gathered all the available media and firsthand data on cases of sports-related spinal cord injury in western Pennsylvania and compared our data to a report by the U.S. government. I was shocked at the results. Our local area, in and around Pittsburgh, had the highest rate of high school football related catastrophic neck injuries in the country!

Immediately, we began to look at why this was so prevalent in our community and what could be done to reverse this horrific distincion. We found that light-weight defensive backs were at greatest risk and that improper tackling with the head and neck was usually the cause. Through an education and a neck strengthening program—now standard today—we were able to reduce the rate of cord injuries significantly. Ultimately, during my tenure as chairman of the Congress of Neurological Surgeons (CNS), in 1985 we took what we had learned and developed the ThinkFirst® education program to help prevent spinal cord injuries from all sports.

The lessons I learned both here at UPMC Presbyterian—and nationally with the CNS—soon led me to question current practices being used to manage sport-related concussion. In 1982, I was asked by the National Football League’s Pittsburgh Steelers to be their neurosurgical consultant. The practice at that time was to hold a player out of the game for seven days following a concussion. The existing guidelines had little to do with the player’s brain function and more to do with arbitrary ‘return-to-play timelines.’ I was challenged by Pittsburgh Steeler head coach Chuck Noll to “get some real data” as to why we were holding back his star quarterback from playing. I agreed. We needed more information about how the concussed brain functioned to better manage return-to-play decisions. This ultimately lead to a collaboration with neuropsychologist Mark Lovell, PhD, and the development of the ImPACT™ computerized neuropsychological software, now used by more than four million athletes and soldiers around the world.

Are We Better Off Today?

I am happy to say that despite an increasing number of sport participants—especially female athletes—prevention strategies, such as better equipment, education, (continued on page 6)