Largely Not Under Control

For those of you who have read this column for a while, you may remember my first piece about how, as interim chair, I felt like the department and I were taking each other for a test drive. The column concluded with my being amazed at how everyone pitched in and “no one threw up in the back seat.” For me, a Maserati taking a tight turn and hugging the pavement under complete control exemplified the test drive image. That had to be true; no one got sick, right?

New milestones for the department make me reflect on the drive and revise the image. As you’ll read in this issue, we now have a flourishing sports medicine division. We are providing team sports coverage and growing every day. In addition, we recently became one of the first programs in the country to receive ACGME accreditation for our brain injury fellowship. Thus, we now have accredited fellowships in sports, spinal cord injury, brain injury, and pediatrics, and we are very active in the UPMC pain fellowship. We remain in the top five of NIH-funded rehabilitation programs and have steadily moved up the U.S. News & World Report rankings. We had eight full-time faculty when the department was founded in 1999. Now, we are somewhere north of 50.

Our unparalleled growth has not been a smooth ride. I remember a department retreat where I felt there were three main conclusions: 1) I was doing so many things wrong; 2) I had great people around me who felt comfortable saying what was wrong; and 3) these same faculty were capable of fixing it. We formed a plan and have been working to follow it. This course change has been one of many we have made.

The image of a Maserati perfectly executing a curve is scintillating, but just not accurate. Picture rapid forward movement interrupted by the car fishtailing around curves and occasionally scraping against a wall. Perfect control? Hardly. But I am comforted by a quote from someone who knows a little about cars:

“If everything seems under control, you’re not going fast enough.”
— Mario Andretti, former world champion race car driver

Sincerely,

Michael L. Boninger, MD
Director, UPMC Rehabilitation Institute
Professor and UPMC Endowed Chair
Department of Physical Medicine and Rehabilitation
Paralympic Gold Medalist Joins UPMC Wheelchair Wash and Tune-Up

The University of Pittsburgh Model Center on Spinal Cord Injury (SCI) hosted the fifth Wheelchair Wash and Tune-Up on June 5, 2014. We performed routine maintenance and cleaning, warding off possible problems. The event was instituted when it became evident through our model system research that the quality of wheelchairs was decreasing while the frequency of wheelchair breakdowns was increasing.

This year’s special guest was Mr. Dan McCoy, a Sochi 2014 Paralympic gold medalist on the U.S. Sled Hockey Team. Mr. McCoy talked about Sochi and being a member of the Mighty Penguins, Pittsburgh’s sled hockey team.

In addition to his exceptional hockey playing, Dan is an undergraduate at the University of Pittsburgh and a student research volunteer in the Department of Physical Medicine and Rehabilitation.

Timeline of Notable Department Achievements and Events

1999 and 2000
• Department status achieved (previously under Department of Orthopaedic Surgery); Ross Zafonte, DO, named chair
• UPMC ranked 43 for rehabilitation by U.S. News & World Report in 1999

2002
• Awarded National Institute on Disability and Rehabilitation Research (NIDRR) SCI Model System grant; has been renewed twice (2006 and 2012)
• Accredited Spinal Cord Injury Medicine fellowship established

2004
• Ranked eighth in NIH funding; first time in the top 10 for physical medicine and rehabilitation programs
• UPMC ranked 28 for rehabilitation by U.S. News & World Report

2005
• Amy Wagner, MD, named AAP Young Academician

2006
• Defense Advanced Research Projects Agency (DARPA) and the U.S. Department of Defense awarded a $1 million grant to the department’s bioengineering researchers working with UPMC to develop a neurointegrated prosthetic limb

2007
• Gwendolyn Sowa, MD, PhD, named AAP Young Academician
• Michael Boninger, MD, becomes interim chair

Since 1999, the department has grown from eight faculty members to more than 50. To date, the department has had 99 residency program graduates, and 22 physicians have completed fellowships.
Future of Biomarkers in Diagnosis, Prognosis, and Treatment of Musculoskeletal Degenerative Diseases

In the February 2014 issue of *Discovery Medicine*, physical medicine and rehabilitation fourth-year resident Prakash Jayabalan, MD, PhD, and associate professor Gwendolyn Sowa, MD, PhD, published a review article entitled, “The Development of Biomarkers for Degenerative Musculoskeletal Conditions.” The article described the importance of developing biomarker panels for osteoarthritis (OA), stating:

“The identification of musculoskeletal disease before it is evident radiographically could be of huge benefit in patient treatment. At present, by the time disorders such as OA or degenerative disk disease are found radiographically, the damage is advanced, which limits treatment options.”

While no particular biomarker has been found to be indicative of musculoskeletal degeneration, research has shown the presence of multiple biomarkers indicative of tissue damage, and that these elements can be measured in serum and urine analyses.

According to Jayabal and Sowa, “The Rotterdam study (Reijman et al., 2004), which incorporated 1,235 men and women with knee OA, found that patients with uCTX-II (type II collagen C-telopeptide) levels in the highest quartile had six times higher risk of radiographic progression of knee OA and eight times higher risk for hip OA, independent of patient demographic factors.”

“We found that there were significantly higher levels of MMP-9 (matrix metalloproteinase protein coding gene) and IL-8 (inflammatory cytokine) in the urine of these patients and negligible levels in normal patients without symptoms of OA (Jayabal et al., 2013). High circulating levels of these biomarkers were associated with lower physical function and ability to perform a knee extension or leg press exercise, as well as with increased symptoms of OA,” Dr. Jayabalan and Dr. Sowa wrote.

Dr. Jayabalan also was co-author of “The Development of a Biomarker Panel to Elucidate the Effectiveness of Rehabilitation for Knee Osteoarthritis,” which won the 2013 AAP Electrode Store Paper Award in the resident category.

**Reference**

Talking Sports Medicine: A Few Medical Vignettes in Sports Medicine and Interventional Procedures

We asked our sports medicine faculty to comment on their view of the field and illustrate their passion through interesting case histories. Our physiatrists practice in outpatient clinics and at the UPMC Center for Sports Medicine, where amateur, collegiate (University of Pittsburgh Panthers), and professional athletes — including the Pittsburgh Steelers and Penguins — turn for care.

Matthew Maxwell, MD

Matthew Maxwell, MD, assistant professor and assistant director of sports medicine, is a recent addition to the University of Pittsburgh after completing his primary care sports medicine fellowship at Allegheny General Hospital, where he subspecialized in the use of fluoroscopic and ultrasound-guided interventions using regenerative medicine for musculoskeletal injury. Dr. Maxwell played lacrosse at Tulane University and is now a recreational tennis and basketball player.

My main clinical interest is in the integrated diagnosis and treatment of upper- and lower-extremity injury in the athlete during my examination, and augmenting the human body’s natural healing response with regenerative medicine to treat the underlying injury.

I was recently visited by a 45-year-old recreational tennis player. He presented with insidious onset right shoulder pain for three months without acute injury. Pain worsened during and after play, at times with marked exacerbation of pain during overhead movement. The patient had undergone several months of targeted therapy for rotator cuff tendonitis, along with subacromial steroid injection, neither of which had provided lasting improvement in symptoms.

Shoulder exam revealed tenderness to palpation along the greater tuberosity and acromioclavicular joint, as well as along pectoralis minor insertion onto the coracoid process. Sonography was performed during the examination, revealing multiple areas of cortical irregularity within the insertion of the supraspinatus tendon onto the greater tuberosity. There was also loss of the tendon’s intrinsic fibrillar architecture and flattening of the tendon’s normal convexity. Dynamic testing demonstrated close approximation of the supraspinatus tendon beneath the acromion and bursal fluid accumulation during shoulder abduction, consistent with subacromial impingement. History and physical, as well as sonogram, were consistent with rotator cuff tendinopathy with likely partial intrasubstance tear and accompanying subacromial impingement.

Given the prolonged course on presentation, the patient elected treatment with regenerative therapy using platelet-rich plasma (PRP). Prior to treatment, the patient was informed of the promising findings in basic science studies indicating the potential of these cells to invigorate the body’s normal healing mechanisms in areas of degenerative change.

Great emphasis was placed on the experimental nature of this clinical treatment. After thorough discussion, the treatment was performed using ultrasound guidance, directing the concentrated platelets into the degenerative supraspinatus tendon and overlying subacromial bursa. The patient was advised to observe relative rest for two to three weeks, with gentle range of motion and low-intensity strengthening of the rotator cuff muscles.

On follow-up at six weeks and again at three months, he reported good tolerance to regular play after gradual return to previous intensity. To augment interventional treatment and prevent re-injury, several visits were spent emphasizing the role of neuromuscular re-education to address the patient’s underlying scapular dyskinesis and secondary impingement, which likely contributed to his rotator cuff injury.

Physical Medicine and Rehabilitation Residency Ranked Seventh Nationally

In the first ever national evaluation of residency programs, Physical Medicine and Rehabilitation (PM&R) at the University of Pittsburgh was ranked seventh in the country by Doximity, an online network of U.S. physicians. The survey reflects a recent call for performance transparency of resident training programs by the Institute of Medicine and the Association of Health Care Journalists.

The ranking process included more than 50,000 nominations submitted by board-certified physicians. According to Doximity, a total of 3,691 residency programs were evaluated. The results were posted by Doximity in the “Residency Navigator,” a tool developed to help medical students research training programs.
Often, the underlying cause of pain or loss of motion is elusive. I focus on a function-based physical examination, and with effort and patience, the reason for pain can usually be uncovered. Once the cause is found, we can take the appropriate steps to fix it. These steps may include thinking and working outside the box using ancillary providers who understand kinematics.

One particular case, involving a high-level, world-class triathlete who came to see me, reflects this approach. The athlete had hip pain of three years’ duration. This hip pain had completely stopped his ability to run at a time when he was attempting to qualify for the IRONMAN® World Championship in Hawaii. He was given multiple diagnoses, including lumbar radiculopathy and hip labral tear, as a cause of pain. He had undergone hip arthroscopy to fix the labral tear and received a spinal nerve block for pain, both to no avail.

According to his history and examination, I felt his issue was related to the soft tissues around the hip, resulting in instability of his hemi-pelvis region. Here was a gentleman who was running, biking, and swimming very intensely in his training, but had developed aberrant movement patterns that were promoting injury. He was placed in a therapy program with an emphasis on functional strengthening, not the traditional modes. For athletes, I incorporate functional movements that will strengthen them in the areas needed while simultaneously allowing freedom of movement within a tolerant range of motion. We usually have to find a way to strengthen a muscle from a lengthened position. He progressed dramatically. He was nearly 80 percent improved within three months and was back to training. Platelet-rich plasma (PRP) therapy was used after a small gluteus medius tear was noted under ultrasound. The ultrasound-guided PRP procedure got him completely over the hump after six to eight weeks. He was back to training and qualified for the IRONMAN World Championship in Hawaii with his best time ever by more than 45 minutes.

A thoracic spine MRI showed moderate degenerative disc changes at T11–T12, and diagnostic ultrasound (see Figure 1) showed normal external and internal oblique muscles and no cortical irregularity. Sonopalpation over the right T12 costotransverse joint area provoked concordant pain. I then performed an ultrasound-guided right T12 costotransverse joint injection.

After this injection, the patient reported a 50 percent improvement in preprocedure right-sided thoracic back pain when performing a provocative maneuver. At the four-week follow-up, he reported 95 percent sustained improvement in his symptoms. He had returned to light jogging. We developed a return-to-running program, emphasizing concentric core and lower trunk strengthening and speed work.

At the eight-week follow-up, he had returned to full participation in cross country and was asymptomatic in racing.
The following case demonstrates the elusiveness of ACL degeneration I have noticed over years of practice.

The patient is a 34-year-old physical education teacher with a history of right posterior lateral knee pain of three years duration. He described no history of injury, and had initially been diagnosed with patella tendonitis treated with physical therapy without benefit. He had no episodes of giving way or swelling, but his pain was exacerbated by deep squat and was unresponsive to nonsteroidal anti-inflammatory medications. His initial physical examination demonstrated no effusion, no joint line tenderness, a firm end point with Lachman testing, symmetric patella glides, and tenderness posterior to the biceps tendon. A research tool that measures anterior displacement of the knee and laxity of the ACL demonstrated a side-to-side difference of 2 mm.

Between the time of initial treatment and referral to me, the patient underwent five MRIs, multiple physical therapy programs, two arthroscopies, and acupuncture, and was cleared of any malignancies. The first arthroscopy included debridement of an ACL cyst and a small radial and posterior root medial meniscal tear; the second included microfracture and platelet-rich plasma (PRP) injection. His EMG after the second arthroscopy was normal.

My initial examination demonstrated full range of motion in the lumbar spine without radicular symptoms, and a negative slump test. Tests for piriformis syndrome were also negative. Examination of the knee demonstrated pain with anterior translation of the tibia-fibular joint and a tender biceps femoris tendon. Lachman test was stable, but there was end-range pain for both flexion and extension with limited range of motion.

He was initially treated by altering his orthotics to control the position of his foot, and his rehabilitation program was altered to include iliotibial band, lateral retinaculum, and hamstring stretching. When seen in follow-up a month later, paresthesias had resolved, but the biceps femoris tendon remained tender with palpation. The iliotibial band and lateral retinaculum were less tender, but the patient’s range of motion was not increasing. He was instructed to isolate the biceps femoris with his hamstring stretching exercises by externally rotating his leg, which in the office recreated some of his pain. He was seen again six weeks later and reported some improvement, but his range of motion was reported to be variable, and he was frustrated.

On that examination, his range of motion was -1 to 120 degrees, and he had pain with forced flexion.

I ordered an MRI arthrogram instead of an MRI because it is more accurate for meniscal tear after partial meniscectomy. The study demonstrated a “celery stalk” sign consistent with ACL degeneration (see Figure 2).

The “celery stalk sign” is seen on T2 weighted images as a bulky ligament with increased signal intensity of the fibers of the ACL that is more clearly evident using an MRI arthrogram.

Figure 2. Celery stalk sign indicating ACL degeneration on MRI arthrogram.

The patient was referred to another orthopaedic surgeon to discuss ACL debridement. He was given a steroid injection, which resulted in improved range of motion and reduced pain. The injection proved temporary, and the patient underwent debridement of the ACL, with return of full range of motion and relief of pain following another course of physical therapy.

This case is important because the patient had multiple procedures performed without a diagnosis. Even at arthroscopy the patient’s condition was missed. The physical exam and MRI arthrogram provided the diagnosis and changed the treatment.
Talking Sports Medicine (Continued from Page 6)

Shailen Woods, MD

Shailen G. Woods, MD, is assistant professor in the Department of Physical Medicine and Rehabilitation and is also the program director of the ACGME-accredited Sports Medicine Fellowship. Her clinical and research interests include sports concussion; ultrasound and fluoroscopic-guided procedures; sports medicine, including the active aging athlete; spine rehabilitation; and electromyography. Dr. Woods is a former college basketball player, has run in one marathon, and continues running and training for future competitions.

I am constantly amazed at the seemingly infinite ways the body can be used to heal itself with the appropriate exercise program.

I am reminded of this when I recall a 20-year-old female patient I treated who presented with a seven-month history of worsening right groin pain. She had been a member of her college crew team and developed insidious pain while rowing. She had seen an orthopaedic surgeon, who diagnosed a sports hernia and referred her for physical therapy. Unfortunately, she experienced no benefit, and her symptoms progressed to include posterior hip pain and mechanical symptoms with ambulation or squatting.

On my exam, she demonstrated normal strength in the L2-S2 myotomes but core weakness with single leg squats; she had concordant symptoms of right groin pain with hip manipulation during exam. Internal and external rotations were within normal range, except 10 degrees internal rotation on the right with pain elicited.

Due to lack of improvement with physical therapy and relative rest, an MRI arthrogram was ordered. Results showed focal tearing of the anteroinferior labrum, as well as tearing of the posterosuperior labrum at the 10–12 o’clock positions (see Figure 3). Administration of lidocaine during the procedure provided 100 percent relief of her pain for one hour.

Treatment focused on a six-week exercise prescription targeting core strength and correcting muscle imbalances around the pelvic girdle through the use of the pelvic floor therapy. Upon follow-up in the office, she reported 75 percent improvement in her symptoms and was able to use the row ergometer with little pain. She was provided with a return-to-play program, which she completed with her athletic trainer.

Figure 3. MRI of T2 Axial oblique with fat suppression tearing of the anteroinferior labrum.

Cervicogenic Headache: Diagnostic and Treatment Strategies

This issue highlights the case of a 40-year-old male who presented to clinic with posttraumatic headaches following a rear-end motor vehicle collision, preventing him from fulfilling his regular job duties.

This issue also features a video, *Third Occipital Nerve Radiofrequency Ablation*, as well as a slide presentation with demonstrations and descriptions of Sharp-Purser and lateral shear tests.

To view this issue of Rehab Grand Rounds, and the video and slide presentations, please visit UPMCPhysicianResources.com/RGRFall14.
Recent and Upcoming Contributions by Department Faculty

Sixth National Spinal Cord Injury Conference
Toronto, Canada — October 2014

Award
Dr. Nimmi Bharatwal Lectureship
“Rehabilomics — Conceptual Framework for Personalized and Translational Rehabilitation Care”
Amy K. Wagner, MD
Established in 2013, the Dr. Nimmi Bharatwal Lectureship is presented to leading international experts in spinal cord and brain injury research to fund keynote lectures at the National Spinal Cord Injury Conference in Toronto.

American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM)
Savannah, Ga. — October 2014

Workshops
“Ultrasound: Guidance for Neurotoxins”
Michael C. Munin, MD
“Electromyography: Laryngeal”
Michael C. Munin, MD

Posters
“Neuromuscular Ultrasound to Improve EMG Needle Localization in Posterior Interosseous Nerve Syndrome”
Jenny Dvorkin, MD, Neilly Buckalew, MD, Michael Munin, MD

“Worsening Muscle Spasms in a Patient With Moderate Caffeine Intake”
Marzena Buzanowska, MD, Michael Munin, MD

American Academy of Physical Medicine and Rehabilitation (AAPM&R)
San Diego, Calif. — November 2014

Awards
PASSOR Legacy Award and Lectureship
“Musculoskeletal Biologics: The Future Is Now (But Proceed with Caution)”
Gwendolyn A. Sowa, MD, PhD
Established in 2008 to preserve the legacy and namesake of the Physiatric Association of Spine, Sports, and Occupational Rehabilitation (PASSOR), this award is meant to recognize an individual in midcareer who has advanced musculoskeletal physiatry through clinical care, education, service, or scholarship (research).

Best Neurological Rehabilitation Research Podium Presentations
“Video Recording the Gait of Stroke Patients During Inpatient Rehabilitation to Improve Motivation, Satisfaction, and Outcome”
Prakash Jayabalan, MD, PhD

Courses
“Selecting Outcome Metrics for Your Outpatient Practice: An International Classification of Functioning, Disability, and Health-Based Approach”
Amy Houtrow, MD, PhD, MPH

“A New Concept! Physiatrists and Exercise in the ICU”
Peter Hurh, MD, Julie Lanphere, DO

“Manual Manipulation for the Adaptive Sports Medicine Athlete”
Julie Lanphere, DO

“Ultrasound Guidance for Chemodenervation: Upper Limb, Head, and Neck”
Michael C. Munin, MD

“Ultrasound Guidance for Chemodenervation Procedures: Lower Limb Muscles and Nerves”
Michael C. Munin, MD

Asia Physical Therapy Student Association
Japan Study Tour 2015
Kyoto, Japan — March 2015

Keynote Speaker
“Regenerative Rehabilitation for the Next Generation”
Fabrisia Ambrosio, PhD, PT

Society for Neuroscience Annual Conference
Washington, D.C. — November 2014

Presentations
American Society of Neuroradiology (ASNR) Satellite Meeting: Plasticity in Sensorimotor Systems After SCI: Towards Neurorehabilitation
“Plasticity in the Corticospinal System After Spinal Cord Injury”
Monica Perez, PhD

Posters
“Lorazepam Does Not Negatively Impact Neurobehavioral Outcome After Experimental Brain Trauma”
A.E. Kline, PhD

“Attentional Set-Shifting After Brain Trauma Is Restored by a Preclinical Model of Neurorehabilitation”
A.E. Kline, PhD

“Manipulating Initiation Time and Duration of Environmental Enrichment Exposure After Traumatic Brain Injury to More Accurately Mimic Clinical Rehabilitation”
A.E. Kline, PhD

“Yogic Breathing as a Non-Pharmaceutical Approach for Hiccups, and for Patient and Family Coping in Non-Traumatic Brain Injury: A Case Report”
Neilly Buckalew, MD, Mary Matsumato, MD, Gary Galang, MD, Dan Butts

“Acute Paraspinal Compartment Syndrome: A Diagnosis to Consider”
Neilly Buckalew, MD, Julie Lanphere, DO, Tim Ferrell, MD
Recent Publications

**May**


**June**


**July**


**August**


**September**


**October**


Department of Physical Medicine and Rehabilitation Fellowships

The University of Pittsburgh Department of Physical Medicine and Rehabilitation is a leader in fellowship training, offering accredited fellowship programs in spinal cord medicine, pediatric rehabilitation medicine, brain injury medicine, and sports medicine. Here is an overview of each fellowship offered at UPMC.

**Sports Medicine Fellowship**

The Sports Medicine Fellowship received ACGME accreditation effective in 2015. The program is directed by Shailen Woods, MD, the first graduate (2011) of the department’s fellowship in Musculoskeletal Sports and Spine Medicine. Dr. Woods is proud to note that every fellow has achieved board-certification in sports medicine.

The faculty has partnered with various NCAA schools to provide fellows with an all-encompassing experience in team sports medicine, including a lead role in sideline coverage at football games and other events.

**Pediatric Rehabilitation Medicine Fellowship**

The Pediatric Rehabilitation Medicine (PRM) Fellowship is one of 20 ACGME-accredited PRM fellowships offered nationwide. Fellowship director Amy Houtrow, MD, PhD, MPH, is board-certified in physical medicine and rehabilitation and pediatrics, as well as pediatric rehabilitation medicine. She is vice chair for Pediatric Rehabilitation Medicine and chief of Pediatric Rehab Medicine Services at Children’s Hospital of Pittsburgh of UPMC. She has been instrumental in developing pediatric rehabilitation programs in spina bifida, muscular dystrophy, and cerebral palsy.

This two-year clinical and research fellowship training program is centered at Children’s Hospital of Pittsburgh of UPMC, a level I trauma center with 304 hospital beds, 79 of which are critical care beds. Children’s is also home to the Children’s Hospital Rehabilitation Unit (CHRU), an eight-bed comprehensive rehabilitation program that caters to the rehabilitation needs of children with medical complexity, brain injury, spinal cord injury, and other disabling conditions of childhood. Children’s Hospital of Pittsburgh of UPMC is one of 10 pediatric hospitals in the United States named to the 2014-2015 U.S. News & World Report Honor Roll of America’s Best Children’s Hospitals.

**Spinal Cord Medicine Fellowship**

Amanda Harrington, MD, is the director of the Spinal Cord Injury and Disease Program and the Spinal Cord Medicine Fellowship. Dr. Harrington, board-certified in physical medicine and rehabilitation and spinal cord medicine, was the 2013 recipient of the “Excellence in Teaching” awarded by graduating residents and was named a 2014 Best Doctor in Physical Medicine and Rehabilitation by Best Doctors, Inc.

The fellowship is strengthened by the department’s designation as an SCI Model System funded by the National Institute on Disability and Rehabilitation Research (NIDRR). While there are 14 such designated sites in the country, we are one of only five SCI Model Centers with the distinction of an ACGME-accredited spinal cord medicine fellowship.

**Brain Injury Medicine Fellowship**

The newly ACGME-accredited (2014) Brain Injury Medicine Fellowship is supervised by Cara Camiolo-Reddy, MD, medical director of the UPMC Rehabilitation Institute. The fellowship was established in June 2003, and nine fellows have successfully completed training.

This fellowship is strengthened by the department’s designation as a NIDRR Model System in traumatic brain injury. We are one of three fellowships in this initial year of ACGME evaluation to receive brain injury accreditation, and one of two programs that have the distinction of being a model brain injury center with an accredited fellowship program.

Dr. Camiolo-Reddy was named a 2014 Best Doctor in Physical Medicine and Rehabilitation by Best Doctors, Inc.
University of Pittsburgh Named Most Prolific Institution for TBI Research

With recent increases in awareness and incidence of traumatic brain injury (TBI), ScienceWatch — a Thomson Reuters open Web resource for science metrics and research performance analysis — evaluated research on the condition over the last decade and a half. Using the Web of Science Core Collection — a large database of scholarly literature — ScienceWatch evaluated a data file of more than 31,000 papers published on the topic between 2001 and June 2014, and highlighted the most prolific and high-impact authors, institutions, journals, and papers.

The University of Pittsburgh, a “major center of TBI research,” was cited as a standout, and named the most prolific and most-cited institution. More than 16,000 citations of 970 papers with at least one university-affiliated author contributed to the University of Pittsburgh’s taking the top spot on the list.

Patrick Kochanek, MD, professor and vice chairman in the Department of Critical Care Medicine, and director of the Safar Center for Resuscitation Research, was named the most prolific author. Dr. Kochanek contributed to 300 reports examining the biochemical markers of TBI, which have attracted approximately 3,800 citations. Amy Wagner, MD, and Anthony Kline, PhD, Safar Center associate directors from the Department of Physical Medicine and Rehabilitation, also have made substantial contributions to TBI research at the University of Pittsburgh.

Dr. Kochanek’s colleague, Robert S.B. Clark, MD, chief of Pediatric Critical Care Medicine at Children’s Hospital of Pittsburgh of UPMC, was among his co-authors on more than one-third of the papers.

To learn more about ScienceWatch and to read the full evaluation of TBI research, please visit ScienceWatch.com.

Amy K. Wagner, MD, Joins Medical Panel of BIAA/Mount Sinai TBI Rehabilitation Guidelines Project

As part of its mission to advance research and appropriate treatment for people with brain injuries, the Brain Injury Association of America (BIAA) announced in July that it has awarded a grant to the Brain Injury Research Center at the Icahn School of Medicine at Mount Sinai. The grant funds a three-year investigation to develop Guidelines for the Rehabilitation and Disease Management of Adults With Moderate to Severe Traumatic Brain Injury (TBI).

Amy K. Wagner, MD, associate professor and endowed research chair in the Department of Physical Medicine and Rehabilitation, was selected to be a member of the Medical Panel that will contribute to the guidelines.

Fifty of the nation’s top researchers and clinicians, as well as family members of people with brain injuries, were selected to review and assess evidence in functional, medical, cognitive, behavioral, and social domains. Their first meeting was held in September 2014 in Dallas.

During the next three years, panelists will:

• Identify and fully describe the continuum of care available following TBI.

• Determine the evidence for various rehabilitative treatments and, based on that evidence and/or expert opinion, make recommendations for treatment and management in various settings.

• Produce a document that supports improvements in the quality and consistency of rehabilitation treatment.

• Broadly disseminate the recommendations to payer, provider, patient, and advocacy communities in an effort to increase access to care.

The goal of the project is to learn how much rehabilitation adult patients with moderate to severe TBI should receive, in what setting, and at what time. BIAA and Mount Sinai have pledged to keep the brain injury community fully informed, and to invite input and feedback at key points along the way. Visit BIAUSA.org/TBIGuidelines for more information.
**UPMC VIDEO ROUNDS**

Video Rounds is a series of informative and educational short videos, created for physicians and covering a variety of medical and surgical disciplines, including:

**Recent Trends in Pediatric Disability**
*Amy Houtrow, MD, PhD, MPH*

In this video, Dr. Houtrow, chief of Pediatric Rehabilitation Medicine at Children’s Hospital of Pittsburgh of UPMC, discusses the significant increase in the number of children who experienced neurodevelopmental issues associated with disability over the past 10 years, as well as the importance of clinical and community support.

**Utilizing Video Capture for Rehab Assessment**
*Prakash Jayabalan, MD, PhD*

Dr. Jayabalan, a physiatrist at UPMC, successfully led a quality improvement project that recorded a patient’s progress using an iPad® and played the recordings back as a motivational tool. He discusses how this approach may be integrated as standard practice in the future.

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**About the UPMC Rehabilitation Institute**

- UPMC is ranked by *U.S. News & World Report* as one of the top hospitals in the country for rehabilitation.

- The UPMC Rehabilitation Institute is accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF) in inpatient rehabilitation, brain injury, spinal cord injury, and stroke.

- Stroke rehabilitation at the UPMC Rehabilitation Institute is certified by the Joint Commission.

- Our experts combine extensive clinical experience with advanced technology and research to offer our patients cutting-edge treatments.

- We are one of only seven institutions with both SCI and TBI Model System designations from the NIDRR.