

PROGRESS

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2017 Annual Report

Constructing the Hospital of Tomorrow: The UPMC Vision and Rehabilitation Hospital

UPMC recently announced a \$2 billion investment to build three new specialty hospitals in Pittsburgh: including the UPMC Heart and Transplant Hospital, UPMC Hillman Cancer Hospital, and the UPMC Vision and Rehabilitation Hospital. These patient-focused, technology-enhanced facilities will provide modern, cutting-edge clinical treatments in combination with multidisciplinary research capabilities for specific diseases and health conditions.



UPMC Vision and Rehabilitation Hospital, which is anticipated to open in 2021, will co-locate synergistic research and clinical activities between the Departments of Ophthalmology and Physical Medicine and Rehabilitation. “The new rehabilitation facility will be a center of innovation and an incubator for new technologies. We’ll explore the healing power of biology and engineering through regenerative rehabilitation, robotics-assisted therapies, and personalized exercise-based approaches to help patients regain function as they recover. By centralizing the researchers, clinicians, and therapists in one location, we will not just impact patient care but create a roadmap for future research,” says **Gwendolyn Sowa, MD, PhD**, chair of the Department of Physical Medicine and Rehabilitation.

This new hospital will serve as a hub for patients with visual, mobility, and cognitive impairments in learning. Incorporating features such as the virtual apartment, city street, and rehabilitation garden will help to create new paradigms of patient care, and at the same time utilizing technology-assisted rehabilitation services to implement early mobility initiatives. The new hospital also will include a state-of-the-art motion analysis laboratory. “I think the most important thing our new facility will accomplish is moving research personnel so they are right next to our clinical team. This means that the advanced technology we have only been using for research will become available to patients receiving treatment,” says **Michael Boninger, MD**, professor and vice chair of research in the Department of Physical Medicine and Rehabilitation.

The integration of research and clinical expertise at the hospital will lead to new research opportunities, and the translation of research findings across the Department. Researcher **Jennifer Collinger, PhD**, assistant professor in the Department of Physical Medicine and Rehabilitation, is excited about the opportunities the new facility will provide. “We will have the opportunity to combine the efforts of our basic science and clinical researchers who share common goals, namely understanding how disease impacts the body and how we can use treatments or therapies to restore function and quality of life,” says Dr. Collinger.



Artist rendering of new UPMC Vision and Rehabilitation Hospital.



Affiliated with the University of Pittsburgh School of Medicine, UPMC Presbyterian Shadyside is ranked among America’s Best Hospitals by *U.S. News & World Report*.

UPMC Pediatric Rehabilitation Updates



The Division of Pediatric Rehabilitation Medicine is comprised of six board-certified pediatric physiatrists and five pediatric neuropsychologists. Our clinicians, who see patients at nine different locations in Pittsburgh and West Virginia, specialize in the rehabilitation care and medical management of children who have brain injuries, spinal cord injuries, neuromuscular disorders, and an array of musculoskeletal conditions. The team is led by **Amy Houtrow, MD, PhD, MPH**, associate professor and vice chair of pediatric rehabilitation medicine.

Along with providing individualized treatment plans, pediatric rehabilitation physiatrists work to provide continuity of care as patients transition to adult services. The physiatrists and pediatric neuropsychologists work in collaboration with other departments, including Cardiology and Anesthesiology, to implement a multidisciplinary approach to providing comprehensive care.

Some specific programs are highlighted below.

HEARTBEAT



Evidence supports the benefits of cardiac rehabilitation in the adult population, but there are limited investigations of cardiac rehabilitation in children.

Helping Each Child Achieve Recovery Through Behavior, Education & Activity Training (HEARTBEAT) is a multidisciplinary program to improve the physiologic effects of long-term cardiac illness.

“As a department, pediatric rehabilitation medicine holds a philosophy that function is a part of every child’s life regardless of what they might be experiencing medically. As a pediatric rehabilitation physician, there is always a piece that we can contribute to each child’s function. In the case of cardiac patients, there are known adverse neurodevelopmental outcomes as a result of the disease process, and our goal is to intervene and hopefully improve these outcomes,” says **Unoma Akamagwuna, MD**, assistant professor in the Department of Physical Medicine and Rehabilitation.

HEARTBEAT has enrolled 20 children since its inception in October 2016. The pilot population was heart transplant patients in the inpatient and outpatient setting. The goal is to expand this program to other pediatric cardiac populations and, ultimately, all congenital heart disease patients.

The project is divided into four phases. Phase I includes pre- and post-transplant evaluations with a pediatric rehabilitation medicine (PRM) physician, physical therapist, and occupational therapist. Phase II is a six-week post-transplant period until clearance of sternal precautions. Phase III is intensive cardiac rehabilitation. The outpatient program template includes a one-hour session twice per week for 12 weeks, with approximately 45 minutes of aerobic and light weight/resistance exercises.

Phase IV is the maintenance period, with a follow-up with PRM at one year. Baseline assessments are repeated, as well as neuropsychology assessments. Patient and family feedback on the cardiac rehabilitation process also is given during the follow-up visit. An important component of the program is educating patients and families about healthy living, and the establishment of good eating and functional habits through the life course.

Pediatric Chronic Pain Clinic



Common conditions treated at the Pediatric Chronic Pain Clinic include amputation pain, back pain, brachial plexus injury, fibromyalgia, headaches, juvenile arthritis, bone/joint pain, reflex neurovascular dystrophy, and sickle cell disease, among others. The main goal of the clinic is to help improve function and management of pain by designing

an individualized treatment plan for each child. **Angela Garcia, MD**, assistant professor in the Department of Physical Medicine and Rehabilitation, has served as the clinical director since July 2016. “The biggest accomplishments of the program are improving our outpatient access to the program and reducing hospital admissions for children with chronic pain,” says Dr. Garcia.

“It has been very tricky navigating the opioid crisis while managing a child’s pain,” comments Dr. Garcia. “We have been using several different classes of medications in coordination with behavioral health, physical therapy, and other integrative medicine modalities to help a child manage their pain. For the children who do require opioids, we are adapting our clinic policy to require them to have behavioral health services so they can learn other coping mechanisms to control their pain. We have found that these treatment modalities and medications have been helpful in improving a child’s ability to manage their pain while improving their function.”

Other Pediatric Initiatives

TACHP Grant

UPMC Children’s Hospital of Pittsburgh was awarded a Technology Assisted Children’s Home Program (TACHP) grant to support families caring for a child with technology-assisted needs at home. The Pennsylvania Department of Health funds this program. The program is free to families who have a child who meets the qualifications. The goal of this program is to provide support, build resiliency, and empower families to care for their loved ones at home.

UPMC Sports Ultrasound Conference Highlights

The UPMC Department of Physical Medicine and Rehabilitation, in partnership with Cleveland Clinic, hosted the Sports Ultrasound Conference on September 21-22, 2018, in Pittsburgh, Pennsylvania. This conference featured both regional and international speakers, and was designed to expand knowledge and hands-on experiences for sports ultrasound. Physicians, residents, and fellows who attended had the opportunity to interact with panel presenters, as well as practice ultrasound techniques on live models and cadavers to enhance their experience.

Physicians from PM&R, Radiology, Orthopaedic Surgery, and Family Medicine made up the multidisciplinary team of expert course faculty and directors. Keynote speakers included Jay Smith, MD, and Jonathan Finnof, DO, both from the Mayo Clinic; Jon Jacobson, MD, from the University of Michigan; Joanne Borg-Stein, MD, from Spaulding Rehabilitation Hospital; Christopher Visco, MD, from Columbia University; and Levon Nazarian, MD, from Thomas Jefferson University. The lecture topics covered hydro-dissection procedures, hydro-release, dynamic ultrasound evaluation of various sports injuries, ultrasound-guided surgery, and various case presentations.

Hands-on skill labs allowed participants to put the information they learned in these robust presentations into practice. The labs consisted of both live model and cadaveric scanning opportunities. Applications of diagnostic and interventional ultrasound of all six major joints were applied. Combining the lectures and labs made this conference a truly comprehensive educational experience.



Updates *Continued from Page 2*

Camp INSPIRE

UPMC works in collaboration with the Woodlands Foundation to offer Camp INSPIRE, an overnight camp designed for children and teens between the ages of six and 18 who use tracheostomies, ventilators, and BiPAP machines. This week-long program is fully funded by donations and includes activities such as wheelchair rugby, archery, swimming, crafts, and adaptive tennis and golf. This program was designed for children and teens to enjoy a variety of activities while building relationships in a medically supervised environment.



Activities and participants from Camp INSPIRE 2018.

UPMC Faculty Highlights



Kentaro Onishi, DO, was the winner of the PM&R Best Original Research Award from the Foundation for PM&R for his paper *Human Adipose-Derived Mesenchymal Stromal/Stem Cells Remain Viable and Metabolically Active Following Needle Passage*.

Dr. Onishi also served as a medical volunteer at the PyeongChang 2018 Olympic Winter Games.

He was one of 12 physicians chosen worldwide by the International Olympic Committee to serve on the medical team treating athletes in the Olympic Village.



Amy Houtrow, MD, PhD, MPH, was appointed to the Medicaid Child Workgroup for the National Quality Forum to address quality and measurement issues for Child Medicaid beneficiaries. Also, Dr. Houtrow served as chair of the National Academies of Sciences Committee on Improving Health Outcomes for Children with Disabilities, which released a report: *Opportunities for Improving Programs and Services for Children with Disabilities*.



Michael Munin, MD, was selected to serve on the Interventional Spasticity STEP Certificate Program Workgroup of the American Academy of Physical Medicine and Rehabilitation (AAPM&R). This group will work to develop the curriculum, structure, format, and assessment for a comprehensive training program in interventional spasticity.

Dr. Munin also is a board member for the American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM).



Amy Houtrow, MD, PhD, MPH, was elected to the National Academy of Medicine (NAM). In her role with the NAM, Dr. Houtrow is part of a group of distinguished individuals who have made important contributions to health, medicine, and science. Her recommendations will shape health research, practice, and policies that improve the lives of

millions of people around the world. Dr. Houtrow will work across disciplines and spark innovative solutions to advance knowledge and accelerate progress in science, medicine, policy, and health equity.



Fabrisia Ambrosio, PhD, MPT, published the article *Regenerative Rehabilitation: Applied Biophysics Meets Stem Cell Therapeutics* in *Cell Stem Cell*. Dr. Ambrosio also co-authored a paper selected as *Aging Cell's* "Best Paper of 2017" titled *Aging of the Skeletal Muscle Extracellular Matrix Drives a Stem Cell Fibrogenic Conversion*.



Amy Wagner, MD, was recently awarded six new grants for research into various aspects of traumatic brain injury:

- *NIDILRR Linking Acute Care for TBI and Long-term Outcomes* from the Administration for Community Living.

- *Biomarker-based Precision Medicine Approach to Traumatic Brain Injury Subphenotypes* from SUNY Downstate Medical Center/ U.S. Department of Defense.
- *Epidemiological Characterization and Prognostic Models for PTE: A Collaborative TBI-MS and VHA Study* from the U.S. Department of Defense.
- *Personal Biology and Comorbidity Impact on Post-TBI Cognitive Dysfunction and Neurodegenerative Disease* from the U.S. Department of Defense.
- *Dopamine Systems and Rehabilitation Treatments for Improving Neurorecovery among Cardiac Arrest Survivors* from the American Heart Association.
- *The Behavioral Assessment Screening Tool (BAST): Psychometric Validation and Mobile Health Tool Development* from UT Southwestern/National Institutes of Health.

A new UH3 grant was recently funded by the National Institutes of Health titled *A Biomimetic Approach Towards a Dexterous Neuroprosthesis*. The award is for \$7 million over five years.

Investigators include: **Michael Boninger, MD (PI)**, **Jennifer Collinger, PhD (Co-I)**, **Robert Gaunt, PhD (Co-I)**, and **Elizabeth Tyler-Kabara, MD, PhD (Co-I)**, all from the University of Pittsburgh, and **Sliman Bensmaia, PhD (PI)**, **Nicholas Hatsopoulos, PhD (Co-I)**, and **Peter Warneke, MD (Co-I)** all from the University of Chicago.



Left to Right: Drs. Boninger, Collinger, Gaunt, Tyler-Kabara.

New Faculty



Kevin Franzese, DO, joins us as an assistant professor with a specialty in acquired brain injury. He attended the University of North Carolina at Chapel Hill (Biology) and the

Touro College of Osteopathic Medicine in New York. He received residency training at the New York University School of Medicine and participated in subspecialty fellowship training at the Shirley Ryan Ability Lab in Chicago, Illinois. When asked why he chose UPMC, Dr. Franzese commented, "I'm elated and humbled to start my career at a place with so many clinical and educational opportunities. I can't wait to meet everyone!"



Amy Letteri, PhD, joins our pediatric neuropsychology department as an assistant professor. She graduated from Baylor University (Psychology) in Waco, Texas, and Gallaudet

University in Washington, DC. She completed her predoctoral internship in clinical psychology with a neuropsychology focus at the Children's Hospital and Clinics of Minnesota in Saint Paul. She completed her postdoctoral fellowship in pediatric neuropsychology from Indiana University School of Medicine in Indianapolis.

Dr. Letteri is fluent in American Sign Language and has specialty experience in neuropsychology working with deaf and hard of hearing populations.



Romer Orada, DO, joins us as an assistant professor specializing in cancer rehabilitation. He attended the University of North Carolina at Chapel Hill (Biology) and the

Edward Via College of Osteopathic Medicine in Blacksburg, Virginia. He received residency training at the Eastern Virginia Medical School in Norfolk and participated in subspecialty fellowship training at Memorial Sloan Kettering Cancer Center in New York. Dr. Orada is excited to join the team stating that, "UPMC is a great institution with excellent faculty members. Their vision for cancer rehabilitation is something I wanted to be a part of."



Krestin Radonovich, PhD, joins our pediatric neuropsychology department as an associate professor with a depth of knowledge that supports both the clinical and research arms

of the Department. She graduated from the University of North Dakota (Psychology) in Grand Forks and the University of Florida

in Gainesville. She completed a pediatric internship and postdoctoral fellowship at Johns Hopkins School of Medicine in Baltimore. Dr. Radonovich has a focus on neurodevelopmental and movement disorders, and hopes to expand the cognitive rehabilitation service for pediatric patients.



Kali Webb, DO, joins us as an assistant professor providing clinical services to our acute inpatient rehabilitation and consult services. She graduated from the University of

California (General Biology and Psychology) in San Diego and the Kirksville College of Osteopathic Medicine in Kirksville, Missouri. She received her residency training at the University of Washington in Seattle. Dr. Webb says, "I felt like UPMC had a great mix of established services within the clinical sphere and new opportunities with the Department's expanding growth. This position has an awesome mix of inpatient and consult work, and everyone's kindness and enthusiasm were the icing on the cake."

UPMC Rehabilitation Institute Annual Report

The 2017 UPMC Rehabilitation Institute Annual Report is now available for viewing and download by visiting UPMCPatientResources.com/Rehab. The report highlights new research and clinical care programs within the UPMC Rehabilitation Institute and Department of Physical Medicine and Rehabilitation.



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A \$19 billion world-renowned health care provider and insurer, Pittsburgh-based UPMC is inventing new models of patient-centered, cost-effective, accountable care. UPMC provides more than \$900 million a year in benefits to its communities, including more care to the region's most vulnerable citizens than any other health care institution. The largest nongovernmental employer in Pennsylvania, UPMC integrates 85,000 employees, 40 hospitals, 600 doctors' offices and outpatient sites, and a 3.4 million-member Insurance Services Division, the largest medical insurer in western Pennsylvania. As UPMC works in close collaboration with the University of Pittsburgh Schools of the Health Sciences, *U.S. News & World Report* consistently ranks UPMC Presbyterian Shadyside on its annual Honor Roll of America's Best Hospitals. UPMC Enterprises functions as the innovation and commercialization arm of UPMC, and UPMC International provides hands-on health care and management services with partners around the world. For more information, go to UPMC.com.

ABOUT THE DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION

- UPMC Presbyterian Shadyside is ranked by *U.S. News & World Report* as one of the nation's best hospitals for rehabilitation.
- The Department of Physical Medicine and Rehabilitation is consistently a top recipient of NIH funding for rehabilitation-related research.
- The Spinal Cord Injury Program at UPMC is one of only 14 in the country selected by the National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR) as a model for other rehab providers.
- Department clinicians lead UPMC's rehabilitation network of more than 90 inpatient, outpatient, and long-term care facilities — one of the country's largest.