

FALL/WINTER 2018

UNIVERSITY OF PITTSBURGH

FACETS

SCHOOL OF HEALTH AND REHABILITATION SCIENCES



COGNITION AND
COMMUNICATION

FINDING THE
SWEET SPOT

MISSION TO MARS
VIA ANTARCTICA, HOUSTON AND PITTSBURGH

FORMULA FOR
EVIDENCE-BASED PRACTICES

FACETS SCHOOL OF HEALTH AND REHABILITATION SCIENCES

CONTENTS

FALL/WINTER 2018



1 From the Dean Dr. Anthony Delitto	16 FACETS Feature Let's Talk About Improving Communication	30 Health Information Management Formula for Evidence-Based Practices	Publisher Dr. Anthony Delitto
2 Giving Greta Daniels	20 Sports Medicine and Nutrition Mission to Mars via Antarctica, Houston and Pittsburgh	32 Prosthetics and Orthotics A Step in the Right Direction	Executive Editor Patty Kummick
3 Perspective Patty Kummick	22 Occupational Therapy Strategies for Living with Mild Cognitive Impairment	34 Emergency Medicine The Thinking Behind Clinical Decision Making	Writing and Design Red House Communications
4 Alumni News	24 Communication Science and Disorders Finding the Sweet Spot	36 The Real World Emily Brown, Taylor Hill, Kara Magliocca, Julia Slifko, Madison Ward	Photography University of Pittsburgh
6 Faculty News	26 Physical Therapy Managing the Fallout from Concussion		
9 Student News	28 Clinical Rehabilitation and Mental Health Counseling Plans for Independent Living		
11 Calendar of Events			
12 Alumni Profile Karen Lau			
14 Clinical Instructor Profile Melissa Kolowitz			



PittSHRS

School of Health and Rehabilitation Sciences

FROM THE DEAN



Greetings,

Each of the professions represented in SHRS serve clients who experience “cognitive challenges” which I will define as disruption in the brain-based skills needed to carry out any task—from the simplest to the most complex. Cognitive challenges have more to do with the mechanisms of how we pay attention, learn, remember, communicate and problem solve than with any actual knowledge we possess. They can be short-term challenges that improve with rehabilitation and time, or long-term challenges that remain the same or decline over time.

Cognitive challenges can be profound and are often the rate-limiting impairment that drives disablement, as occurs with advanced stages of Alzheimer’s disease. However, cognitive deficits may also be mild, almost sub-clinical, and difficult to detect. But left untreated they can negatively influence the outcomes of our interventions. Among the more exciting innovations in rehabilitation in the last few decades is a growing awareness that cognitive abilities are not necessarily “fixed,” that is, unchangeable; rather, in selected cases, cognitive abilities can and do respond to targeted practice and lifestyle adaptations.

The professions within SHRS will see patients across the entire spectrum of cognitive challenges. Fortunately, our ability to detect and measure the magnitude of cognitive challenge has improved tremendously over the years. Concomitant with detection, we have developed numerous strategies to implement with patients to address the deficit through either environmental accommodation or improve abilities through targeted practice or lifestyle adaptations.

This issue of *FACETS* is rich with examples from numerous departments related to managing people with brain injury and concussion (Counseling and Physical Therapy), mild cognitive impairment (Occupational Therapy), and language use and recovery (Communication Science and Disorders). In addition, innovative approaches to helping patients deal with cognitive challenges include wearable technologies (Prosthetics and Orthotics), and mobile apps for communication disabilities (HIM).

When I graduated from my entry-level physical therapy education program in 1979, brain function after injury was thought to be relatively fixed with limited chance to change appreciably over time. Since that time, we have seen tremendous progress in our ability to understand brain function, which has opened a new world in detecting cognitive challenges and intervening for the benefit of our patients.

Anthony Delitto
Professor and Dean



The donations SHRS gratefully receives from alumni, friends, foundations and corporations are often reflective of the donors' particular interests or desires. Whether you wish to support cutting-edge innovation in rehabilitation research or invest in the next generation of clinical practitioners, we work diligently with our donors to ensure their gifts create the desired impact in SHRS. This is particularly significant for those individuals whose generous contributions will not realize their full value immediately but will rather reach maturity in the future in the form of permanent endowments, bequests and other structured estate gifts. While these gifts may outlive their donors, our careful and deliberate planning ensures their perpetual impact.

Students in the Department of Physical Therapy and the Department of Communication Science and Disorders will benefit from the generosity of two new endowed funds created through unique methods and with specific intent.

Dr. Cindy Miles (BS '77) recently established a new endowed scholarship in the Department of Physical Therapy that will specifically support students who are interested in pursuing pediatric physical therapy. In addition to an outright gift that launched this new endowment, Dr. Miles has elected to support the fund's growth through the establishment of a Charitable Gift Annuity (CGA) as well. A CGA is a gift vehicle that allows a donor to transfer cash, securities or other assets to a charitable institution, like SHRS. In return, the donor receives a partial tax deduction and a fixed stream of annual income from the annuity for the rest of her life. This CGA will not only ultimately provide additional funds for the scholarship, but it will continue to supply income to Dr. Miles and her family for years to come.

Dr. Richard M. Riedman (CSD '63) and his wife, Dr. Kathi Hoffer-Riedman, created a new endowed scholarship in the Department of Communication Science and Disorders to support future audiology students pursuing doctoral degrees. As the founder of the Audiology program at San Diego State University, Dr. Riedman values the impact of exceptional graduate students on the academic and research landscape while also understanding the burden that tuition and loans can place on those who pursue advanced degrees. The couple established this new fund using the proceeds from the minimum required distribution from an IRA. In addition to creating a lasting impact on the lives of future doctoral students in our Audiology program, they also received a tax benefit.

We are so fortunate to have generous alumni, faculty and friends like those described in this letter. If you would like to support the work being carried out in your department or program or would like to learn more about any of the vehicles used by our two featured donors to create their legacy gifts, I'd welcome the opportunity to speak with you in greater detail about the many available options. Through your generous and continued support, we can make even greater strides in education, clinical preparation, innovation and research.

Hail to Pitt!

Greta Daniels
Director of Development

412-383-4084, grd17@pitt.edu
4049 Forbes Tower, Pittsburgh, PA 15260



perspective

Perspective is written by Patty Kummick, FACETS executive editor and SHRS executive director of Internal and External Relations. This column serves to address topics relating to our students, faculty, staff, the school, and local and global communities.

“Continuity gives us roots; change gives us branches, letting us stretch and grow and reach new heights.”
—Pauline R. Kezer

With new leadership comes change. The School of Health and Rehabilitation Sciences is solid proof of that statement. Since Dr. Tony Delitto was named dean in early 2016, the school has experienced changes in top-level positions and in priorities and focus areas.

Administrative modifications were the first to be realized beginning with my own shift from director of Development to executive director of Internal and External Relations. Dean Delitto also realized the need for direct support for the Dean's Office and quickly elevated Debora Miller from associate dean for Strategic Initiatives and Planning to vice dean.

Academically, additional adjustments and assignments were made, creating a new leadership team with common goals and a shared vision to continue the school's amazing, decades-long progression of success. Here's a rundown of the latest SHRS academic leadership changes.

Dr. Bernard Rousseau has been recruited from Vanderbilt University to fill the role of chair in the Department of Communication Science and Disorders. Rousseau replaces **Dr. Malcolm McNeil** who retired at the beginning of the year.

Dr. Jonathan Pearlman, associate professor, serves as the new chair of the Department of Rehabilitation Science and Technology. He will have oversight of the Prosthetics and Orthotics program, Rehabilitation Technology program and a newly created division of Community Health Services. **Dr. Rory Cooper**, distinguished professor and former RST chair, will remain as professor in the department and will focus his attention and talents on continuing his service as director of the Human Engineering Research Laboratories and as SHRS associate dean for Inclusion.

Dr. Bambang Parmanto, professor, is now interim chair of the Department of Health Information Management. **Dr. Mervat Abdelhak**, professor, remains in her faculty position in the department after serving 36 years as the chair of HIM.

Dr. Thomas Platt, associate professor, has been elevated to vice chair in the Department of Rehabilitation Science and Technology with direct responsibility for the new Community Health Services division. The division consists of the Clinical Rehabilitation and Mental Health Counseling program, the Emergency Medicine program and the Physician Assistant Studies program. Platt was also named director of the Emergency Medicine program with which he has been affiliated for 21 years. **Dr. Walt Stoy**, professor and former EM program director, will remain in the department as professor.

Also in the Department of Rehabilitation Science and Technology, **Dr. Mark Schmeler**, assistant professor, has been appointed vice chair for Education and Training and director of the Rehabilitation Technology program. He replaces **Dr. Dan Ding**, who will remain as associate professor with the department and researcher in the Human Engineering Research Laboratories.

David Beck, assistant professor, now serves as the interim director of the Physician Assistant Studies program replacing **Dr. Deborah Opacic** who resigned her position as assistant professor and program director.

Putting this all into perspective, the School has benefited greatly from the contributions of its previous leaders who were dedicated, involved, forward-thinking and always committed to excellence in academics, research and service. In this new era, SHRS is assured continued dedication, involvement, vision and commitment from its new leadership team which is poised to face and address the challenges and opportunities of a promising future.

To comment or share your insights on this column, please contact Patty Kummick at pkummick@pitt.edu, 412-383-6548, SHRS, 4054 Forbes Tower, Pittsburgh, PA 15260.

Alumni News

Athletic Training/Sports Medicine



Michael G. Wells (BS '90, MS '92) was named to the University of Pittsburgh Board of Trustees.



Larry Cooper (AT '83) was recognized with the Korey Stringer Institute's Lifesaving Service Award for years of dedicated service in athletic training at the local, regional and national levels.

Communication Science and Disorders

Dr. Michael Biel (CScD, '10) was promoted to associate professor with tenure in the Department of Communication Disorders and Sciences, California State University Northridge.

Dr. Samantha Procaccini (CScD '11) was promoted to associate professor with tenure in the Department of Communication Disorders at California University of Pennsylvania.

Dr. Kendra McAlear (CScD '18) accepted a faculty position with the Department of Communication Disorders, Special Education and Disability Services at Indiana University of Pennsylvania.

Dr. Szu-Han "Kay" Chen (MA '10, PhD '16), is assistant professor at Fredonia State University of New York.

Patricia "Tish" Gaffney (MA '03, AuD '05) received an AAA Editor's Award at the American Academy of Audiology Annual meeting. The award is bestowed upon a member of the Editorial Board for The Journal of the American Academy of Audiology for "outstanding contributions to the peer review of the journal."

David Jedlicka (AuD '10) presented his award-winning poster "Comparison of Hearing Aid Sound Generator Fitting Strategies as a Tinnitus Treatment among the Veteran Population" at the 2018 American Academy of Audiology annual meeting. Co-authors included AuD students **Elizabeth Lucius** and **Kelsi J. Bubb**.

Amanda Poor (BA '10) is serving as a speech pathology clinical fellow at Mercy Health, Springfield, Ohio.

Kaitlyn Maria Smith (MA '17) is a pediatric speech language pathologist with Carilion Clinic, Roanoke Va.

Emergency Medicine



Ted Fessides (EM '13), pictured center, received the Amanda Wertz Memorial EMS for Children Award from the Pennsylvania Department of Health and Pennsylvania Emergency Health Services Council. Fessides' award recognized his efforts in decreasing pediatric morbidity and mortality through injury prevention programs at Cranberry Township Emergency Medical Service.

Health Information Management

Nakita Fleming (BS '97) is employed by Fox Chase Cancer Center at Temple University Hospital, Philadelphia, as tumor registrar/data analyst.



Brian Mann (BS '17) was named an ORISE Research Fellow at the FDA's Center for Devices and Radiological Health (CDRH). The Oak

Ridge Institute for Science and Education (ORISE) is dedicated to providing world class expertise in STEM workforce development. The CDRH ensures that patients and providers have timely and continued access to safe, effective and high-quality medical devices and safe radiation-emitting products.

Nutrition and Dietetics

Kelly Danis (BS '90) received the Keystone Award from the Pennsylvania Academy of Nutrition and Dietetics in recognition of her demonstrated outstanding professional standards through leadership, willingness to serve and efforts to advance the aims of the organization. Danis serves as director of Nutrition for UPMC Presbyterian Shadyside and leads the Clinical Nutrition System Integration Committee.

Kimberly Autore (MS '13) received the Recognized Young Dietitian of the Year Award from the Pennsylvania Academy of Nutrition and Dietetics. The award is presented to registered dietitians 35 years of age or younger with leadership qualities.

Occupational Therapy

Yocelin Hernandez Rajero (MOT '18) was commissioned as Lieutenant, Junior Grade, in the Medical Service Corps, United States Navy.

Katie Beresik Schwab (MOT '13) received a cash award from the St. Margaret's Foundation to improve the facility's Rehabilitation Patio promoting function and participation of inpatient clients.

Physical Therapy



Physical Therapy alumni **Kim Nixon-Cave** (BS '81), **Mary Lou Galantino** (BS '82) and **Greg Hicks** (PhD '02) were recently inducted into the new class of 2018 Catherine Worthingham Fellows, the highest honor of the American Physical Therapy Association. Of more than 100,000 members, these three alumni were among just 15 recognized as fellows at the meeting in Orlando.

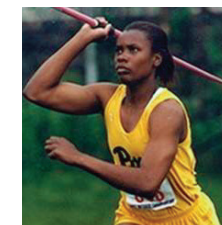
Russ Myer (MS '82) is enjoying his work as an athlete classifier for International Paralympic Committee Nordic Skiing, IPCNS Biathlon International referee and president of a US Paranordic club based in Albany, NY. Myer works with veterans, adults and youth with a variety of impairments travelling worldwide to classify these athletes into competitive sport classes and runs events like continental cups, world cups and world championships.

Valerie (Skupnik) Ludwig (PT '90) is the clinic director/owner of Team Rehabilitation in Lake Orion, Mich. The diverse clinic specializes in sports and orthopaedics with an emphasis on functional body weight training. Ludwig has been a certified Pilates instructor for 20 years and is also involved in international and local mission work in Detroit.



SHRS alumna and former Pitt PT researcher, U.S. Army Major **Carrie Hoppes** (PhD '17), won a Won-Sang Lee Award at the

Bárány Society Meeting in Sweden. The award honors those who have made exceptional academic achievements by conducting innovative research to help understand the vestibular system. Hoppes' award-winning abstract was based on her PhD project, "Changes in Cortical Activity during Dual-task Walking in Individuals with and without Visual Vertigo."



Trecia-Kaye Smith (MS '02) was named to the first class of athletes inducted into Pitt's new Hall of Fame. She ranks as one

of the most decorated athletes in Pitt's history winning seven individual NCAA championships as a member of the track and field team. Smith was a 15-time All-American and 14-time Big East champion. She represented her native Jamaica at the 2004 Athens Summer Olympics.

Prosthetics and Orthotics

Michael Wargo (MS '12) is employed in Orthotics and Prosthetics in the Department of Orthopaedic Surgery, University of Virginia Medical School, Charlottesville, Va.

Rehabilitation Science Undergraduate Program

April Lianne (Shultz) Stocker (BS '14) is a captain, Sustainment Services Flight Commander with the U.S. Air Force at F.E. Warren Air Force Base, Wyo.

Department/Program News

Communication Science and Disorders

The Department of Communication Science and Disorders hosted a reception for audiologists and speech-language pathologists who serve as field faculty for clinical students. Attendees learned of the launch of free online continuing education courses in evidence based clinical instruction. The reception was organized by **Dr. Cheryl Messick**, professor, and **Dr. Elaine Morner**, associate professor.

Physician Assistant Studies

The Physician Assistant Studies program was granted "accreditation-continued" status by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA). The status is granted to accredited programs in compliance with the ARC-PA Standards.



The second consecutive class in the Physician Assistant Studies Program has completed the SBIRT Program (Screening, Brief Intervention, and Referral for Treatment) for recognition and intervention in substance abuse, through a SAMHSA grant.

Rehabilitation Science and Technology

The Department of Rehabilitation Science and Technology's master's program in Rehabilitation Technology became the first master's level program to receive accreditation by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The designation was recommended by the Rehabilitation Engineering and Assistive Technology Education Committee on Accreditation (RATE-CoA).



Faculty News

The School of Health and Rehabilitation Sciences recognizes the following faculty who have received promotions: **Dr. Jennifer Brach**, professor, Department of Physical Therapy; **Dr. Christopher Brown**, associate professor, Department of Communication Science and Disorders; **Dr. Dilhari DeAlmeida** and **Dr. Leming Zhou**, associate professors, Department of Health Information Management; **Dr. Joanne Baird**, associate professor, Department of Occupational Therapy; **Dr. Kelly Battle Beck** and **Christopher Hovorka**, assistant professors, Department of Rehabilitation Science and Technology; and **Dr. Kim Beals** and **Dr. Mita Lovalekar**, associate professors, Department of Sports Medicine and Nutrition.

SHRS welcomes the following new faculty members: **Dr. Bernard Rousseau**, chair, **Dr. Bharath Chandrasekaran**, professor, **Dr. Leah Helou**, assistant professor, **Linda Sustich**, instructor, and **Leanne Sayce**, research assistant, Department of Communication Science and Disorders; **Dr. Natalie Leland**, visiting associate professor, **Cara Lekovitch**, visiting instructor, and **Erin Mathia**, instructor, Department of Occupational Therapy; **Dr. Charity Patterson**, visiting professor, and **Tara Ridge Harkin** and **Christine McDonough**, assistant professors, Department of Physical Therapy; and **Jamie Hammond**, assistant professor, and **Robert Maguire**, instructor, Department of Rehabilitation Science and Technology.

Communication Science and Disorders



Dr. Bharath Chandrasekaran, professor, was one of two winners of the Society for the Neurobiology of Language 2018 Early Career Award. The award was established to honor researchers whose high quality of scientific work and academic citizenship exemplify the ideals of the Society.

Dr. Ellen Cohn, professor, delivered the keynote address, “Infusing Diversity into the Curricula,” at University of Hartford’s Curriculum Festival. She also presented at the Rehabilitation Engineering Society of North America and the American Cleft Palate-Craniofacial Association’s annual meetings.

Dr. James Coyle, professor, recently presented at the Missouri Speech Language Hearing Association Convention, the Pennsylvania Speech Language Hearing Association Convention, the Charleston Swallowing Conference at Northwestern University and the Scotland Dysphagia Clinical Excellence Network, Dundee, Scotland.

Dr. Dawna Duff, assistant professor, presented at the Symposium for Research in Child Language Disorders, Madison, Wis., and the Society for Scientific Study of Reading, Bristol, UK.

Dr. Will Evans, assistant professor, co-authored two articles for publication in the American Journal of Speech-Language Pathology including “Speed-Accuracy Tradeoffs and Adaptation Deficits in Aphasia: Finding the ‘Sweet Spot’ between Impulsive and Overly Cautious Responding” and “Acquisition and Generalization Responses in Aphasia Naming Treatment: A Meta-analysis of Semantic-feature Analysis Outcomes.”

Dr. Katya Hill, associate professor, was invited to present at the Cerebral Palsy Summit on Assistive Technology Innovations for Communication and Mobility in San Francisco. The Summit was sponsored by the Cerebral Palsy Alliance and funded by the National Science Foundation to bring together invited experts to discuss and recommend future research priorities. Dr. Hill presented “Theory-based Perspectives on Thought-to-Speech for an Augmentative and Alternative Communication Brain-Computer Interface.”

Dr. Leah Helou, assistant professor, received a Health Research Formula Fund award in excess of \$430,000 with results expected to provide a foundation for the future identification of potential cortical therapeutic targets in patients with neuromuscular breathing and speech breathing disorders.

Dr. Paula Leslie, professor, delivered the opening keynote lecture and closing commentary at the Advancing Dysphagia Practice Summer Conference at the University of Central Lancashire, UK. Her presentation addressed what it means to partner with another, and who might form such alliances in working with people with swallow problems. She was also an invited faculty member at the Charleston Swallowing Conference at Northwestern University: Innovation to Implementation in Dysphagia Practice, delivering the session on “Instrumental Assessment: Is it Always Appropriate? Complexity of Clinical Decision Making: Ethics, Vulnerable Populations and End of Life.”

Dr. Erin Lundblom, associate professor, and **Dr. Paula Leslie**, professor, presented a seminar at the Council of Academic Programs in Communication Sciences and Disorders Annual Meeting in Austin, Texas, on “Specifications Grading: What is it and Lessons Learned.”

Dr. Elaine Morner, associate professor, delivered a continuing education workshop for an interprofessional group titled “Student Perspectives on Clinical Education: Networking & Educating Students Together (NEST),” St. James Hospital, Dublin, Ireland.

Dr. Catherine Palmer, associate professor, was elected president-elect of the American Academy of Audiology (AAA).



Dr. Lea Sayce, research assistant professor, presented papers in Madison, Wis., and at the International Conference on Voice Physiology and Biomechanics, East Lansing, Mich.

Dr. Susan Shaiman, associate professor, recently co-authored articles published in The Journal of Neuroscience and Folia Phoniatrica et Logopaedica. She was also elected to the Coordinating Committee, Special Interest Group (SIG) 19: Speech Science, American Speech Language Hearing Association, through 2021.

Dr. Janice Vance, assistant professor, and director of the Communication Science undergraduate program, led the annual Study Abroad Trip to Ireland where students spent four weeks visiting a range of clinical, educational and research settings in Belfast, Northern Ireland; and Dublin, Republic of Ireland. Through the program, students observe and discuss practices and policies across a range of health-related disciplines including audiology, clinical dietetics, occupational therapy, physical therapy, speech-language pathology and athletic training/sports medicine.

Emergency Medicine

Instructor and alumnus **Alex Cutsumbis** (BS '09) received the State EMS Educator of the Year Award from the Pennsylvania Department of Health and Pennsylvania Emergency Health Services Council.

Samuel “Bob” Seitz, assistant professor, received the Clara Barton Meritorious Leadership Award from the American Red Cross National Chapter during its Scientific Advisory Council meetings in Washington, D.C. The award is presented to a volunteer who has provided outstanding leadership to the Red Cross, recognizing meritorious service in volunteer leadership positions.

Dr. Walt Stoy, professor, was awarded the 2018 James O. Page/JEMS Leadership Award. Stoy was recognized as a leader, professor and visionary to the field and future of emergency medical services. The award is given to individuals or agencies who have exhibited the drive and tenacious effort necessary to develop improved EMS systems, resolve important EMS issues and bring about positive EMS system changes.

Health Information Management



Dr. Bambang Parmanto, interim chair and professor, is collaborating with Dr. Anne Germain, associate professor, Department of Psychiatry, to determine

if Parmanto’s app, iRest, can improve sleep health care for all. Previously, iRest, has helped active military members and veterans who have sleep disorders connect with behavioral therapists who can improve their quality of sleep.

Associate Professor **Dilhari DeAlmeida** co-presented “Use of Electronic Health Records to Harness Data Analytics Practices” with Suzanne Paone, adjunct faculty, at the PHIMA annual meeting. She also co-presented on STEM in HIM and moderated a competency breakout session at the Assembly on Education meeting in Indianapolis.

Dr. Bambang Parmanto, interim chair and professor, **Dr. Leming Zhou**, associate professor, and **Dr. Andi Saptono**, assistant professor, presented a workshop titled “RERC on Information & Communication Technology Access” at the RESNA 2018 annual conference in June.

Occupational Therapy

Dr. Nancy Baker, associate professor, was selected to be a visiting scholar, Center for Rehabilitation Research Using Large Datasets at the University of Texas Medical Branch, Galveston, Texas.

Assistant Professor **Roxanna Bendixen** was appointed to the Patient-Centered Outcomes Research Institute (PCORI) Advisory Panel on Rare Disease. She will play a part in helping patients and those who care for them make better informed health care decisions. Bendixen was selected on the basis of her experience, expertise and ability to contribute to the panel’s mission.

Dr. Natalie Leland, associate professor, was recognized as a fellow of the Gerontological Society of America. She also co-presented a research paper on “Patient Care Priorities and Clinical Documentation” at AcademyHealth’s Annual Research Meeting, Seattle, Wash.

Juleen Rodakowski, assistant professor, and Beth Fields, postdoctoral associate, presented a poster titled “Role of Family Caregivers’ Health Literacy in Predicting Health Care Communication and System Navigation” at the Academy Health’s Annual Research Meeting, Seattle, Wash. The pair also presented a similar presentation at the Annual Occupational Therapy Summit of Scholars, Kansas City, Kan.

Dr. Amit Sethi, assistant professor, and colleagues presented “A Sleeve Electrode Array for Myoelectric Control of Functional Electrical Stimulation-assisted Hand Function” at the 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Honolulu, Hawaii.

Dr. Elizabeth Skidmore, chair and professor, and Emily Kringle, PhD student, presented “iADAPT: mHealth for Stroke Intervention” at the State of the Science Symposium in Washington, DC, highlighting SHRS’s Rehabilitation Engineering Research Center on Information and Communication Technology Access. Skidmore also presented “Innovation and Research Interventions Using Telehealth” at the event.

Dr. Skidmore also presented a clinical workshop on improving patient outcomes at the Occupational Therapy Academy and a research presentation on returning to independence after stroke at the 24th Annual Interdisciplinary Stroke Course: Foundation for Stroke Recovery, both at the Shirley Ryan Ability Lab, Chicago, Ill.

Faculty News *(continued)*

Dr. Skidmore, Dr. Lauren Terhorst, associate professor, **Juleen Rodakowski**, assistant professor, and **Chao-Yi Wu**, doctoral student, presented “Predictors of Daily Participation in Late Life” at the Occupational Therapy Summit of Scholars, Kansas City, Kan.

Physical Therapy

Dr. Alexandra B. Gil, assistant professor, **Dr. Sara Piva**, associate professor, and **Dr. Jay Irrgang**, chair and professor, had their research paper “Considerations for Assessment and Applicability of Studies of Intervention” published in the July 2018 edition of *Clinics in Sports Med.*



Professor **Sue Whitney**, second from left, visited Nowall (Hassan) Al-Sayegh (PhD '07), pictured left, acting PT chair at Kuwait University and other Kuwait University leaders to evaluate their proposed Master of Science program in physical therapy.

Dr. Patrick Sparto, associate professor, traveled to Singapore earlier this year to provide guidance to the Ministry of Health about the role of physical therapy in the management of concussion. He visited three hospitals and one university and consulted with physiotherapists, otolaryngologists and neurosurgeons about their concussion management program.



Physician Assistant Studies

Mary Allias, assistant professor, was named a Distinguished Fellow of the American Academy of Physician Assistants for her achievement and service to the profession.



Assistant Professor **Emily Murphy** along with Ashley Firm, assistant professor, School of Pharmacy, received a 2018 Innovation in Education Award from the University of Pittsburgh Provost's Advisory Council on Instructional Excellence. Their proposal, “The Merged Pharmacology Classroom: A Formative and Interdisciplinary Approach to Physician Assistant Education,” will revolutionize the instruction of pharmacology in the PA program by incorporating personalized learning experiences and routine practical application of pharmacology course material.

Students, alumni and faculty from the Pitt PA Studies Program attended the American Association of Physician Assistants National Conference in New Orleans in May 2018. **David Beck**, interim program director and assistant professor, and **Emily Murphy**, assistant professor, presented at the conference while more than 20 current students and alumni represented SHRS and PA Studies.

Rehabilitation Science and Technology

SHRS Associate Dean for Inclusion and Distinguished Professor **Rory Cooper** was a recent recipient of the AIMBE Advocacy Award, recognizing his outstanding and lasting contributions to humanity and the field of bioengineering.

Dr. Cooper also competed in the 38th National Veterans Wheelchair Games in Orlando, Fla., coming away with 14 medals: seven gold, six silver and one bronze in categories including slalom, hand cycling, swimming and table tennis.

Sports Medicine and Nutrition

Assistant Professors **Katelyn Allison** and **Matt Darnell** (below), were part of the team that won Pitt's first Performance Innovation Tournament. Their proposal, “Impulse Swimming Test,” measures force production and anaerobic performance in real-time to swimmers. Pitched by Assistant Professors **Chris Connaboy** and **Qi Mi**, the proposal, which aimed to develop a “Pitt Fusion” data acquisition and dashboard application to integrate performance, injury and sleep factors in order to inform coaches, placed in the top four proposals out of 16 submissions.



◀ At the National University Health System, Singapore, from left, Dr. Patrick Sparto, associate professor, met with Dawn Tan, senior principal physiotherapist, Singapore General Hospital; Beryl Wong, principal physiotherapist, Tan Tock Seng Hospital; and Hui Chueng Seow, physiotherapist, Singapore General Hospital.

Student News

Communication Science and Disorders



Pitt's chapter of the National Student-Speech-Language Hearing Association (NSSLHA) achieved 2018 Gold Chapter Honors in recognizing chapters that engage in ways that support NSSLHA's mission to inspire, empower and support students to engage in leadership opportunities, grow professionally and excel in their future careers. Dr. Erin Lundblom, assistant professor, serves as chapter advisor.



Carrie Ann Donohue, CSD PhD student, was awarded one of two LSVT Global Small Student Grant Competition awards for graduate students in Speech Language Pathology. The competition funds student research investigating the efficacy of treatment of neurologically-impaired patients. This grant will support Donohue's planned research related to ALS.

Yina Quique, CSD PhD student, and faculty mentor **Dr. Will Evans**, assistant professor, received a Research Mentoring-Pair Travel Award to attend the 28th Annual ASHA Convention Research Symposium.

AuD student **Kara Magliocca**, along with faculty members Associate Professor **Elaine Morner** and Assistant Professor **Erin Lundblom** presented a poster at the annual convention of the American Academy of Audiology, Nashville.

Four AuD students were accepted as 2018-2019 Schweitzer Fellows. The Pittsburgh Schweitzer Fellows Program is a competitive one-year, direct-service, interdisciplinary, mentored fellowship program focused on health and human services-related community service and leadership development. Students **Taylor Hill** and **Elizabeth O'Karma** created the DEFY (Deaf Experiences for Future Years) project focused on building skills among 16 – 21-year-old students at Western PA School for the Deaf as they transition to post-graduation life. **Rebecca Penaranda** and **Ryan Shea** will continue the HEAR-UP project that was started two years ago, providing free hearing tests and hearing aids to underserved individuals at Squirrel Hill Health Center and Birmingham Free Clinic.



The American Academy of Audiology Foundation recently honored AuD students **Rachel Fryatt** and **Kayla Copperthite** (pictured above) with the “Empowering Students Scholarship” for exceptional promise as a clinical audiologist and the “Continued Achievement Scholarship” for demonstrating exceptional promise in providing outstanding patient care, respectively.



Elisabeth Haley, doctoral student, received the James and Susan Jerger Award for Excellence in Student Research at the 2018 American Academy of Audiology's annual meeting. She collaborated with CSD Professors **Sheila Pratt** and **Malcolm McNeil** on the poster titled “Central Auditory Processing Abilities in Blast Exposed Veterans.”

Health Information Management



Zoe Delozier, HIM student (pictured left with Dr. Dilhari DeAlmeida, associate professor), was presented with a Pennsylvania Health Information Management Association scholarship. While a student, Delozier volunteered at UPMC Shadyside assisting rehab patients and completed a clinical assignment with Pittsburgh Mercy, an outpatient behavioral health clinic. She has also participated in leadership programs including the Panther Connect Leadership Retreat, Emerging Leaders Certificate Program, Panther Leadership Summit and Leadership in Action Program. In addition, Delozier has studied abroad and is fluent in French.

Nutrition and Dietetics

Molly Owens, Coordinated Masters in Nutrition and Dietetics student, was named a 2018-2019 Pittsburgh Schweitzer Fellow. Her “Power Up with Plants” program focuses on offering cooking classes to veterans and their families to promote family meal-time, improving diet on a budget, and educating on the health and environmental benefits of plant-based meals. Owens' mentor is **Judy Dodd**, assistant professor.

Occupational Therapy

Beth Fields, postdoctoral associate, was accepted to the RAND Summer Institute in Santa Monica, Calif., and received a competitive scholarship to support her travel. She was also accepted to the Pittsburgh VA Center for Health Equity Research and Promotion Postdoctoral Fellowship Program and was a recipient of the 2018 Golden Quill Award from the Canadian Association of Occupational Therapists for the co-written article “The Lived Environment Life Quality Model for

Student News *(continued)*

Institutionalized People with Dementia.”

OTD students **Kimberly Holliday**, **Marybeth Moscirella**, **Laura Otchy** and **Madeleine Wirth** each received 2018 Pennsylvania Occupational Therapy Association scholarships. Holliday also received the Reba M. Sebelist Student Award.

Emily Kringle, doctoral student, received the 2018 Rehabilitation Institute Research Day Best Research Award in the pre-doctoral category for her abstract “Feasibility of the Activating Behavior for Lasting Engagement (ABLE) Intervention After Stroke.”

Chao-Yi Wu, doctoral student, received a travel award to attend the 38th North American Taiwanese Professors’ Association Young Scholar Program in Washington, DC.

Physical Therapy

Department of Physical Therapy students won the 2017-2018 Mercer-Marquette Challenge by raising over \$50,000 for the Foundation for Physical Therapy. They also earned the title of Leaders Society for bringing the University’s total donations to more than \$600,000 over the last 30 years.

DPT students **Teresa Toomey** and **Daniella Woiski** were the recipients of APTA student memberships thanks to a donation from alumnus **Michael Gans** (DPT ’06). The students were selected through a random drawing of entries earned by completing service activities during the academic year. Gans has made it an annual occurrence to provide the membership fees for deserving students.

DPT students organized and participated in the production of a “Healthy Back Video Series” as part of the University’s Healthy U initiative. The series included three videos highlighting the importance of maintaining a healthy spine and tips/insights on how simple changes in everyday actions and routines can make a difference in back health. Students participating were **Joe Dietrich**, **Teresa Toomey**, **Natalie Sorek**, **Amanda Montemayor**, **Marina Wright**, **Tyan Kan**, **Erin Savoldy**, **Emily Lyons**, **Rebecca Grier**, **Cynthia Mentch**, **Daniella Woiski**, **Jennifer Condio**, **Tyler Lookabaugh**, **Christie Chiesa**, **Maddie Heistand**, **Kiersten Olsen** and **Ashley Sax**.

Sports Medicine

Sports Medicine students **Dan Herring**, **Guillemette Bodenreider**, and **Mackenzie Dailey**, participated in the University of Pittsburgh Health Career Scholars Academy by educating nearly 100 students about athletic training and sports medicine careers. In addition, the participants observed the cadaver lab and learned hands-on skills in preventive taping, crutch walking and football helmet fitting.



▲ Dan Herring, Guillemette Bodenreider and Mackenzie Dailey, pictured top to bottom, at the University of Pittsburgh Health Career Scholars Academy

Calendar of Events

OCTOBER

Saturday, October 20, 2018

Nutrition and Dietetics Alumni Reception, Marriott Marquis Washington DC, Dupont Circle Room, 901 Massachusetts Ave. NW, Washington, DC, 7 – 9:30 p.m. Held in conjunction with the Food and Nutrition Conference and Expo. Email Emily Mente, coordinator, Alumni Relations, emm191@pitt.edu for info.

NOVEMBER

Saturday, November 3, 2018

SHRS Fall Open House, William Pitt Union, University of Pittsburgh, 10 a.m. – noon. For information, contact Nicole Skellie, Recruitment manager, 412-383-6556, skellienny@pitt.edu.

Friday, November 16, 2018

Department of Communication Science and Disorders Alumni Event, location TBA, Boston, Mass., 8:30 – 10:30 p.m. Held in conjunction with the American Speech-Language-Hearing Association Annual Conference. Email Alumni Relations Coordinator Emily Mente at emm191@pitt.edu for info.

JANUARY

Thursday, January 24, 2019

Department of Physical Therapy Alumni Reception, location and time TBA, Washington, DC. Held in conjunction with the American Physical Therapy Association Combined Sections Meeting

FEBRUARY

Friday, February 15, 2019

2019 Winter Academy, Ritz-Carlton Resorts of Naples, Naples, Fla. Email Alumni Relations Coordinator Emily Mente at emm191@pitt.edu for info.

MARCH

Monday – Friday, March 18 – 22, 2019

35th International Seating Symposium (ISS) and Pre-Symposium Workshops, David L. Lawrence Convention Center, Pittsburgh, Pa. Visit <https://www.seatingsymposium.us/> for details.

Wednesday, March 27, 2019

Audiology Program Alumni Reception, location and time TBA, Columbus, Ohio. Held in conjunction with the American Academy of Audiology Conference and Exposition

APRIL

Thursday, April 4, 2019

Department of Occupational Therapy Alumni Reception, location and time TBA, New Orleans, La. Held in conjunction with the American Occupational Therapy Association Annual Conference and Expo.



◀ **Top:** Karen Lau helps Asian Americans manage their diabetes by showing them how to adapt traditional Chinese recipes.

Bottom right: Lau shows parents how to use compartmentalized lunchboxes to ensure their children have all food groups in their meals.

**"SMALL CHANGES MAKE
A BIG DIFFERENCE IN HEALTH."**



For Karen Lau (MS '10), these are not only words to live by. They are the driving force behind her career.

Since completing her Coordinated Master in Nutrition and Dietetics degree at Pitt, Lau has been sharing her mantra with hundreds of patients at the Joslin Diabetes Center's Asian American Diabetes Initiative (AADI) in Boston. She loves her work. And takes it quite personally.

As a registered dietitian, this Hong Kong native understands that Asian Americans are at a significantly higher risk for developing type 2 diabetes than Caucasians. In fact, one in two Asians in the United States either has diabetes or is at risk for developing it. Furthermore, the National Health and Nutrition Examination Survey in 2011–12 showed that more than 50 percent of diabetes cases were undiagnosed in Asian Americans—higher than any other ethnic or racial group.

The higher rate of type 2 is a result of both genetic and environmental factors.

"Because I am bicultural and bilingual, I am in a unique position to serve this population," says Lau. "I can help them to understand and manage their diabetes before it leads to other health problems."

Lau is the only registered dietitian and certified diabetes educator at the AADI clinic at Joslin. She follows patients for a long period of time, providing diabetes education and medication management. "It is so rewarding to see patients become empowered by nutrition information and learn how to manage their diabetes," says Lau.

Joy Zhang, a second-year student in the Coordinated Master in Nutrition and Dietetics program, connected with Lau at an SHRS-sponsored alumni event at last year's national Food & Nutrition Conference & Expo. Soon after, she was offered an internship at AADI, where she assisted Lau in the development of educational materials.

"I helped to create sample Chinese American vegetarian meal recipes, for example," says Zhang. "I also developed pamphlets explaining how diets high in potassium, phosphorus and purines affect Asian Americans."

**"BECAUSE I AM BICULTURAL AND BILINGUAL, I AM IN A
UNIQUE POSITION TO SERVE THIS POPULATION. I CAN HELP THEM
TO UNDERSTAND AND MANAGE THEIR DIABETES BEFORE IT
LEADS TO OTHER HEALTH PROBLEMS."**

Zhang says she was fortunate to have the opportunity to help organize a Walking Club for AADI patients. "Interactions with the patients taught me so much," notes Zhang. "When I chatted with them on these Saturday walks around Boston Common, they told me about their needs and their questions concerning their health."

According to Lau, this type of social-educational interaction is especially important for immigrants. "At AADI, we focus on treating the whole person," she explains. "The patients come to trust us and we develop long-term relationships that contribute to good outcomes."

In addition to her work in the AADI clinic, Lau devotes a great deal of time to outreach. She is especially proud of her involvement with the national initiative, Screen at 23. Through the campaign, AADI is leading the charge in initiating appropriate screening practices for Asian Americans.

"Most individuals are at risk for type 2 diabetes if their Body Mass Index (BMI) is above 25," explains Lau. "But Asian Americans are at risk when their number reaches 23. At AADI, we use the Asian BMI to estimate a patient's risk of developing diabetes."

To date, the states of California, Hawaii and Massachusetts are following the lead of AADI. They have passed resolutions for health care providers to use the Asian BMI as a screening tool for Asian Americans so they can treat—and hopefully prevent—more cases of type 2 diabetes.

Zhang was both inspired and motivated by her internship at AADI. "This was the first time I was able to work with Asian colleagues, and had the opportunity to use my Asian background to help patients in an Asian clinic.

"Furthermore, I was truly impressed with how Karen interacts with her patients," Zhang continues. "She does not give them orders, but treats them as equals. She never takes credit for changing their lifestyles—she says all she does is provide them with scientific knowledge and information."

Dr. Lori Cherok, director, Didactic Program in Dietetics, applauds alumni like Lau for providing unique learning experiences for students. "Gaining real-world experience in a variety of settings is a key component of our Coordinated Master in Nutrition and Dietetics program," says Cherok. "We are very grateful to Karen for providing this internship experience for Joy."

"My experience with Karen expanded my interests in diabetes," adds Zhang. "Becoming a diabetes educator is now one of my career goals." ■



NOT-SO-STANDARD OPERATING PROCEDURE.

When students in the Physician Assistant Studies (PA) program encounter Melissa Kolowitz (MS '13) during their surgical rotation at UPMC Passavant, they get a lesson that's anything but ordinary. A PA with the University of Pittsburgh Physicians, Kolowitz couples knowledge and patience with a sense of humor in her role as preceptor.

"I remember what it was like going into a clinical rotation," recalls Kolowitz. "It's scary because you don't want to fail. I do what I can to make each and every student succeed."

"Melissa encourages her students to jump right in on the first day," says second-year PA student Gabrielle Storino. "She leads by example and challenges us with thoughtful questions and cases throughout the rotation."

"She challenges you to think critically," adds fellow student Alexa Stout. "Just when you think you have presented the correct answer, she is quick to ask 'why' or 'how,' forcing you to provide a deeper reasoning."

"During my time with Melissa, I found that this engaging teaching approach reinforced each topic we discussed," she continues. "That made me more confident with each answer I gave."

"I don't like to spoon-feed students," admits Kolowitz. "Students don't learn that way. When they come to me, they have a good knowledge base, but they are still intimidated by the operating room. I tell them to rely on what they know, then go from there."

"Because she has such extensive surgical experience, Melissa sets the bar high for students and understands what is within their reach and what isn't," says Benjamin R. Reynolds, chief advanced practice officer, UPMC.

"She is an excellent clinician who brings with her a wealth of experience as a surgical technologist prior to becoming a physician assistant," he continues. "Melissa has a passion for teaching that comes through in every discussion I've had with her."

Kolowitz, who was recently named the University of Pittsburgh PA Preceptor of the Year, takes pride in helping to transform students into capable health care professionals.

She sets high expectations and tries to hone their skills in taking daily progress and consultation notes, performing patient histories and physicals, and diagnosing certain problems. Eventually, she wants them to grasp what is going on in the operating room. "That takes time to learn," she says.

"Melissa makes sure that each student understands not just the surgical procedure and technique, but also the pathology and physiology behind each condition and how the surgery will benefit the patient," explains Morgan Snyder (MS '17), who currently works as a PA in General Surgery at UPMC McKeesport.

"My rotation with Melissa and the team at UPMC Passavant really convinced me that I wanted to pursue a career in general surgery," she adds.

Former student Cara Semelsberger (BS '14, MS '16) was inspired in a similar way. Now a PA at Children's Orthopaedic and Scoliosis Surgery Associates in St. Petersburg, Fla., Semelsberger says that Kolowitz is always invested in the students she works with.



"Melissa took the time to review each educational objective with me, especially those in which my knowledge was lacking," says Semelsberger.

"She also expanded my learning outside of the hours spent on rotation, recommending additional topics to research at home, which we would then discuss together. After my rotation ended, she asked me for feedback in order to improve the learning experience for future students."

"Our students describe Melissa as approachable and willing to teach, which are two invaluable qualities in a clinical preceptor," adds Emily Murphy, assistant professor and clinical coordinator for the PA program. "I know I can always rely on her to provide a meaningful experience for the students."

Kolowitz enjoys introducing students to new technologies such as robotic surgery. "It's exciting for a student to be able to scrub in and pass the instruments to the surgeon in this new environment," she explains. "Sometimes they are instructed to move the robotic arm—this really gives them a head start on the latest operating room competencies."

"Melissa helped me to develop my surgical skills, so that I felt prepared to enter into a surgical position, even though I was a new graduate," notes Semelsberger. "She also inspired me to one day get involved in educating PA students, while working as a clinical PA."

But there's more to a clinical experience than learning technical skills. "I learned a lot about what a great work environment looks like," comments Stout. "Melissa's team at Passavant is like a family. Everyone's roles are clear, they communicate well, and have fun while effectively doing their jobs."

"Witnessing such a good work environment and collaboration between physician and physician assistant was invaluable," she continues. "I hope to use this example as I begin my own career."

"The Pitt PA program is extremely fortunate to have Melissa as a preceptor for the students because she understands the value of an attentive and enthusiastic preceptor," adds Murphy. ■



LET'S TALK ABOUT
IMPROVING COMMUNICATION.

A touch. A gesture. A look.
A smile. All convey a message.
But nothing communicates
more profoundly than the
human voice.

Whether it's with a tender whisper, a victorious shout or a captivating song, the human voice expresses every sort of emotion and connects us to others in meaningful ways. Most of us don't think twice about our ability to speak, yet voice disorders affect approximately 7.5 million people in the United States.



Dr. Bernard Rousseau, professor and newly appointed chair of the Department of Communication Science and Disorders (CSD), hopes to reduce those numbers.

Rousseau arrived at the University of Pittsburgh in September, bringing with him a host of accolades associated with his work at Vanderbilt University Medical Center and the Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences. And a passion for continuing his research on voice disorders.

Two of his awards from the National Institutes of Health total more than \$5 million. One focuses on improving outcomes in patients with vocal fold paralysis, while the other investigates the safety and efficacy of treatments for voice disorders. Both align perfectly with Quality of Life Optimization goals defined by the SHRS Research Framework.

"The decision to come to Pittsburgh was an easy one for me," says Rousseau. "The outstanding faculty and students, highly ranked academic units and clinical programs, and exciting opportunities to leverage and strengthen clinical and research partnerships in the health and rehabilitation sciences are second to none.

"Everything that is going on here aligns perfectly with my vision to advance the study of communication science and disorders and improve quality of life for all with speech, language, swallowing, hearing, balance and related disorders. I can't wait to get started," he continues.



Collaboration is key to Professor Bernard Rousseau, chair, Department of Communication Science and Disorders.

On the wings of a cicada

Vocal fold paralysis occurs when one of the vocal folds fails to close completely against the other. Patients may experience hoarseness, shortness of breath, even difficulty swallowing. There is a surgical solution: type 1 laryngoplasty.

But outcomes are not always satisfactory.

“During the surgery, a small implant is used to medialize the affected vocal fold to help restore optimal voice, swallowing and breathing function,” says Rousseau. “The challenge is that every patient’s anatomy is unique, and even highly skilled surgeons have difficulty determining the optimal size, shape and placement of the implant.”

Rousseau and a multidisciplinary team of scientists, engineers and surgeons envisioned a way to help surgeons create customized implants for each patient. It started when they took a lesson from Mother Nature.

Rousseau noticed a similarity between the way the wings of a cicada move and the movement of human vocal folds.

Leveraging the most current advances in micro-imaging, computational modeling and high-performance computing, the team is developing PhonoSim™, a surgical planning tool that will provide a customized solution that captures the specific features of the patient’s laryngeal anatomy to assist surgeons in predicting the optimal shape, size and position of the implant.

“Our vision is to create a pre-operative surgical planning tool that will improve not only surgeon and patient-based outcomes, but also the efficiency of the surgical procedure in order to reduce the overall cost of care and time necessary to complete the procedure,” says Rousseau.

Safety first

The process of communication is fundamental to human existence, particularly among those who use their voices for a living.

Teachers, singers, lawyers and telemarketers all use their voices for many hours throughout the day. As a result, they can become hoarse and develop phonotrauma, a condition arising from excessive and prolonged use of the voice. These individuals may ultimately develop vocal fold lesions that require surgery. Rousseau cites the singer Adele, who underwent vocal fold surgery for the removal of a polyp.

“Vocal fold healing is necessary for recovery,” says Rousseau. “But very little is known about the effects of vibration exposure on tissue repair.”

He is currently investigating the effects of vibration exposure on recovery of the vocal folds and the effects of tissue mobilization on post-surgical voice outcomes in order to develop improved guidelines for post-operative voice use.

“It appears that mobilization of tissues during the early stages of repair may actually facilitate healing and lead to better outcomes than prolonged tissue immobilization,” Rousseau explains.

As he continues to collect and analyze data, he hopes to establish occupational guidelines for safe voice use.

Rousseau notes that the Occupational Safety and Health Administration (OSHA) has established guidelines for the levels of noise that the human ear can safely endure, but there is nothing comparable for safe voice use.

“There is a critical shortage of information on the tissue response to vibration exposure. Nowhere else in the human body does vibration occur continuously and repeatedly on the order of 100 to 1,000 times per second,” remarks Rousseau. “Our goal is to determine the cellular and molecular events responsible for trauma to the vocal folds in order to establish guidelines that will be helpful to many professions and organizations.”



Dr. Rousseau and his interdisciplinary research team discuss opportunities to improve patient outcomes and a strategic vision for personalized medicine for an upcoming NIH grant submission.

Collaboration is key

“My overall vision includes strengthening CSD collaboration in the neurosciences, engineering, otolaryngology and across the various schools at Pitt and highly ranked programs in SHRS. Success of these research partnerships will require us to continue to leverage the outstanding clinical resources available at UPMC and the VA Pittsburgh Healthcare System,” says Rousseau. “There is already a rich collaborative spirit here.”

He cites the ongoing work between CSD Assistant Professor Will Evans and colleagues Patrick Doyle and Will Hula at the VA Pittsburgh Healthcare System. “This team received national recognition for their PARTNeR and PIRATE programs designed to make a difference in aphasia rehabilitation. They should be commended for leading the way and increasing access to care for this underserved patient population.”

Recently, Professor Emeritus Malcolm McNeil, Associate Professor Leming Zhou, Department of Health Information Management (HIM), Associate Professor Qi Mi, Department of Sports Medicine and Nutrition, Adjunct Professor Wiltrud Fassbinder and several colleagues throughout the country developed a web-based research data management system and statistical model to understand better the cognitive and linguistic communication disorders for people with aphasia due to stroke.

“Our goal is to understand how people with aphasia process language,” says McNeil. “Specifically, we want to determine how cognitive impairments in the areas of short-term memory, working memory and executive functioning impact their language and communication abilities.”

The study, with one of the largest samples of people with aphasia ever conducted at the VA, took place over a period of four years and encompassed four clinical sites: Temple University; the VA Northern California Healthcare System in Martinez, Calif.; the University of Washington; and the VA Pittsburgh Healthcare System. It consisted of a battery of computerized tests that measured the participants’ ability to follow simple and very complex listening and reading commands.

According to McNeil, the scientists measured response time and accuracy on a variety of different tasks. But the real challenge was managing massive amounts of data and computing factor analyses and structural equation modeling of these data.

“We collected approximately 20 hours of data on each of the 100 participants,” explains McNeil. “Now imagine 50 different tests, with tens of thousands of data points for each test!”

Mohammed Aldhoayan (HIM MS ’14, PhD ’18) helped to design, develop and maintain the tools for data integration, processing, management and analysis as part of his doctoral dissertation.

“We used different methods to collect data from participants, making sure that each method excelled at capturing a specific aspect that we were interested in,” explains Aldhoayan, who is currently assistant professor, Department of Health Informatics, King Saud bin Abdulaziz University for Health Sciences in Saudi Arabia.

“Although this helped us to build a comprehensive statistical model, processing and preparing the data for analysis was a huge challenge since each data file required customized algorithms to integrate, extract, validate and manage the data,” adds Aldhoayan.

Down the road McNeil believes the data management system and statistical modeling will have the potential to inform both theory and treatment.

“This is an excellent example of how health informatics and clinicians can work together to solve problems,” adds Zhou.

MOST OF US DON’T THINK TWICE ABOUT OUR ABILITY TO SPEAK, YET VOICE DISORDERS AFFECT APPROXIMATELY 7.5 MILLION PEOPLE IN THE UNITED STATES.

Let’s listen too.

In her work with the VA, CSD Professor Sheila Pratt investigates ways to understand the hearing problems of younger veterans who have experienced high-intensity blasts. “Many of these individuals complain of hearing issues, but their standard hearing test results are normal,” says Pratt.

The study takes on both a behavioral and physiological perspective as Pratt examines whether impairments to the auditory and cognitive systems contribute to the hearing problems reported by these veterans, and whether mild hearing aids reduce their symptoms.

“We hope to provide support for the development of a battery of tests that will lead to better diagnosis and treatments for this particular group of veterans,” says Pratt. ■





MISSION TO MARS

VIA ANTARCTICA, HOUSTON AND PITTSBURGH

When NASA began preparing for its journey to the red planet, it enlisted the help of researchers to determine what happens when an individual is forced to spend several months in isolated and confined environments. They examined the similarities between astronauts on Mars and individuals who work for extended periods of time in the extreme conditions of Antarctica.

Working with the National Science Foundation's United States Antarctic Program, scientists from the University of Houston and the University of Pittsburgh collaborated to collect data that highlights the potential for psychological symptoms and conditions that degrade crew performance, increase conflict and jeopardize mission success.

Assistant Professor Chris Connaboy, Department of Sports Medicine and Nutrition (SMN), is part of the research team developing new metrics of behavioral risks as they relate to physical health in extreme environments.

As part of this work, Connaboy is helping to synthesize existing knowledge of the psychological and behavioral symptoms experienced in space and other extreme environments, and then developing a comprehensive checklist of symptoms that will be monitored among different cohorts, both on Antarctica and in simulated missions at the Johnson Space Center.

"Our study will extend previous research by exploring relationships among psychological health, sleep loss and dysregulation, biomarkers of stress and performance-based outcomes," notes Connaboy.

Operating in isolated and extreme environments requires crew members to spend prolonged periods in confined space with the same people. This increases the likelihood of interpersonal conflicts that may have a negative effect on crew cohesion and, ultimately, mission success.

"We know from previous studies that sleep deprivation is associated with emotional regulation," reports Connaboy. "And whether individuals are aware or not, emotion shapes human behavior, reactions, decisions and experience.

"Therefore, it is vital that we study the combination of these effects to fully understand the potential risks facing our astronauts, so that we can put in place a series of countermeasures designed to mitigate them," he continues.

Rehabilitation Science doctoral student Alice LaGoy (MS '17), who is studying the interaction between sleep and performance, says the unique design of the study allows for the collection of physiological and psychological measures to help explain underlying factors that may be contributing to these behavioral changes.

"We can study these behaviors throughout a night of sleep deprivation," says LaGoy. "The behavioral changes we capture may relate to an individual's propensity to take unnecessary risk, their ability to judge whether a certain action is risky, and other aspects of cognitive function.

"These behavioral changes, working in extreme environments or under conditions of sleep deprivation, may have significant implications on operational performance and on operator safety," LaGoy adds.

Kevin Conley, SMN chair and associate professor, notes, "Human performance is not limited to just the physical characteristics of an individual. Variables such as cognitive, physiological and psychological health play just as critical a role. With this particular study, Dr. Connaboy and his doctoral students here at Pitt and collaborators at the University of Houston are seeking to determine the extent to which psychological readiness can determine one's ability to adapt and execute tasks in extreme environments."

According to LaGoy, collaboration elevates the level of science being conducted at both institutions.

"Across different universities, there are experts in different fields and investigators with different specialties and experiences," says LaGoy. "Being able to work with investigators who may bring different perspectives to the table enhances the quality of the science we can conduct.

"WE KNOW FROM PREVIOUS STUDIES THAT SLEEP DEPRIVATION IS ASSOCIATED WITH EMOTIONAL REGULATION, AND WHETHER INDIVIDUALS ARE AWARE OR NOT, EMOTION SHAPES HUMAN BEHAVIOR, REACTIONS, DECISIONS AND EXPERIENCE. THEREFORE, IT IS VITAL THAT WE STUDY THE COMBINATION OF THESE EFFECTS TO FULLY UNDERSTAND THE POTENTIAL RISKS FACING OUR ASTRONAUTS, SO THAT WE CAN PUT IN PLACE A SERIES OF COUNTERMEASURES DESIGNED TO MITIGATE THEM."

"Working with investigators from the University of Houston who have expertise in different fields allows us to look at the interaction between different psychological, physiological and behavioral parameters rather than looking at these parameters in isolation," she continues.

Although this study is in its final stages, the implications are far-reaching. As NASA prepares for future missions, they will apply the knowledge gained from the research to improve astronaut safety. At the same time, medical personnel in polar environments will be better prepared to treat individuals who spend extended periods of time in extreme conditions.

Conley adds, "This type of study illustrates the array of expertise of the faculty in our Neuromuscular Research Laboratory and our agility in being able to address important research questions surrounding human performance beyond those associated with typical sports medicine topics.

"I believe the findings of this study will contribute significantly to explaining the capabilities of the human system and further highlight the range of performance variables our researchers are well positioned to examine," he concludes. ■



STRATEGIES FOR LIVING WITH MILD COGNITIVE IMPAIRMENT

It happens to everyone at some point in time. You forget where you put your keys. You walk into a room and wonder, “Why was I coming in here?”

According to Juleen Rodakowski, assistant professor, Department of Occupational Therapy, what some people call “senior moments” are actually quite normal.

“All adults experience temporary lapses in memory,” says Rodakowski. “As people age, there are declines in the processing speed of our brains. But with some people, there are more distinct changes that create barriers to performing activities of daily living.”

Mild Cognitive Impairment (MCI) is a diagnosis that bridges the gap between healthy cognitive aging and dementia. Although scientists predict that the number of people with cognitive impairments will triple by the year 2050, only a small percentage of them will progress to dementia. Rodakowski is committed to helping those in the early stages of decline, and examining how rehabilitation can maintain their quality of life.

Individuals with MCI have difficulty with challenging cognitive tasks, such as managing their finances or medications. They may also have trouble focusing on more than one task at a time. These impairments often lead to lack of participation in social activities they used to enjoy.

“For example, someone with MCI may start to prepare a meal but become so distracted by a phone call that she forgets that she has a boiling pot on the stove,” explains Rodakowski. “Another may take the initiative to join a club, but forget who he met at a meeting and what he promised to contribute to the group, so he stops going.”

Through her research, Rodakowski is exploring ways to better identify older adults with MCI. She then develops strategies and interventions that will enable them to complete tasks and meet their personal goals. Rodakowski uses a home-based model that is very patient-centered.

Through a standardized assessment tool, Rodakowski and other trained occupational therapists measure the number of prompts or cues a person needs to complete a cognitively challenging daily activity.

“With 80 percent accuracy, we can discriminate cognitive status between normal cognition and MCI by looking at these daily activities,” she continues. “We can then employ rehabilitation techniques that will help them become better equipped to complete tasks that are important to them.”

One of the interventions Rodakowski examines is strategy training. During this four-step process, an occupational therapist helps the individual examine the challenges he or she faces in order to participate in certain activities. Together they develop alternative ways to engage in an activity. Eventually the individual completes the activity and then reviews it.

An example of a component in strategy training might be that a client decides to write specific information on a calendar or in a notebook so he or she has a visual reminder of appointments, names and other important information. When such pragmatic interventions become routine, they allow individuals to return to activities they enjoy.

Kate Golias (MOT '13) worked with Rodakowski as a study coordinator and research therapist. She has seen individuals with MCI flourish when they are given the components of strategy training.

“Strategy training gives them back so much of what has started to slip away,” says Golias. “They are able to look at the activity that has become difficult, and find alternative ways to participate in it. After strategy training, I’ve had participants begin to try new activities that support their healthy aging.”



Intervention therapist and graduate student researcher Chao-Yi Wu agrees. “There were ‘Aha!’ moments when the participants realized they had given up many activities they used to do and enjoy. When they worked with the therapist to collaboratively identify strategies to make things work again, they were able to sustain and improve their cognitive functioning.”

According to Rodakowski, behavior only changes if the individual with MCI wants it to change. “The goal of the occupational therapist is to guide and support the client, and help him reach his personal goals.”

Rodakowski recently recruited participants for a new study that utilizes positron emission tomography (PET) scans to study the motivational networks in the brain. “We will establish a baseline for individuals and do a PET scan to see how the motivational networks are associated with response to strategy training.”

“We are not expecting to change the pathology in the brain,” she continues, “but we believe we can change behavior and help older adults with MCI maintain engagement in daily living. And that leads to a better quality of life.” ■



FINDING THE SWEET SPOT

For people with aphasia, finding the right word comes at a price. “Sometimes the word comes; sometimes it does not,” says Dr. William S. Evans, assistant professor, Communication Science and Disorders (CSD).

“When this happens, how long should a person try to produce the word they have in mind?” he asks. “If they rush or try to force it, they are more likely to make a mistake. But slowing down too much does not always help either, and can result in unnecessary frustration.”

In his Language Rehabilitation and Cognition Laboratory, Evans probes the cognitive and emotional factors involved in language use and recovery. In a new study, he hopes to implement a computer-based treatment to help people with aphasia find their own “sweet spot” between speed and accuracy following stroke or brain injury.

The reason is simple. According to Evans, “When patients find their own ‘sweet spot,’ the point where they approach their own best-possible accuracy without spending too much extra time trying to get there, they will feel less stress, complete more successful drills during language therapy and be more likely to communicate better with family and friends.”

Evans, who holds a joint appointment as a speech-language pathologist at the VA Pittsburgh Healthcare System (VAPHS), is currently testing his treatment on ten veterans and other adults with aphasia. As part of the study, they will be assessed prior to treatment, then participate in 25 hours of intensive treatment over a period of two to four weeks. After treatment, they will receive two follow-up assessments. The entire process takes approximately three months.

“The goal is to minimize errors while maximizing word retrieval effort during language training, since there are good reasons to believe that this will improve treatment outcomes,” Evans explains.

Evans’ computational model estimates the patient’s optimal speed-accuracy balance and provides individualized feedback in a simple computer-based language game. The treatment is divided into three steps. In the first step, a patient sees a picture of an object—an apple, for example. The patient is asked to name the object, and then receives feedback about the speed and accuracy of his response.

During the second step, the patient is given questions about the object that force him to think about the word’s meaning. “Is this a fruit? Does it grow on trees?” Activating word meaning helps the patients make stronger semantic connections, which helps them successfully produce words. Again, the patient receives feedback about speed and accuracy.

In the third step, patients are asked to name the object again, after activating the word meaning by answering the questions. At the end of every round, the number of “sweet spot” points they earned is shown on the screen. Patients earn the most points when they learn to balance their own speed and accuracy.

Yina Quique, a Fulbright scholar and third-year CSD doctoral student, serves as the lab manager for Evans. Previously a speech pathologist and music therapist in her native Colombia, Quique is developing the stimuli for the treatment program that Evans has created.

“To develop these stimuli, we have selected normalized pictures from different databases and matched them in characteristics such as their length, how frequently they’re used, the age that they are first learned, and so on,” says Quique.

She reports having approximately 250 treatment pictures that will be used in the treatment exercise. For each picture, they have created 12 “yes” or “no” questions that will be used to activate word meaning and aid in word retrieval.

While every patient is different, and there are many variables in their conditions, Evans believes that every individual can find his own “sweet spot” through this kind of adaptive, drill-based training.

VAPHS Speech Pathologist William Hula agrees. He serves as primary mentor on Evans’ study and sees great value in the work.

“Most current treatment programs for word production in aphasia focus on the content or the words to be produced,” observes Hula. “Dr. Evans’ research is novel and important because it asks people with aphasia to consider the amount of time or effort they are strategically allocating to producing a given word, and does so in a very sophisticated way.”

In the future, Evans predicts his computer-based model will be used successfully in telemedicine as well as in the clinic.

“Optimizing the amount of effort or time that a person spends on any given item can help to maximize the efficiency of language therapy,” says Hula. “It may also have positive effects on how people with aphasia communicate in everyday situations.” ■

Dr. Evans helps a patient with aphasia find the “sweet spot” between speed and accuracy.





MANAGING THE FALLOUT FROM CONCUSSION.

Concussion.
It's a hot topic among professional athletes and a constant worry for parents of active children.

According to the Brain Injury Research Institute, an estimated 1.6–3.8 million sports- and recreation-related concussions occur in the United States every year. Countless other individuals are diagnosed with concussions following car accidents and other types of trauma, or combat and military training exercises.

A concussion is a type of traumatic brain injury that can cause a range of cognitive, physical, emotional and sleep-related problems that include headaches, dizziness, short-term memory loss and mood swings. Although most concussions are temporary, timely treatment leads to the most favorable outcomes.

Department of Physical Therapy (PT) Professor Susan Whitney and Associate Professor Patrick Sparto have been studying balance, dizziness and other disorders related to concussion for more than 15 years. “The average length of time for vestibular rehabilitation is four to five weeks,” notes Sparto. “But no two concussions are the same—and no single treatment protocol works for everyone.”

Whitney and Sparto hope to optimize treatment protocols by studying the intensity and frequency of therapeutic exercises for people with concussions.

“THE KEY TODAY IS MANAGING CONCUSSION—NOT JUST WAITING AND WATCHING, AS WAS OFTEN THE CASE IN THE PAST.”

“We know, for example, that non-concussed individuals with vestibular disorders respond well when they do their prescribed exercises three times a day,” says Sparto. “But we are interested in what works best for concussed individuals with those same symptoms.”

“If we prescribe a higher frequency of exercise or more intense exercise, will concussed patients get better faster? Or will it have the opposite effect?” asks Whitney.

By adding knowledge to the field, Whitney and Sparto aim to establish new clinical guidelines that will improve the cognitive as well as physical health of patients.

Sparto points out that concussion impacts cognition in a variety of ways. “Patients can experience confusion or difficulty solving problems.

“Research shows that when people with concussions are asked to perform dual tasks, like counting backwards by three while trying to balance under difficult conditions such as standing on a foam surface, their performance declines. We want to explore how much exercise is needed for optimal performance,” he continues.

Physical Therapist Anne Mucha (MS '95), vestibular rehabilitation coordinator at the UPMC Centers for Rehab Services and Sports Medicine Concussion Program, frequently collaborates with Sparto and Whitney in an effort to improve patient outcomes.

“The key today is managing concussion—not just waiting and watching, as was often the case in the past,” says Mucha. “Although physical therapy does not treat cognitive issues in and of themselves, we are very much concerned with treatments that lead to a full recovery—cognitive as well as physical.”

“Treatment of concussion requires a multi-disciplinary team of experts,” adds Whitney. She says that the team looks at cognitive symptoms from different perspectives. They ask the patient about memory loss and assess problem-solving skills.

“Although we are physical therapists, when we treat patients with concussion, we rely on data from other professionals such as referring physicians, psychologists, athletic trainers and speech and language pathologists,” says Whitney.



Anne Mucha observes a concussion patient during a vestibular physical therapy session.

At the UPMC Sports Medicine Concussion Program, approximately 15,000–20,000 patient visits are conducted each year by a multi-disciplinary team. As part of their comprehensive treatment, they are given the Vestibular Ocular Motor Screening (VOMS) assessment, which was developed through the collaborative efforts of Mucha and Pitt faculty, alumni and graduate researchers, including Drs. Micky Collins, Joseph Furman, Anthony Kontos, Gregory Marchetti, Cara Troutman-Enseki and RJ Elbin.

The VOMS evolved from an earlier tool, the Vestibular Screening Form, which Whitney and Sparto helped to create. “We’re very proud of the VOMS because it helps us characterize different types of concussion,” says Mucha. “It is not only used by rehabilitation clinicians across the country, but will also be used by the U.S. military as a quick, on-site assessment tool for combat soldiers.”

According to Sparto, “Once physical factors such as imbalance, blurry vision or dizziness are resolved, the cognitive issues begin to resolve as well.”

“As we learn more about the optimal ‘recipe’ for frequency and intensity of exercise for people with concussions, we will be able to treat physical and cognitive deficits better and help individuals make a full recovery,” he adds. ■



Evan C. Knutson uses the PLANS tool to help a client complete a cognitively challenging everyday task.

PLANS FOR INDEPENDENT LIVING

Individuals with healthy cognitive skills take many things for granted. But the ability to plan, manage time, control emotions and complete tasks can be challenging—if not impossible—for individuals with traumatic brain injury (TBI). To further complicate the issue, there's no definitive treatment protocol that ensures a person with TBI will be able to make a successful transition back into the community.

“There are so many variables,” says Evan C. Knutson, a certified rehabilitation counselor and doctoral student researcher in the Clinical Rehabilitation and Mental Health Counseling (Counseling) program. “Every individual with TBI exhibits different physical and emotional complications that affect executive functioning.”

That is why Knutson is dedicated to helping clinicians determine cognitive functioning in the real world. With support from a grant from the Council on Brain Injury, he recently developed the Planning in Life and Adapting to Novel Situations (PLANS) tool, a naturalistic instrument that fills an important gap.

“Traditional psychological and neuropsychological assessments are typically used to identify impairments associated with brain injury,” says Clinical Neuropsychologist Michael McCue, professor and director of the Counseling program, who serves as Knutson's PhD advisor and chair of his dissertation committee. “Unfortunately, these tests lack ecological validity, or the capacity to identify how persons might respond to naturally occurring demands and situations that they face.

“Evan's work is a scientifically rigorous attempt to develop a tool that will identify the functional, everyday impact of brain injury,” McCue continues.

Knutson says the PLANS tool is designed to include open-ended, problem-solving demands that are similar to the task demands that individuals face in independent living and community environments.

The assessment takes place in a clinical setting where a community rehabilitation clinician such as an occupational therapist or a vocational rehabilitation professional can observe the planning process a client goes through to complete a cognitively challenging everyday task.

For example, an individual may be asked to plan out the steps to prepare a three-course meal for himself and a friend, and to pick up a medication for the friend. He will need to select a recipe from a cookbook, budget the cost of the meal, make a trip to the grocery store to purchase the ingredients and pick up the friend's medication from the store pharmacy.

To assist with the planning, Knutson says the materials that are required to complete the task are laid out on a table space. They may include a cookbook, a map of the grocery store, a catalogue of ingredient prices and aisles, an audio player with the voicemail from the pharmacist and an envelope containing the money used to budget the dinner and medication.

“EVAN'S WORK IS A SCIENTIFICALLY RIGOROUS ATTEMPT TO DEVELOP A TOOL THAT WILL IDENTIFY THE FUNCTIONAL, EVERYDAY IMPACT OF BRAIN INJURY.”

The assessment is timed, and is completed in approximately 45 minutes. The clinician can evaluate the plan execution by a series of rubrics and guidelines designed to identify cognitive performance in the following domains: Plan Accuracy, Adherence to Generated Plan, Strategic Behavior, Rule Following, Plan Execution Speed and Accuracy.

“The knowledge gained from such an ecologically valid tool is expected to provide persons with TBI and their clinicians detailed and reliable information upon which to make decisions about important community re-entry matters,” adds McCue. “They will identify the individual's capacity to live independently or return to work, and to identify specific goals for cognitive rehabilitation intervention.”

It was important for Knutson to follow strict scientific guidelines in the development of the PLANS tool. He conducted interviews with rehabilitation professionals to determine the types of challenges that individuals with TBI face on a day-to-day basis. “Including stakeholder input makes any study so much more impactful,” says Knutson.

In addition, he did a scoping literature review to extract psychometric data from other naturalistic instruments.

Occupational Therapist Jessica Kersey, who is also a graduate research student working on her PhD, assisted Knutson with data extraction. “Evan and I each extracted data separately from the articles he included in his review, and then we looked for discrepancies,” reports Kersey. “This was to reduce the risk of errors in data extraction.

“I appreciate Evan's emphasis on ecological validity,” Kersey continues. “It's very important in cognitive assessment and often is under-valued.”

This fall, Knutson began a pilot study using the PLANS instrument, recruiting clients with mild to moderate brain injuries who are at least six months post-trauma. “Our goal is to identify levels of cognitive functioning as they apply to completing real-world tasks. With that information, clinicians can develop strategies and interventions that will contribute to an individual's rehabilitation, and help them regain their independence.” ■



FORMULA FOR EVIDENCE-BASED PRACTICES.

The whole is greater than the sum of its parts. That's especially true when Health Information Management (HIM) Associate Professor Leming Zhou collaborates with Communication Science and Disorders Associate Professor Katya Hill.

Together, they developed a new mobile app that serves as a virtual therapist and speech assistant for individuals with communication disorders.

"In the past, patients with communication disorders used dedicated Augmentative and Alternative Communication (AAC) devices for communication and language exercises, but they had a number of limitations," says Zhou. "For example, patients' language performance data was not readily available to clinicians. To access and analyze the data, a patient needed to take the dedicated AAC device to the clinic. A clinician had to download the data and separate the patient's speech from other data, and then complete a very time-consuming analysis to determine if the patient's therapy needed to be adjusted.

"After a comprehensive literature review and feedback from both patients and clinicians, it became clear that the old technology was not an effective way to improve communications outcomes," Zhou continues.

The new mobile AAC app, labeled EuTalk, uses the sophisticated mobile technology to realize features found in dedicated AAC devices. It captures high-quality and clinically relevant patient data in real time and separates it from other data, including sentences created by other people. Embedded in the app are training materials such as games and practice lessons so that individuals with communication disorders can improve their communication skills at home.

The research-based, high-frequency or core vocabulary in the app includes words used in daily conversations across different circumstances. Patients can enter other words through an alphabet page. They can also customize their experience by changing settings or adjusting training materials to meet their specific needs.

Erh-Hsuan Wang (PhD '16) helped to design and develop the platform, and to evaluate the feasibility and usability of the system as part of her doctoral dissertation. And Szu-Han Kay Chen (PhD '17), in her doctoral dissertation, evaluated the effectiveness of treatment with patients with aphasia using EuTalk.

Wang says with the advances of today's technology, it is relatively easy to collect all kinds of data, but that is not enough. "It becomes really important to be able to identify clinically relevant data, and to convert these data into meaningful and useful information for the target users."

EuTalk immediately analyzes the patient-generated data and produces a performance report so the user can easily see his or her progress in the training lessons over a period of time.

Clinicians have access to patients' language performance reports via a secure web portal. They can see how long their patient spent on the training lesson, whether or not they are improving, and how treatment therapy should be adjusted, even before the patients show up in the clinic.

"All of these features make it possible for people with aphasia, cerebral palsy or other speech-language disorders to achieve their full potential in language communication," says Zhou.

Hill, who has spent nearly three decades working with individuals with communication disorders, says the mobile app is raising the standard of care. "Clinicians need precise measurements to determine the effectiveness of treatment, but to date standardized methods of calculation have not been implemented for real-time feedback," she explains.

"For example, clinicians may not use precision calculations to report the communication rate of patients," she continues.

"The new mobile app has the ability to standardize the measurement of speech and language using a language activity monitor (LAM) data logging feature that we use in our lab at Pitt. Standardization improves measuring the effectiveness of treatment and being able to compare reliable and valid results across published studies."

EuTalk is an example of how collaboration leads to evidence-based practices in both disciplines.

"Clinicians like Dr. Hill understand the challenges that their patients face and what information they need to change their treatment strategies," says Zhou. "On the other hand, computer scientists like myself and my colleagues in the HIM department know how to develop health information technologies. Working together, we can improve health service accessibility and quality, and also reduce health care costs."

Wang agrees. "Collaboration helps us to understand the clinicians' needs and their clinical requirements instead of looking at a problem only from the HIM perspective," she says. "This helps us develop better technologies which will support clinicians in their clinical service delivery."

In the future, Zhou and Hill envision this technology being used in telemedicine.

"When a patient lives in a rural or remote area, it's difficult—sometimes even impossible—to have face-to-face contact with a clinician. This technology that includes LAM data logging and reporting features can provide a tremendous service," notes Hill. "It's a way to bring the clinician to the patient, providing customized intervention strategies and helping them improve their ability for meaningful communication." ■

"AFTER A COMPREHENSIVE LITERATURE REVIEW AND FEEDBACK FROM BOTH PATIENTS AND CLINICIANS, IT BECAME CLEAR THAT THE OLD TECHNOLOGY WAS NOT AN EFFECTIVE WAY TO IMPROVE COMMUNICATIONS OUTCOMES."

Among other features, the EuTalk app links essential vocabulary to a connected page with related vocabulary.





Learning to walk with a prosthetic limb takes time, energy and a healthy dose of optimism. The patient must regain his strength and confidence while he gets comfortable with wearing and using a prosthetic device. At first, he may feel awkward, perhaps even frustrated. He may also experience pain.

A physical therapist can assist with gait training. But thanks to a multi-disciplinary collaboration, patients are now able to use a wearable technology system to teach themselves to move better.

Krista Kutina, physical therapist and pre-doctoral fellow in the Rehabilitation Science PhD program, says she has always been fascinated by all aspects of gait and walking problems. “As soon as the foot hits the ground, I’m interested,” says Kutina.

When Professor David Brienza, associate dean of Research at SHRS, learned of Kutina’s interest, he introduced her to Prosthetics and Orthotics (P&O) Assistant Professor Goeran Fiedler. Together they embarked on the Movisu-Fit research project.

Movisu-Fit utilizes a wireless sensor that is implanted in a lower leg prosthesis. The sensor captures sophisticated data from the limb itself while the participant is walking. It immediately relays the information back to the participant through smart glasses and lets him know if he is using his limb correctly.

“So much of what we do as physical therapists is subjective,” observes Kutina. “We may notice a problem with gait, but patients often have a hard time feeling the incorrect action. With the new technology, they get real-time visual feedback so they can see for themselves and make adjustments.

“The effect of their corrections then becomes their own feedback,” she continues. “The patient’s sense of a new normal becomes more natural, and this can speed improvements as well as help avoid injuries down the road.”

“The technology’s ability to provide feedback on gait directly to the users in real-life situations is a huge advantage over current practices and promises to improve outcomes,” says Brienza.

Kutina says it also motivates patients.



A STEP IN THE RIGHT DIRECTION.

“WE MAY NOTICE A PROBLEM WITH GAIT, BUT PATIENTS OFTEN HAVE A HARD TIME FEELING THE INCORRECT ACTION. WITH THE NEW TECHNOLOGY, THEY GET REAL-TIME VISUAL FEEDBACK SO THEY CAN SEE FOR THEMSELVES AND MAKE ADJUSTMENTS.”

One participant in the study reported having increased confidence because she could see when her gait was “falling apart” and she needed to take a break. With that kind of information, the patient realized she could go out and walk for exercise—something she thought might no longer be possible.

Another participant, a former Division I football player, liked the simplicity of the device and the potential for future applications. “I believe this technology could possibly be programmed into a cell phone,” says Kutina.

For now, the Movisu-Fit project has captured the attention of professional organizations such as The Foundation for Physical Medicine and Rehabilitation, the American Academy of Orthotists and Prosthetists (AAOP), and the American Orthotic & Prosthetic Association (AOPA) as well as the International Society for Prosthetics and Orthotics (ISPO). It also won the grand prize in the 2017 PInCH competition, which was created by the Clinical and Translational Science Institute at the University of Pittsburgh to foster innovative solutions to challenging health problems.

In July, the innovation’s inventors were awarded additional funding by the Center for Medical Innovation in Pitt’s Swanson School of Engineering to translate the project to other populations who could benefit from mobile training.

“Krista has been able to combine her clinical expertise in physical therapy and her passion for lower extremity biomechanics with the engineering and clinical research expertise of the faculty and physicians both within and associated closely with the Department of Rehabilitation Science and Technology to successfully create an innovative gait training system for people using lower limb prostheses,” notes Brienza.

“The multi-disciplinary aspect of Krista’s research is invaluable,” agrees Fiedler. “Because it was based on many disciplines, from biomechanics and physical therapy to computer science and engineering, as well as physical medicine and rehabilitation, it has expanded the knowledge of prosthetists, giving these professionals a much different and broader perspective on gait training.” ■



RESEARCH ENHANCES P&O EXPERIENCE

“Academic research plays a significant role in advancing any profession,” says Goeran Fiedler, assistant professor, Prosthetics and Orthotics program. “The P&O field is no exception. We constantly strive to improve clinical practice and patient outcomes.”

In a recent study, Fiedler examined the learning curve that patients must go through to adapt to using a new prosthetic device, and then quantified the process in mathematical terms. With a recently awarded grant from the Orthotic and Prosthetic Education and Research Foundation, he plans to expand his current research to include data collections in different sub-populations and over longer periods of time. The goal is to arrive at normative values so clinicians can streamline the process of optimizing prosthesis prescriptions and fittings.

In addition, through their required capstone projects, P&O students are challenged to conceptualize an idea and support it with comprehensive research.

For example, students Lance Valentine and Connor Morris recently collaborated on research that immersed patients with transfemoral prosthetic devices in a virtual environment to mitigate the Hawthorne effect, a reaction that causes people to change their behavior when they are being observed by clinicians.

Fellow student John Peter Zenger reported on levels of clinicians’ self-efficacy based on their confidence in their abilities and years of experience compared to their education level.

“We have approximately 20 different research topics being examined by students at any given time,” continues Fiedler. “The topics range from technology and patient care to clinician effectiveness. Many are cutting-edge ideas that lead to invitations to present at regional and national conferences.”



THE THINKING BEHIND CLINICAL DECISION MAKING.

On television, the drama is high. First responders arrive on the scene just in time to make a snap decision that saves a patient's life. We all breathe a sigh of relief. And tune in next week when it happens all over again.

But according to Dr. Paul Paris, professor, Department of Emergency Medicine (EM) in Pitt's School of Medicine, making the best clinical decision doesn't just happen. It involves a wealth of complex thinking—and some biases.

In his course, Cognitive Psychology of Decision Making, Paris helps students in SHRS's EM program gain a better understanding of the decision-making process in order to avoid errors and improve patient outcomes. The primary text for the course is *Thinking, Fast and Slow*, by Nobel Prize winner Daniel Kahneman.

It presents a dual theory of decision making. "Medical practitioners use intuitive reasoning—a shoot-from-the-hip approach—as well as analytical reasoning—a slow, deliberate and cautious approach," says Paris.

"One way is not always the right way," he continues. "There's a fine balance between thinking too fast and thinking too slowly."

Paris says there are also conscious and unconscious biases that interfere with sound clinical judgment.

"Biases are not just about race, gender or economic class," notes Paris. "As first responders, we may make snap decisions when we walk into a particularly hectic environment. Maybe we suspect some underlying problem like drugs or domestic abuse that influences our judgement about the patient's current condition. Perhaps we're stressed out about something in our personal lives. Or maybe we are simply overly tired or hungry, and we'd like our shift to end."

According to EM Program Director and Associate Professor Thomas Platt, "When students become more aware of all of the factors that impact their thinking, they become better prepared to move into roles that require them to consistently make sound clinical judgements."

Paramedic and EMT Instructor Aryana Jones (BS '18) says this was one of the most influential courses that she took during her senior year of the Emergency Medicine program. "At first, many of the biases Dr. Paris discussed, such as fatigue, seemed inconsequential. But I soon realized when working the night shift on an ambulance and other jobs during the day, that fatigue would certainly be a major factor. Mentally replaying Dr. Paris' advice to be consciously aware of this bias and not letting it affect patient treatment has helped me through some pressure situations."

Paramedic Stephen Worrall (BS '17) agrees. "It is very easy to get engrossed in a culture or into a call that sets you up for failure. This course allowed me to be able to identify some of those 'red flags' that could cause me to falter in judgment.

"It also made me more aware of the different ways to think about a patient's condition and what could be causing it," Worrall continues. "This allows me to render more thorough, and potentially more accurate, patient care."

As part of the coursework, Paris and his students hold weekly discussions about recent cases. They talk about what they were thinking when they were on the call, what situations may have interfered with their clinical decision making, and what they could have done differently to avoid errors or improve outcomes.

"In emergency medicine, there's very little feedback, so it's difficult for providers to evaluate their judgment," says Paris. "In this course, students get feedback, both from me and from other students."

"The most valuable thing I learned throughout this course was the pathways in which medical professionals

make decisions and aspects of ourselves and our work environments that affect that decision making, both in positive and negative ways," reports Jones. "When we are aware, we can work to enhance or counteract those influences in order to provide the highest level of patient care."

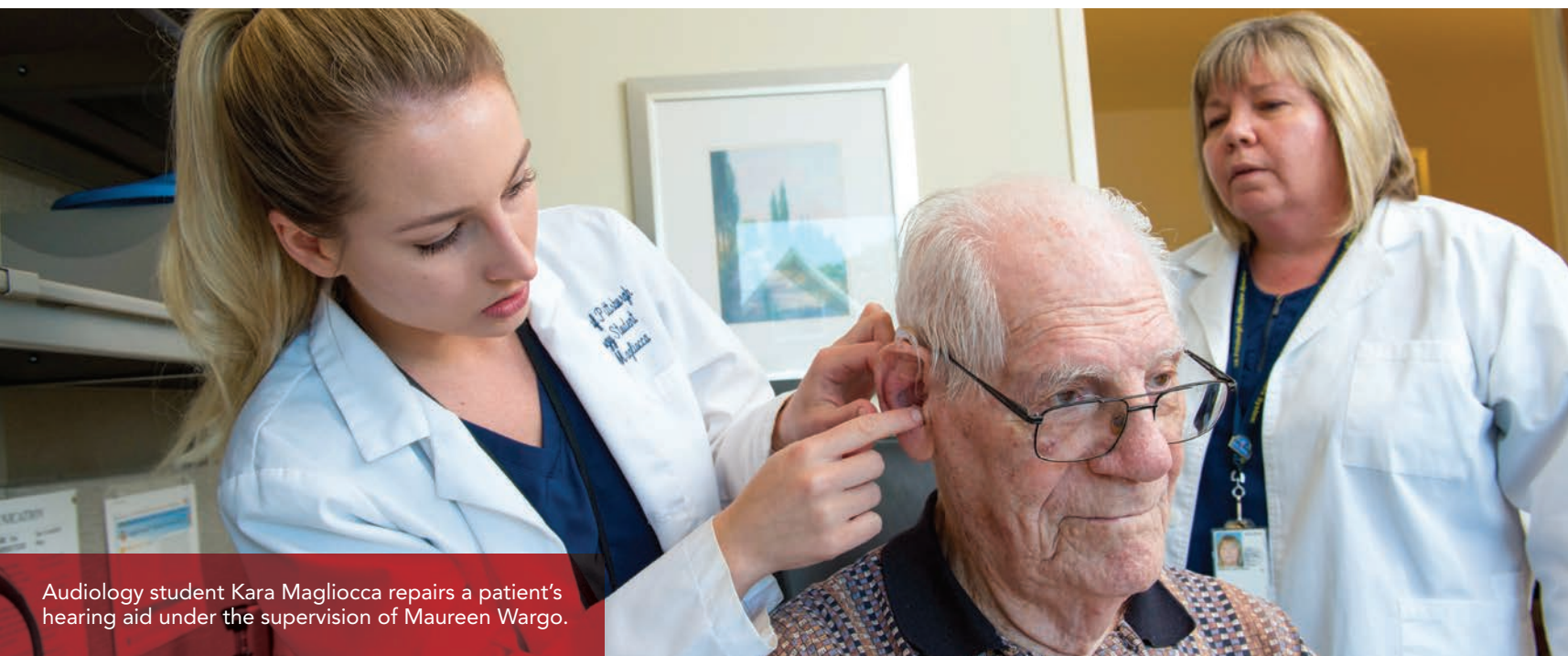
"I learned to never go into a call or into a patient interaction thinking that it is going to be 'typical'," adds Worrall. "When we start to lose focus on our goal, that is when we are most likely to make a mistake that can potentially lead to a detrimental patient outcome."

"The goal of any undergraduate education is to teach students how to think," says Platt. "What's unique about Dr. Paris' course is that he challenges his students to think about what they're thinking, and how to overcome biases they may not even realize they have.

"When our EM alumni move on to graduate or professional programs, they will already have great clinical thinking skills," he continues. "This will make them even better clinicians." ■



Dr. Paris looks on as Aryana Jones supervises EM students during the Cognitive Psychology of Decision Making course.



Audiology student Kara Magliocca repairs a patient's hearing aid under the supervision of Maureen Wargo.



Speech-Language Pathology student Madison Ward conducts routine tests with supervisor Christine Matthews.

THE REAL WORLD

Veterans, more than any other population, experience a variety of communication disorders that impact their health and overall quality of life. Many live with tinnitus or auditory processing or vestibular disorders. Others require aural rehabilitation, cochlear implants, treatment for aphasia, swallowing disorders and cognitive impairments, as well as other ongoing therapies.

At the VA Pittsburgh Healthcare System (VA), students in the Doctor of Audiology (AuD) program and the Master of Speech-Language Pathology (SLP) program gain rich clinical experiences that span the entire course of their graduate education.

During the summer term, SLP student Emily Brown spent one day a week at the VA. She was impressed with the teaching style of her preceptor, Ronda Winans-Mitrik. “Whenever I asked a question, she let me try to answer it myself first, instead of just providing the answer,” explains Brown. “This helped me to develop my critical thinking skills, and also learn to trust myself a little more.

“My instructor’s expectations challenged me to really synthesize any observation I was making about the patient, and make clinical decisions about what to do next,” Brown adds. “These are the kinds of things—on-the-spot thinking and interpreting—that can’t be taught in a classroom.”

“All clinical instructors focus on helping students translate their didactic knowledge into sound clinical decisions,” says VA Speech Pathologist Geoffrey Fredericks. “They also help students see the integration of services across various medical disciplines.”

According to VA Speech-Language Pathology Program Supervisor Christine Matthews (CScD ’10), education is an important part of the mission of the VA. “We provide a unique environment to care for the individual needs of our veterans,” notes Matthews. “We want students to learn that we’re not just treating the physical conditions of the veterans, but we also care about their emotional well-being.”

Madison Ward (MS ’18), who completed her first rotation at the VA in 2016, just started her year-long clinical fellowship there. “The VA is a great place to expand the knowledge of an SLP, especially a recent grad,” says Ward. “We have so many opportunities to develop clinical skills, and to diagnose and treat aphasia, motor speech disorders and cognitive-communication impairments.”

Ward notes that she receives clinical instruction from multiple employees at both VA campuses. “They all have different teaching and mentoring styles, which provides me with the opportunity to learn from some of the best minds in our field, but in diverse ways. Their emphasis on mentorship is what makes this fellowship extraordinary.”

AuD student Julia Slifko (MA ’18) has similar praise for her VA supervisors. “My preceptor encouraged me to make my own decisions and create a timeline for the day. She allowed me to have 100 percent hands-on training, trusted me, and was always happy to help me when needed,” says Slifko. “In addition, she asked questions that challenged my skill level and helped me understand the bigger picture in terms of what was best for the veteran.”

According to Audiology Supervisor Maureen Wargo (BA ’82, MBA ’96), the VA audiologists work hard to have students internalize the concept of veteran-centric care. “We encourage them to think outside of the box to identify and implement novel solutions to often complicated hearing problems.

“Throughout their training, we coach students to really listen to their patient to determine where the patient’s greatest communication challenges occur,” she continues.

“Many veterans experience dexterity, cognitive and emotional challenges,” reports AuD student Kara Magliocca (MA ’17). “The only way to truly learn how to provide the best care for these patients is to interact with them on a daily basis and develop strategies for helping them.

“For example, many elderly veterans have dexterity problems,” she continues. “To compensate for this, there are many tips and tricks I can provide to help him or her best wear and care for their hearing aids. I have learned these tricks by observing my preceptors and then utilizing them in my own practice.”

Pitt AuD students frequently run the VA’s Hearing Aid Repair Clinic—an experience that Taylor Hill (BS ’16, MA ’18) finds unique. “Our primary job is to triage the hearing aids,” says Hill. “On a daily basis, I usually repair between six or eight hearing aids.

“Although I learned a lot about hearing aids and how they work from this placement, I also learned how to be a valuable employee and a good coworker. Although not directly audiology related, they are invaluable skills,” Hill adds.

“Many of the audiologists at VA Pittsburgh Healthcare System are Pitt graduates,” says Wargo. “Their work as students and externs allows us to see the skills and attributes they possess, which tells us far more than any interview could.

“Pitt has a great history of developing incredible audiologists,” she continues. “We are fortunate to be a part of that clinical education and have the opportunity to hire some of the best audiologists in the field.”

Although they work hard and are learning every day, the SLP and AuD students are honored to serve the veterans at the VA. Slifko, a veteran herself, sums up her feelings. “My dream is to someday work at a VA. The support, generosity, learning opportunities and teamwork I was privileged to experience at the VA has only solidified this dream.” ■

Change Service Requested

Stay connected to Pitt SHRS!



Contribute advice to the bi-annual
Food For Thought event during
Final Exams Week!



Volunteer with us! Help plan
alumni events or participate in
student mentorship.



Come back and visit as a
guest lecturer.



Engage with us on social media!
Conduct a Snapchat Alumni Takeover or become
an SHRS Social-ite. Support your School and win
prizes by engaging in our social media channels!



We want to celebrate your
achievements and milestones with
you. Share your news with us and you
could be recognized in
FACETS magazine or on social media!



Share your
professional journey
through an Alumni Profile!



Interested?

Email us at **SHRSalumni@pitt.edu**
or visit **shrs.pitt.edu/alumni/keep-touch.**



PittSHRS

