Pride in Children

It’s kind of a big year for me — I turn 50 and my oldest child will leave for college. It’s clear to me that my son Joe is better prepared to leave than I am to see him go. As ill-prepared as I may feel, his readiness gives me a pride that is difficult to put into words. I feel very blessed. Thinking of kids, blessings, and pride, I can’t help but talk about our new Division of Pediatric Rehabilitation Medicine (PRM). The kid connection is an obvious one, but blessings? I’ll tell you about three.

UPMC’s Investment: Children’s Hospital of Pittsburgh of UPMC saw a need. We had one PRM physician who had just resigned, and the children we serve needed more of the kind of care only a PRM-trained doctor can provide. In a single, brief meeting, the leadership of Children’s gave me the green light and the financial resources to build a division.

Jason Edinger’s Leap: The most important resource is people, and we needed help. Jason Edinger, DO, agreed to join our department, right out of fellowship, as our first PRM physician in the new Division of Pediatric Rehabilitation Medicine. He shared the vision and thought that together we could get it started. He chose Pittsburgh despite the dangers of going it alone at first. From the moment he got here, he began to refine the vision and put into place the blocks needed for the next big step.

Amy Houtrow’s Choice: I don’t think it’s an exaggeration to say that Amy Houtrow, MD, MPH, was the most recruited PRM physician in the country last year. Her research and administrative background made that inevitable. What was far from inevitable was her choice to leave San Francisco and join our team as vice chair of the division. She is the leader we needed — kind of an amazing birthday present.

By August of this year, our Division of Pediatric Rehabilitation Medicine will be five physicians strong. In July of 2011 we had no one. You can read more about it in the following pages. Our newest division is having a growth spurt, and I’m proud already.

Sincerely,

Michael Boninger, MD
Director, UPMC Rehabilitation Institute
Professor and Chairman, Department of Physical Medicine and Rehabilitation
University of Pittsburgh School of Medicine
Amy Houtrow, MD, MPH
has been appointed vice chair of the new Division of Pediatric Rehabilitation Medicine at Children’s Hospital of Pittsburgh of UPMC. She comes to UPMC from the University of California at San Francisco, where she was assistant professor of clinical pediatrics and medical director of pediatric rehabilitation. Dr. Houtrow is building a vital center that delivers preeminent care to children with disabilities and strong medical and community support for their families.

“I see it as my life’s work to improve the lives of children with disabilities,” Dr. Houtrow says. “It is our division’s primary goal. To achieve this, we strive to provide excellent, coordinated family-centered care for children with disabilities; we conduct research to determine the best interventions for children with disabilities; we educate medical students, residents, and fellows about how to manage disability in childhood; and we advocate for children locally and nationally to ensure they receive the services they need.”

Dr. Houtrow works closely with leaders in health services research around the country and sits on the Executive Steering Committee at Children’s Hospital for their Health Services and Information Sciences Research Core. She also is director of the ACGME-accredited Pediatric Rehabilitation Medicine Fellowship at UPMC. The fellowship is one of only 18 such programs in the country and the only one offered in the state of Pennsylvania.

“Pediatric health care is shifting from diagnosing and treating acute and episodic medical problems to managing more complex conditions that are associated with varying degrees of disability,” says Dr. Houtrow. “Because of this shift, the role of the pediatric physiatrist is changing. As the division evolves to reflect these new roles, additional programs will be developed, and teaching and research efforts will be expanded.”

Brad Dicianno, MD, is an assistant professor in the Department of Physical Medicine and Rehabilitation and director of both the UPMC Adult Spina Bifida Clinic and the UPMC Center for Wellness for Individuals with Spina Bifida and Spinal Cord Injury. Dr. Dicianno’s input ensures continuum of care as patients transition through pediatric to young adult to adult phases. Dr. Dicianno also is the medical director of the Center for Assistive Technology where he leads an interdisciplinary team of specialists providing assistive technology, including wheelchairs, communication devices, and computer access equipment to children and adults with various disabilities.

Jason Edinger, DO, is director of the Cerebral Palsy Clinic at Children’s Hospital of Pittsburgh of UPMC and assistant program director of the Pediatric Rehabilitation Medicine fellowship. He is board-certified in both pediatrics and physical medicine and rehabilitation. Dr. Edinger’s clinical interests include cerebral palsy, pediatric traumatic brain injury, spasticity management, pediatric limb deficiency, and pediatric neuromuscular disorders. “I am excited to be a part of this growing division to help children maximize their functional potential,” says Dr. Edinger. “In the Cerebral Palsy Clinic, pediatric physiatrists work in a multi-disciplinary fashion with orthopaedic surgery, physical therapy, occupational therapy, nursing, and social work to provide comprehensive medical, surgical, therapeutic, and equipment management for children with cerebral palsy and related disorders. Our goal is to help these children function in society and achieve their aspirations.”

Angela Garcia, MD, is a clinical instructor and the program’s first pediatric rehabilitation medicine fellow who will complete the program in July 2012. She will then join the faculty as a full-time member. Dr. Garcia is an alumna of this department’s Physical Medicine and Rehabilitation Residency Program.

Additional faculty will be joining the PMR division in the coming months. Further information about the division and faculty can be found at www.rehabmedicine.pitt.edu.
New SmartRoom® Technology Improving Patient Care

UPMC has teamed with IBM to create a new health care technology system called SmartRoom®. This technology is an interface that is improving health care delivery and actively involves patients in their recovery. Retrieving a patient’s information is as simple as the assigned caregiver walking into the patient’s room. Patients watch educational videos pertinent to their condition and recovery.

How SmartRoom Works

SmartRoom gathers information from the patient’s electronic medical record and displays that information on a monitor in the patient’s room. The data includes allergies, medications, test results, vital signs, and therapy schedules.

The system includes a tag detector that reads ultrasound ID tags worn by health care staff, wall mounted monitors for the caregiver and the patient, and a SmartBoard located at the unit nurses station. The caregiver screen is a simple touch screen that automatically authenticates the caregiver upon entering the patient room and provides access to clinical data. Tiffany Calloway, MD, attending physiatrist at the UPMC Rehabilitation Institute at UPMC Montefiore says, “The caregiver screen is well-organized and updates appear simultaneously on several interfaces in the system. Lab results are posted and available while I am with the patient, without having to leave the room. The caregiver screen also provides me with a list of current medications.”

Patients also can receive emails and load personal photos into an electronic album. It is operated using the normal patient call button or by touching the screen. The Patient Portal offers many features to help engage patients and family members in their care. This enhances the experience and increases patient satisfaction.

Joyce Marasco, a rehabilitation nurse at the UPMC Rehabilitation Institute, has found the new system convenient and easy to use. “It has made my job easier and given me time to more effectively interact with my patients,” she says. “It makes the patient feel more in control and they enjoy staying in touch with family through emails and building a family photo album. Patients view their daily schedule and know when they have physical therapy, or an x-ray, or have free time for educational videos.”

Ms. Marasco and other rehabilitation nurses are looking forward to a new application that will enable them to create personalized educational videos for patients, giving the rehabilitation team greater control to emphasize particular information and rehab techniques.

The third component of the SmartRoom system is the SmartBoard located at the nurses station. This replaces and updates the typical dry erase white board normally found at the station. The SmartBoard provides updates, such as indicating when a patient is due for testing and informing nursing staff when new physician orders have been placed in the electronic medical record.

To see a film clip explaining more about SmartRoom technology, watch “An Overview of SmartRoom” at http://smartroomsolutions.com/Pages/about-us.aspx.
Thought Translated to Movement

Can someone with a high-level spinal cord injury think their way to pouring a glass of milk or maybe even taking a walk? Seven years ago, a motorcycle accident left 30-year-old Tim Hemmes paralyzed. Mr. Hemmes, of Evans City, Pa., was the first to participate in a new trial led by the Department of Physical Medicine and Rehabilitation. The trial included collaborators from across the University of Pittsburgh to assess whether the thoughts of a person with spinal cord injury can be used to control the movement of an external device, such as a computer cursor or a prosthetic arm.

On September 21, 2011, Mr. Hemmes touched his girlfriend’s hand. “I put my heart and soul into everything they asked me to do,” he said. “I got to reach out and touch somebody for the first time in seven years.”

“Seeing Tim reach out with a mechanical arm to touch his girlfriend was an unexpected and poignant bonus for all of us who are involved with this exciting project,” said co-principal investigator Michael Boninger, MD, director of the UPMC Rehabilitation Institute.

One month earlier, an electrocortigraphy (ECoG) grid, about the size of a large postage stamp, was placed on the surface of Mr. Hemmes’ brain by co-investigator and UPMC neurosurgeon Elizabeth Tyler-Kabara, MD, PhD, assistant professor in the Department of Neurological Surgery.

Careful testing and mapping using functional imaging technology prior to surgery ensured the grid would be placed on the area of Mr. Hemmes’ brain that processes signals for his right arm. After removing a small piece of skull, the grid was placed directly on the brain beneath the dura. Dura and skull were put back in place and the grid wires brought outside and under the scalp. Connecting wires were tunneled under the neck skin and exited the upper chest where they would be connected to computer cables during testing.

“He imagined flexing his thumb, which created a brain signal pattern that the computer then interpreted as ‘move left,’ or bending his elbow to move the object right,” explained principal investigator Wei Wang, MD, PhD, assistant professor in the Department of Physical Medicine and Rehabilitation. “He mentally associated specific motor imageries with desired movement direction,” said Dr. Wang. “It required concentration and patience, but this process seemed to get easier for him with practice. “Future studies will test other approaches, including simply thinking up for up and down for down.

Mr. Hemmes’ training began with guiding a ball from the middle of a large television screen either up, down, left, or right to a target, within a time limit. With practice, he could do this two-dimensional task without any computer assistance with what the researchers call “100 percent brain control.”

He then performed a similar task with the mechanical arm, reaching out to touch a target on a large, desk-mounted panel. After about eight sessions, Mr. Hemmes tackled more complicated tasks. While wearing special goggles to properly view a three-dimensional TV screen, he moved the ball up and down, left and right, and also to the front or back. He then accomplished the same three dimensional movements with the mechanical arm. At the end of four weeks of practice, the day of formal testing arrived. Mr. Hemmes completed all the tasks and finished by reaching out to his girlfriend with the mechanical arm.

See videos of Mr. Hemmes and the researchers at www.UPMCPhysicianResources.com/BCI.
Sensitivity and Specificity of the Stroke Assessment of Fall Risk (SAFR)

Accidental falls are a significant problem during inpatient rehabilitation. Properly identifying those at greatest risk of falls would enhance implementation of preventive strategies, but such identification has proven problematic in clinical practice. Led by Stroke Team Leader Terry Breisinger, and Nurse Educator Grace Campbell, a team from UPMC Rehabilitation Institute was awarded pilot funding to test the accuracy of a new fall risk-assessment tool, the Stroke Assessment of Falls Risk (SAFR). The goal is to compare SAFR’s predictive accuracy for identifying stroke patients who fall to that of the existing health system inpatient falls risk tool, the UPMC Fall/Harm Risk Screening (FHIRS).

UPMC FHIRS is a three-item scale with three corresponding levels of fall risk, completed using a nurse’s clinical judgment. It was designed to be applicable to a general hospital inpatient population, and is used throughout UPMC. In contrast, the SAFR was developed to assess stroke-specific fall risk factors identified through a review of relevant literature. The SAFR comprises four impairments, including impulsivity, hemi-neglect, static sitting balance, and dynamic sitting balance. It then analyzes three functional limitations, including lowest Transfer FIM, Problem Solving FIM, and Memory FIM scores. The SAFR item scores are derived from objective clinical measures completed on admission to rehabilitation by the team as part of the initial comprehensive rehabilitation assessment.

Fallers and non-fallers differed only with respect to age; unexpectedly, subjects who fell were significantly younger than those who did not (63.7 years vs. 68.2 years, respectively; p=.007). Using Receiver Operating Characteristic Curves to determine predictive accuracy, the area under the curve (AUC) for FHIRS was 0.52 (p-value not significant), while the AUC for SAFR was .73, p=.001, indicating the FHIRS accurately predicts falling in stroke rehabilitation nearly 75% of the time. The new grant funding will allow further testing of the SAFR that could be a significant tool for rehabilitation facilities across the country to decrease hospital-based falls.

Rehabilitation Institute Pilot Grant
3rd Cycle Awards

Type I

Shawn Farrokhi, PhD – Assistant Professor, Department of Physical Medicine and Rehabilitation. Biomechanics and Biomarkers of Walking Exercise in Knee Osteoarthritis

Robert Gaunt, PhD – Assistant Professor, Department of Physical Medicine and Rehabilitation. Microstimulation of Pelvic and Pudendal Afferents to Restore Bladder Function

Type II

Gary Galang, MD – Attending Physician, Department of Physical Medicine and Rehabilitation. Use of the ABS to Assist with Determining Safety Interventions in TBI Patients

Jaclyn Glosser, MS, OT – Senior Occupational Therapist, UPMC Rehabilitation Institute. A Sensory Integrative Approach to TBI Agitation: Weighted Lap Pads and Blankets

Awards

Angela Garcia, MD, Pediatric Rehabilitation Fellow
Ernest W. Johnson/AAP Excellence in Research Writing Award for the best paper on which the first author was in training when the paper was written. “The frequency of lymphedema in an adult spina bifida population” was published in the February 2011 issue of Journal of Physical Medicine & Rehabilitation; co-author is Brad Dicianno, MD. Dr. Garcia will complete her fellowship in June 2012 at which time she will be joining the faculty as assistant professor in the Department of Physical Medicine and Rehabilitation Division of Pediatric Rehabilitation Medicine.

Rory A. Cooper, PhD, distinguished professor and FISA-Paralyzed Veterans of America chair, Department of Rehabilitation Science and Technology, School of Health and Rehabilitation Sciences, University of Pittsburgh. American Association for the Advancement of Science Mentor Award to honor individuals who during their careers demonstrate extraordinary leadership to increase the participation of underrepresented groups in science and engineering fields and careers.

Special Recognition

Brittany Kelly, OTR/L, and Kelly Noone, MOT, were awarded a 2011 UPMC RI Pilot grant to develop a bowel management training protocol for use by people with spinal cord injury. Their innovative protocol has been accepted as a standard of care at the UPMC Rehabilitation Institute. They have been invited to present their findings at Summit 2012: Delivering Excellence — Achieving State-of-the-Art Healthcare at the Paralyzed Veterans of America annual conference in Las Vegas from Aug. 28 to Aug. 30.
Symposium on Regenerative Rehabilitation

In November 2011, the UPMC Rehabilitation Institute, the McGowan Institute for Regenerative Medicine, and the School of Health & Rehabilitation Sciences at the University of Pittsburgh hosted the First Annual Symposium on Regenerative Rehabilitation. The event attracted 130 attendees from around the world. Course directors were Fabrisia Ambrosio, PhD, PT, Alan J. Russell, PhD, Michael Boninger, MD, and Katherine Verdolini Abbott, PhD.

Thomas A. Rando, MD, PhD, from Stanford University School of Medicine delivered the keynote address “Stem Cells in Tissue Repair, Regeneration, and Restoration” discussing his vision of the future of PM&R that will include regenerative medicine as an approach to chronic and acute tissue injury.

Two plenary sessions, designed to present clinical cases from the viewpoint of the researcher, the rehabilitation clinician, and the patient, highlighted the clinical relevance of the topics at hand, and provided real-life demonstrations of the collaboration between rehabilitation specialists and regenerative medicine scientists needed for success in each case.

- **Hand Transplantation**, led by W.P. Andrew Lee, MD, from Johns Hopkins University School of Medicine.
- **Rehabilitation in Constructive Remodeling of Biologic Scaffolds**, led by Stephen Badylak, DVM, PhD, MD, from the University of Pittsburgh School of Medicine.

**The 2nd Annual Symposium on Regenerative Rehabilitation** will be held in Pittsburgh, Nov. 12 to 13, 2012. New this year will be a pre-conference workshop entitled “Regenerative Medicine 101” that is intended for those individuals new to the topic of regenerative medicine. More details will be coming soon on the McGowan Institute for Regenerative Medicine site at www.mirm.pitt.edu.

For more information about the 2nd Annual Symposium on Regenerative Rehabilitation, please visit www.mirm.pitt.edu.

For consultations and referrals, please call UPMC’s 24-hour physician OnDemand service at 1-866-884-8579.