

U N I V E R S I T Y O F P I T T S B U R G H

FACETS

SCHOOL OF HEALTH AND REHABILITATION SCIENCES

FALL/WINTER 2011



NEW DESTINATIONS

THROUGH TECHNOLOGY

CONTENTS

FALL/
WINTER
2011



16



30



20



27

- 1 **From the Dean**
Dr. Cliff Brubaker
- 2 **Giving**
Patty Kummick
- 3 **Access**
Dr. Kate Seelman
- 4 **Faculty News**
- 6 **Student News**
- 8 **Alumni / Department News**
- 10 **Alumni Profile**
Helping Hands in New Orleans
- 11 **Clinical Instructor Profile**
Jamie Leuthold:
A Full – and Satisfying – Plate
- 12 **Tribute**
Clifford E. Brubaker:
The Guiding Force Behind SHRS
- 14 **Feature Story**
Speeding Along the Technology Superhighway

- 18 **Health Information Management**
Managing Security Risks in Telerehabilitation
- 20 **Communication Science and Disorders**
“They’re trapped inside a body that doesn’t work and a mind that works beautifully.”
- 22 **Rehabilitation Science and Technology**
“Welcome to My Telerehab Office.”
- 24 **Physical Therapy**
New Tools of the Trade
- 26 **Occupational Therapy**
Tired of Being Tired?

- 28 **Emergency Medicine**
Distance Education Clicks with EM Students
- 30 **The Real World**
Youngyun Chung
- 32 **SHRS Donors 2011**

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Dear Alumni and Friends of SHRS,

I shall note that I am writing this column on the first trading day of U.S. markets following the downgrade of the credit rating of the U.S. government. As we are painfully aware, the future is difficult to predict in the best of times. With the recent contentious proceedings of our government, anticipating how these actions by the U.S. Congress to address the federal debt will impact us and our institutions becomes even more difficult. Perhaps by the time you read this we shall have observed significant changes – hopefully they will have been positive.

Despite this recent history and current uncertainty, I am pleased to share information on the performance of our School over the past year with the presentation of some relevant metrics to acknowledge the extent of our growth and accomplishments of the past 20 years. SHRS currently awards degrees in 25 different academic and professional areas, including PhD degrees in both rehabilitation science and communication science and disorders, as well as clinical doctorates in three professional disciplines. It is noteworthy that 15 of these degrees qualify graduates to practice in an important health or rehabilitation profession. This is in contrast with the five professional degrees awarded by our school 20 years ago. Progress in research and scholarly performance is also markedly evident in the context of competitive research funds totaling more than \$20,000,000 awarded to faculty investigators of SHRS in 2011. This constitutes a more than hundredfold increase over research funds awarded in 1992.

I shall further acknowledge significant accomplishments in the development of enhanced distance education and rehabilitation capabilities that are featured prominently in this issue of FACETS. Particularly notable has been the continuing development of VISYTER (Versatile and Integrated SYstem for TELeRehabilitation) that has enabled clinicians to provide remote diagnostic services and therapeutic interventions. Of particular note is the prospect of using this unique system in following our professional students in remote clinical rotations. This capability will allow us to place students almost anywhere there is high-speed Internet access. With increasing competition for local placements, this capability will enable SHRS clinical programs to maintain and perhaps increase enrollments as we prepare to start a new academic year at the University of Pittsburgh and SHRS.

Finally, I would like to acknowledge the roles of SHRS faculty and students – particularly those associated with the Department of Rehabilitation Science and Technology (RST) and the Human Engineering Research Laboratories (HERL) – in the recently concluded (August 6, 2011) 31st National Veterans Wheelchair Games. I wish to congratulate the VA Pittsburgh Healthcare System (VAPHS) and Keystone Paralyzed Veterans of America as the hosts of these games with particular recognition to Ms. Terry Gerigk Wolf, director and CEO of the VAPHS, and Fred Tregaskes, Keystone PVA president. I take great pride in acknowledging Professor Rory A. Cooper, who served as the chair of these games and participated in multiple events as a competitor. Dr. Cooper is the chair of the SHRS RST Department and director of the VA-Pitt HERL.

While the general outlook for the coming year appears problematic on many fronts, I am nevertheless confident that Pitt and SHRS will have a productive academic year in 2011–2012.

Warm regards,

Clifford E. Brubaker, Professor and Dean
cliffb@pitt.edu

giving



Technology. It can be exciting, challenging, daunting, frightening. But when it comes to technology that benefits the quality of someone's life – especially someone with a temporary or permanent disability – it's an avenue to amazing possibilities and outcomes.

At the School of Health and Rehabilitation Sciences, our faculty, staff and students are always eager to explore or create the next generation of technology, as you'll discover in this issue of FACETS. All departments and programs, and, by extension, all students interact with technology specific to their field of study. From simulator manikins to robotic arms and assistive devices to handheld computers to motion sensors and more, our students are learning through technology and expanding their knowledge of technology's possibilities and benefits related to health care.

This fall, students from SHRS and the other Health Sciences Schools at Pitt will compete for a Scholar's Award made possible through an endowed fund established by Athletic Training and Sports Medicine alumnus Michael G. Wells (BS '90, MS '92). The award recognizes and encourages entrepreneurship in the health care field. When making his gift, Mike told me he anticipates the day when he sees an invention, product or technology in use in a physician's office or health care setting that was created by a Pitt student through the support of his gift.

This conversation with Mike came to mind the other day as I was touring the new home of our Human Engineering Research Laboratories (HERL) at Bakery Square in the East End of Pittsburgh. I walked through the research and testing labs, among the machines that manufacture amazing gadgets and implements, and I was reminded once again how very involved our school is in furthering health care, positively affecting patient outcomes, and improving the quality of life for individuals of all ages, conditions and abilities.

You can make a difference, too, by joining the many alumni and friends who contribute to SHRS annually or who make more permanent and long-lasting major gifts or planned gifts. By establishing an endowed fund (\$10,000 or more, payable in as many as five years), you're ensuring the perpetuity of your gift and your legacy here at Pitt. Through a planned gift, you may consider options such as charitable annuities, life insurance or bequests in your will.

It would be my pleasure to discuss some of the needs of the school (including student scholarship, faculty support and research) and share possible giving options with you. And, as always, if you'd like to visit the school and see the work being done within our research labs, I'd look forward to making the necessary arrangements to suit your interests.

Sincerely,

A handwritten signature in black ink, reading "Patty Kummick". The signature is fluid and cursive, with the first name "Patty" written in a larger, more prominent script than the last name "Kummick".

Patty Kummick
Director of Development

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ACCESS

DR. KATE SEELMAN

At the University of Pittsburgh, we are fortunate to be surrounded by a wealth of world-class scholars and researchers. Few among them, however, have contributed more to the development of rehabilitation technology and the advance of clinical care of persons with disabilities than Dr. Michael L. Boninger. Among his many appointments, Dr. Boninger serves as professor and chair of the Department of Physical Medicine & Rehabilitation at the University of Pittsburgh and medical director of the Human Engineering Research Laboratories (HERL). We were honored that he took time out from the National Veterans Wheelchair Games in August to speak with us about how technology is impacting the field of rehabilitation.

SEELMAN: You have been at the forefront of the development of rehab technology. What are the most significant changes you have seen, and what is the impact of technology on R&D and its applications to clinical assessments and diagnosis and therapeutics?

BONINGER: I think some of the most important technological innovations have actually been outside of rehabilitation research, and related to improvements that consumers have enjoyed. Cell phone technology and related devices such as iPads and smartphones have changed the world of rehabilitation and the delivery of care. They have spawned a whole realm of research and connectivity that otherwise wouldn't be possible.

SEELMAN: Tell us about your work in the area of Brain-Machine Interface.

BONINGER: This is a very exciting area of research. We are heading into clinical trials that investigate two different brain interfaces that we feel will have a profound impact for people with disabilities. The first interface, known as ECoG, uses electrodes that are implanted on the surface of the brain. In the second trial, we utilize another device in which electrodes actually penetrate the brain. We believe both of these interfaces have merit, and support each other. We believe that using a Brain Computer Interface (BCI) with an Alternative and Augmentative Communications (AAC) device could be a game changer. Research might also show that brain interfaces could help someone control a prosthetic limb, or to give more functionality to a person who has had a stroke. Brain interface devices have the potential to offer people with disabilities a high degree of freedom control. If these interfaces are successful, as we believe they will be, they should go to commercialization in years, not decades.

SEELMAN: You have contributed so much to wheelchair research and related body physiology. In turn, this work has impacted CMS coding and reimbursement. How are we doing in advancing CMS reimbursement coverage for advanced wheelchair technology?

BONINGER: I've spent the best part of the past 18 years investigating ways to prevent over-use injuries in manual wheelchair users. We've come very far in this regard. Through ultrasound, we can track soft tissue injuries of shoulders and wrists and see if there are changes due to transferring and other repetitive actions. One of the things I am most proud of is the clinical practice guidelines we have established to prevent this kind of injury.

This evidence-based research has led to more people being qualified for lightweight titanium wheelchairs. During the

National Veterans Wheelchair Games, it appeared that half of the participants were using very lightweight wheelchairs, so I see the standard of care improving. But we're not there yet. We will continue to do battle so that the requests for lighter chairs are accepted by Medicare.

SEELMAN: Information and communications technology has created a revolution in the field of health. Do you consider telerehabilitation a plus for physical medicine and rehabilitation?

BONINGER: My feeling is that anything that's good for patients is good for my specialty. The ability to get treatment to remote areas is a great thing. There is the issue of reimbursement, but sometimes I think we should just take a leap and go ahead, even if we have to wait for reimbursement policy to catch up.

SEELMAN: The technology revolution has great significance for the education and training of researchers and clinicians. Do we have the curriculum in place to train our students to meet the demands of tomorrow's practitioner?

BONINGER: My doctoral students are always three steps ahead of me on technology, so I do believe we have the framework in place when it comes to training researchers. On the clinical side, there is more variability across the country. Ideally, we should equip our students to complete research projects as part of their training. This will enable them to understand all the literature that is out there and apply it to patient care.

We have to teach our students to be part of a team. This team should include informatics so we can look at data. At UPMC, we're on the cutting edge of mining huge amounts of data to improve patient care. It's important that we teach future clinicians how to use data and understand research to stay current with their practices.

SEELMAN: When you look in your crystal ball, what possibilities do you see for funding for R&D?

BONINGER: While I don't see increases in funding on the horizon, I do believe the concept of accountable care organizations and integrated teams holds great promise for the future of rehabilitation. Our agenda should be to look at the difference in cost of care when someone goes to physical therapy instead of having surgery. Or when a patient has a 10-day stay in a rehab facility instead of going into a nursing home. I think we can show cost savings, higher-functioning patients and fewer doctors' appointments. This is what we should focus on. This is the future.



Faculty News

The School of Health and Rehabilitation Sciences welcomes the following new faculty to its ranks:

Theresa Crytzer, assistant professor, Department of Rehabilitation Science and Technology; **Matthew Darnell**, instructor, Department of Sports Medicine and Nutrition; **Dr. Alexandra Gil**, research assistant professor, Department of Physical Therapy; **Dr. Allen Lewis**, associate professor, Department of Rehabilitation Science and Technology; **John F. Pierce**, instructor, Emergency Medicine Program; and **Dr. Pamela Toto**, assistant professor, Department of Occupational Therapy.

Communication Science and Disorders

Dr. Ellen Cohn, associate dean for Instructional Development and associate professor, was appointed interim director, SHRS Undergraduate Program in Rehabilitation Sciences. Cohn is chair of the American Telemedicine Association's Telerehabilitation Special Interest Group, founder and coordinator of the new American Speech-Language Hearing Association's Special Interest Group on Telepractice, and serves on the ASHA Board of Division Coordinators. She is also the founding editor of the *International Journal of Telerehabilitation*.

Dr. James Coyle, assistant professor, was an invited faculty member at the Karlsbad Dysphagia Forum in Germany, April 27–30, 2011. Coyle lectured on dysphagia treatments and conducted workshops on dysphagia and aspiration pneumonia to an international audience.

Also, **Coyle** serves on the National Advisory Committee (NAC) for the Educational Testing Service on the PRAXIS examination and attended a

NAC meeting, June 22–25, 2011 in Princeton, NJ.

Dr. Katya Hill, associate professor, was a plenary speaker at the International Conference on Rehabilitation and Medicine at the University of Shanghai TCM, Shanghai, China, March 5–6, 2011. Hill addressed the audience on “Rehabilitation and AAC Technology: Establishing the Gold Standard.” Also, she presented at the Annual AAC Conference in Taiwan in May, followed by a presentation on evidence-based practice and AAC at Ehwa Woman's University in Seoul, South Korea.

Hill also recently participated at the kickoff and week-long training meeting for local site coordinators in Albany, NY, as a primary investigator on a Veterans Affairs (VA) Cooperative Study Program research protocol that is a clinical demonstration of a brain-computer interface (BCI) for ALS patients. **Tom Kovacs**, CSD doctoral student, is a site coordinator for the core lab at the VA Pittsburgh Healthcare System site. The study is the first of its kind in collecting BCI language sample data using language activity monitoring (LAM) tools developed by Hill and colleagues.

Dr. Cheryl Messick, associate professor, is the 2011 recipient of the Distinguished Service Award from the Council of Academic Programs in Communication Science and Disorders. This award is in recognition of Messick's distinguished record of service to the Council.

Dr. Cynthia Puranik, assistant professor, was awarded a \$1,445,000 U.S. Department of Education grant titled “Enhancing Reading Instruction for Children with Down Syndrome: A Behavioral Phenotypic Approach.” Puranik is the co-PI for the grant, with

Dr. Christopher Lemons from the Department of Education at Pitt serving as the PI.

Emergency Medicine

Dr. Walt Stoy, program director and professor, was named a Distinguished Alumnus by the University of Pittsburgh's School of Education in April. Stoy was honored during the school's Centennial Celebration at Carnegie Music Hall.



Health Information Management

Dr. Mervat Abdelhak, chair and associate professor, was an invited panelist for “Faculty Readiness: Teaching in Graduate Programs & Finding the Next Wave of Upper Level Course Instructors” at AHIMA's Assembly on Education Symposium, San Antonio, TX, July 25, 2011.

Drs. Sajeesh Kumar, assistant professor, **Mervat Abdelhak**, chair and associate professor, and **Leming Zhou**, assistant professor, presented “Integrating Telemedicine into the HIM Curriculum” at AHIMA's Assembly on Education Symposium, San Antonio, TX, on July 26, 2011.

Drs. Leming Zhou, assistant professor, **Valerie Watzlaf**, associate professor, and **Mervat Abdelhak**, chair and

associate professor, presented “Teaching Genomics in the Health Information Management Department” at AHIMA’s Assembly on Education Symposium, San Antonio, TX, on July 26, 2011.

Drs. Qi Mi, assistant professor, **Valerie Watzlaf**, associate professor, and **Leming Zhou**, assistant professor, presented “Integrating Computational Modeling Component into the Health Information Management Curriculum,” at AHIMA’s Assembly on Education Symposium, San Antonio, TX, on July 26, 2011.

Dr. Valerie Watzlaf, associate professor, presented “VoIP for Telerehabilitation: A Risk Assessment for HIPAA Compliance” in the Technology and Communications Track, Understanding Telemedicine Technologies, at the American Telemedicine Association’s (ATA) Annual Meeting, Tampa, FL, May 3, 2011. She was also an invited panelist at the ATA Shortcourse on Telerehabilitation with a presentation titled “Are your Internet-Based Technology Practices HIPAA Compliant?” The ATA shortcourse in Telerehabilitation was under the direction of **Dr. Ellen Cohn**, associate dean for Instructional Development.

Dr. Bambang Parmanto, associate professor, visited Indonesia’s Gadjah Mada University School of Medicine and Udayana University Computer Science Department in June. During the visits, he met with the deans of both schools and presented his research in telehealth.

Drs. Qi Mi and **Leming Zhou** received the 2010 Best Article Award through IGI Global’s Fourth Annual Excellence in Research Journal Awards. The article they co-authored is titled “SPARK: A Framework for Multi-scale Agent-based

Biomedical Modeling” and appeared in the *International Journal of Agent Technologies and Systems*.

Occupational Therapy

Dr. Elizabeth Skidmore was promoted to associate professor.

Drs. Mary Lou Leibold, assistant professor, and **Nancy Baker**, associate professor, received an Innovations in Education grant from the Office of the Provost, University of Pittsburgh. This award will be used to address occupational therapy students’ accuracy, efficiency and self-efficacy in conducting a standardized upper extremity biomechanical assessment.

Drs. Nancy Baker, Denise Chisholm, Margo Holm, Mary Lou Leibold, Ketki Raina, Joan Rogers and **Elizabeth Skidmore** presented at the 2011 American Occupational Therapy Association Annual Conference.

Dr. Nancy Baker, associate professor, was the co-director and invited panelist for “Experts in Arthritis 2011: What’s New and What to Do,” sponsored by UPMC Arthritis Center, United States Bone and Joint Decade, Ladies Hospital Aid Society and Western Pennsylvania Arthritis Foundation.

Dr. Margo Holm, professor, and **Joanne Baird**, assistant professor, received funding to examine the effectiveness of horseback riding as a therapy for children with autism.

Dr. Joan Rogers, professor and chair, presented “Team-Based Care” at the Institute of Medicine’s Workshop on the Allied Health Workforce and Services, May 10, 2011. She also served as a panelist for the session “The Sponsor Effect: Getting Noticed and Getting

Ahead” as part of the University of Pittsburgh 2011 Forum: Women in Medicine and Science.

Rehabilitation Science and Technology

Dr. Rory Cooper, distinguished professor and chair, was inducted into the Pennsylvania Department of Military and Veterans Affairs Hall of Fame at Ft. Indiantown Gap on June 2, 2011. Election to the Hall of Fame is the highest honor bestowed by the department.

Dr. Rory Cooper and **Justin Laferrier**, RST student, were invited to speak at the National Research Week Symposium on May 5, 2011, at the VA Central Office, Washington, D.C. Their presentation, titled “VA/DoD Model of Collaboration and the Impact on Veterans” highlighted the continuing partnership between HERL and the Walter Reed Army Medical Center.

Sports Medicine and Nutrition

Dr. Kim Crawford, assistant professor, was awarded the 2011 Pennsylvania Dietetic Association’s Outstanding Dietician Award. This is the highest honor bestowed upon a member of the PADA, recognizing one whose leadership and service are exemplary and whose contributions to PADA and the public have been longstanding and exceptional.

Deborah Hutcheson, assistant professor, was named the 2011 Pennsylvania Dietetic Association’s Outstanding Dietetics Educator. The award recognizes excellence in educators in the PADA.



Student News

Communication Science and Disorders

Samantha Procaccini, graduate student in the Doctor of Clinical Science program, received a Southwestern Pennsylvania Speech-Language-Hearing Association Student Honors of the Association award in May 2011.

Mariah Cheney, graduate student in the Doctor of Audiology program, has been elected to the National Board of the Student Academy of Audiology and serves as the organization's treasurer. She also was named an AVADA Book Award winner for summer 2011.

Rhona Galera, graduate student in the Doctor of Clinical Science program, presented at the 28th World Congress of the International Association of Logopedics and Phoniatrics in Athens, Greece, August 2010. She and her colleagues applied key principles from the United Nations Convention on the Rights of Persons with Disabilities Treaty to the practice of speech-language pathology on cleft palate medical missions.

Health Information Management

Dr. Andi Saptano was nominated for the student paper award for his paper titled "Improving the Efficiency of Telerehabilitation Service Delivery with Integrated System" at the American Telemedicine Association Annual Meeting, Tampa, FL, May 1–3, 2011. Co-authors included **Drs. Bambang Parmanto, David Brienza, Michael McCue** and **Richard Schein**, and doctoral students **Gede Pramana** and **Wayne Pulantara**.

Occupational Therapy



Ruth Plasterer, MOT student, mentored by **Dr. Denise Chisholm**, associate professor, was selected as a Pittsburgh Schweitzer Fellow for the Class of 2011–2012. Plasterer's project is to establish a program offering occupational therapy

services to the uninsured clients of the Birmingham Free Clinic.

Elyse Aufman is the 2011 recipient of the University of Pittsburgh's Department of Occupational Therapy Award of Scholarly Excellence for her scholastic achievement and scholarly excellence in research activities.

Matthew Blinky is the 2011 recipient of the University of Pittsburgh's Department of Occupational Therapy Award of Professional Excellence for his promotion of occupational therapy through service learning activities.

Rebecca Berick, Angela Bumgardner, Sarah Dellinger, Laura Ferrando, Giavonna Ferraro, Katelyn Fox, Callie Hammond, Bridgette Loiselle, Lisa Lopaze, Terra Moscalink, Kerri O'Rourke, Ruth Plasterer, Lara Pytlik, Kathleen Schramm, Natalie Seiler and **Kylie Veverka**, MOT students, were inducted into the Beta Tau Chapter of Pi Theta Epsilon, the national honor society for occupational therapy students.

Lara Pytlik, Natalie Seiler and **Rachael Simon**, MOT students, were selected as fellows for the 2011 Jewish Healthcare Foundation Patient Safety Fellowship.

Shannon Juengst, doctoral candidate, received a SHRS Research Development Fund grant for her proposal titled "Self-Awareness and Community Integration after TBI."

Kevin Kim, doctoral candidate, received dissertation funding for his research on functional outcomes of cardiac arrest from the American Occupational Therapy Foundation and the SHRS Research Development Fund.

Rachael Simon, MOT student, received a scholarship from the Pennsylvania Occupational Therapy Association.

Esther Tempies, MS student, and **Matthew Blinky, Kerri O'Rourke** and **Joshua Mickle**, MOT students, received the Bruce Baker Education

Travel Award, which provides financial assistance for travel relevant to the student's academic pursuits.

Kerri O'Rourke, MOT student, was elected to the American Occupational Therapy Association's Assembly of Student Delegates Steering Committee.

Dr. Elizabeth Skidmore, associate professor, and **Scott Bleakley** and **Shannon Juengst**, doctoral candidates, presented at the 2011 UPMC Rehabilitation Institute Research Day. **Kevin Kim**, doctoral candidate, presented at the Rehabilitation Institute Research Day as well as the Safar Symposium along with co-authors **Drs. Margo Holm, Ketki Raina, Jon Rittenberger** and **Clifton Callaway**.

Kristen Slater, MOT student, organized a PITT MOT team consisting of 25 MOT students, faculty and family to participate in the Annual Arthritis Foundation Walk – Let's Move Together. The team raised more than \$850 to help fight arthritis. Kristen also organized a toy drive that helped to fill 21 school buses as part of 96.1 KISS radio's "Stuff-A-Bus" project to provide toys for the United States Marine Corps Toys for Tots program.

Dr. Denise Chisholm, associate professor, and **Rebecca Berick, Michelle Gerstenhaber, Caitlin Kempf, Laura McKain, Rachael Simon** and **Jana Valenti**, MOT students, participated in the Investing Now: Hands-On Science program.

Pamela Nutt, Rachael Simon and **Rafaela Reyna**, MOT students, volunteered for several ski outings with Three Rivers Adaptive Sports. The students helped physically and cognitively disabled participants ski using adaptive equipment and specialized teaching methods.

Angela Bumgardner, Sam Boardman, Giavonna Ferraro, Michelle Gerstenhaber, Kourtney Heichel, Bridgette Loiselle, Josh Mickle, Ellen Ordons, Kerri O'Rourke, Ruthie Plasterer, Kate Schramm,

Natalie Seiler and **Kristin Slater**, MOT students, volunteered at the Allegheny County Special Olympics Bowling at the AMF Mt. Lebanon Lanes to assist with the opening ceremony, as well as to coach, score, present awards, raise funds and provide social support to teams and individuals.

Kerri O'Rourke, Terra Moscalink, Lynne Lescott, Rachael Simon, Michelle Gerstenhaber, Angela Bumgardner, Laura McKain, Ashley Shearer, Bridgette Loiselle, Ellen Ordons, Jana Valenti, Josh Mickle, Kate Schramm, Caitlin Kempf and **Ashleigh Altmeyer**, MOT students, participated in the Brain Safety Fair. Lara Pytlik was the student coordinator for the event. Included in the event were a bike helmet giveaway and activity stations where children and families learned important information about brain injury prevention.

Kate Fox, Kourtney Heichel, Jamie Musick, Geoff Mack, Pam Nutt and **Lara Pytlik**, MOT students, raised money for the Multiple Sclerosis Walk. The students walked to honor a local woman diagnosed with multiple sclerosis receiving home care services from an MOT student.

Dr. Nancy Baker, associate professor, and **Giavonna Ferrero, Kate Schramm** and **Natalie Seiler**, MOT students, worked with curators of the Carnegie Museum of Natural History to redesign their exhibit, Human Ancestors, to make it more accessible.

Dr. Denise Chisholm, associate professor, and **Dr. Pam Toto**, adjunct instructor, and 30 MOT students assisted local organizations to rebuild and repair the homes of low-income homeowners in Allegheny County, particularly the elderly and those with disabilities, through Rebuilding Together. In the weeks preceding National Rebuilding Day, occupational therapy students and faculty worked with the contractor and homeowner to identify homeowner needs, home safety issues and make recommendations for

environmental accommodations. **Leah Cozzens, Laura Ferrando, Katelyn Fox, Michelle Gerstenhaber, Kourtney Heichel, Caitlin Kempf** and **Kerri O'Rourke**, MOT students, volunteered for Rebuilding Together Pittsburgh's annual fundraising event at Club Noir.

Dr. Denise Chisholm, associate professor, and **Angela Bumgardner, Giavonna Ferraro, Caitlin Kempf, Joshua Mickle** and **Natalie Seiler**, MOT students, participated in the Health Assistant High School Student: Hands-On Science program.

Dr. Denise Chisholm, associate professor, and **Caitlin Kempf, Natalie Seiler, Josh Mickle, Giavonna Ferraro, Angela Bumgardner, Terra Moscalink, Kristin Slater** and **Callie Hammond**, MOT students, participated in the Hands-On Science Workshop for the Lawrence County Career and Technical center Health Assistant Program. The purpose of the Hands-On Science Workshop was to provide experiences in science and opportunities for students to interact with science professionals; show students that careers in science are within their reach, and encourage students to choose science majors in college.

Kourtney Heichel, Caitlin Kempf, Bridgette Loiselle and **Natalie Seiler**, MOT students, participated in the 6th Grade Health Science Career Fair, sponsored by the Center for Inclusion of UPMC and the Pittsburgh Public Schools. The students presented information about the occupational therapy profession using adaptive equipment and demonstration to teach students about disability and intervention.

Rehabilitation Science and Technology

Maria Toro Hernandez and **Shivayogi Hiremath**, RST graduate students, were recognized for their papers that were winners in the RESNA competition in June 2011.

Sports Medicine and Nutrition

Jessica Davis, CDN student, was awarded the 2011 Pennsylvania Dietetic Association's Diversity Scholarship. The award recognizes a minority student who has demonstrated commitment to the dietetic profession and exhibited leadership qualities as evidenced by volunteer activities in community organizations, campus activities or in other organizations.

Ingrid Hoenke, CDN student, received the 2011 Pennsylvania Dietetic Association's Outstanding Dietetics Student Award in recognition of her emerging leadership and achievements as a student in an ADA-accredited dietetics education program.

Jillian Joyce, Coordinated Masters in Dietetics student, presented a poster titled "Survey to Investigate Rigid Portion Control Practices as a Problematic Eating Behavior among Patients with Anorexia Nervosa" at the Pennsylvania Dietetic Association's 2011 Annual Meeting.

Susan Thomas, Coordinated Masters in Dietetics student, won the award for "Best in Show" in the category of design/graphics at the Pennsylvania Dietetic Association's 2011 Annual Meeting for her poster titled "Caring for Patients Receiving Enteral Nutrition: Implementation of Recommendations Made by the Dietician."



Evelyn Little
and **Laura Thomas**,
Coordinated
Masters in

Dietetics students, were selected to the Pittsburgh Schweitzer Fellows Class of 2011–2012 by the Albert Schweitzer Fellowship. The students will create a nutrition education curriculum geared toward elementary-aged school children in the Pittsburgh area.



Alumni News



Communication Science and Disorders

The department hosted an Alumni Open House at the American Academy of Audiology Annual Convention in Chicago, April 2011. Attendees were able to meet with fellow alumni, faculty, students, vendors and audiologists from across the country. A highlight for the alumni and current students was meeting **Jack Katz** (A&S/CSD '62) who authored the *Handbook of Clinical Audiology*, a popular textbook.



Health Information Management

Dr. Gregg Margolis (HRS '94) was named a Distinguished Alumnus by the University of Pittsburgh's School of Education in April. Margolis was honored during the school's Centennial Celebration at Carnegie Music Hall.

Many HIM graduates have been elected to serve on state association boards, including:

Laura Rizzo (HIM '82) was elected president of the Pennsylvania Health Information Management Association Board for 2011–2012.

Wannetta Edwards (HIM '82) was elected president-elect of the Pennsylvania Health Information Management Association Board for 2011–2012.

Denise Dunyak (HIM '81) was elected delegate, Pennsylvania Health Information Management Association Board for 2011–2012 and president, Southeastern Pennsylvania Health Information Management Association Board for 2011–2012.

Laurine Johnson (HIM '81 & '88) was elected second-year director, Pennsylvania Health Information Management Association Board for 2011–2012.

Karen Gibson (HIM '74) was elected treasurer, Southeastern Pennsylvania Health Information Management Association Board for 2011–2012.

Michael Comunale (HIM '03) is director of Telemedicine for Physician Services Division, UPMC, Pittsburgh, PA.

Sharon Winters (HIM '88, HIS '91), HIM adjunct instructor and director, Registry Information Services at UPMC Cancer Centers, was selected by the National Cancer Registrars Association Board to the position of NCI SIG Committee chair.

Physical Therapy

Dr. Cindy Miles (PT '77) recently completed a volunteer goodwill trip to the remote areas of Tibet and mainland China to deliver wheelchairs and medical help, and provide educational sessions to families, therapists, schools and hospitals. Team members fund their own travel and purchase the wheelchairs. Typically, a group of four to six team members, including therapists and physicians, from the U.S. make the trip.



Cindy Miles, right, and a fellow therapist stopped to honor Pitt from the Zhe Duo Mountain of Tibet, some 14,000 feet above sea level, where they traveled on a wheelchair mission.

Mary Riley (PT '98) is working at Camp Pendleton Naval Hospital with service members with vestibular dysfunction as a result of traumatic brain injury from both blast and blunt force head trauma. She was responsible for the complete implementation of all aspects of the Vestibular PT Clinic in 2008 and has continued to run the clinic since that time.

Ziya Altug (PT '89) recently published a one-of-a-kind 2012 Healthy Lifestyle Calendar through TF Publishing. The wall calendar helps track exercise and activity, weight and food consumption. Each month also features health and fitness tips.



Occupational Therapy

Timothy W. "Casey" Sypolt (OT '86) passed away unexpectedly on July 13, 2011, in UPMC Horizon, Farrell, after complications from knee surgery. He worked as a certified hand therapist at Specialty Orthopedics in Hermitage, PA, where he supervised University of Pittsburgh occupational therapy students during their fieldwork experiences.

Jennifer Lantz (OT '02) was selected to attend the American Occupational Therapy Association's Leadership

Department News

Development Program for Middle Managers. Jennifer is the Centers for Rehab Services Facility Director for Occupational Therapy at UPMC Presbyterian Hospital, UPMC Montefiore Hospital and UPMC Western Psychiatric Institute and Clinic.

Colleen White (OT '86, '92) happened upon a contingent of SHRS undergraduate students while vacationing in Ireland. White couldn't miss the students in their green Pitt hoodies during a stopover at the Newgrange World Heritage site. The students were participating in a study abroad trip organized through SHRS.



Rehabilitation Science and Technology

Josie Badger (RST '09) was named the 2011 Ms. Wheelchair Pennsylvania. In this role, she has the responsibility of sharing disability awareness throughout the state.

Veronica Umeasiegbu (RST '09) received the Carol S. Adelstein Outstanding Student Award from the University of Kentucky Disability Resource Center. The award is presented to students with disabilities who are inspirations to others on and off campus through excellence in academic achievement, leadership, extracurricular activities, and social and personal qualities. Umeasiegbu is working on her doctorate in the UK's College of Education Department of Special Education and Rehabilitation Counseling.

Sports Medicine and Nutrition

Breanna Wojtaszek (CDN '10) received the 2011 West Virginia Dietetic Association's Outstanding Dietetics Student Award for a Dietetic Internship. This award recognizes emerging leadership and achievement of students enrolled in ADA-accredited dietetics education programs.

The School of Health and Rehabilitation Sciences will host its Fall Open House on Saturday, Nov. 5, 2011, from 10 a.m. to 1 p.m. Faculty, staff and students will be on hand to meet with prospective students and their parents and will highlight all of the school's programs and professions. Register online at www.shrs.pitt.edu/openhouse.

Communication Science and Disorders

The department hosted its 4th Biennial Audiology Teaching Conference, June 9–11, 2011. This year's conference focused on the challenging issues in the art and science of teaching pediatric and educational audiology. The conference was preceded by a half-day symposium on links from auditory to literacy development, "The Art and Science of Teaching Challenging Topics in Pediatric and Educational Audiology." The goal of the conference was to provide audiology faculty and clinical instructors an opportunity to discuss best practices in teaching pediatric and educational audiology. Conference faculty were nationally recognized educators who shared examples of course handouts, practicum strategies, reference lists, take-home assignments, lab exercises, exams and more. University of Pittsburgh CSD faculty speakers included **Barbara Vento, Deborah Moncrieff, Elaine Mormer, Diane Sabo, Sheila Pratt** and **Catherine Palmer**. Breakout sessions and poster sessions gave participants an opportunity to share classroom and clinical teaching ideas with colleagues. Participants also had the opportunity to attend a half day "think-tank" symposium on the impact of audition on literacy development, sponsored in part by a grant from the U.S. Office of Special Education Programs (US DOE).



Occupational Therapy

Christine Jackson, grant and financial administrator in the Department of Occupational Therapy, successfully

met all requirements and passed the examination to become a certified research administrator.

Rehabilitation Science and Technology

The Rehabilitation Counseling Program broke into the top 25 with a ranking of 23 from *U.S. News & World Report's* ranking of graduate programs.

The Human Engineering Research Laboratories (HERL) relocated to Bakery Square in the East Liberty section of Pittsburgh in July. A ribbon-cutting ceremony was held on August 1, 2011, featuring speakers **Dean Cliff Brubaker, Dr. Rory Cooper, Dr. Michael Boninger** and **PVA President Bill Lawson**.

HERL once again had a major presence at the National Veterans Wheelchair Games at the David L. Lawrence Convention Center, Pittsburgh, August 1–6, 2011. Four research studies were conducted during the Games.

Dr. Cliff Brubaker, dean of SHRS, and **Dr. Katherine Seelman**, associate dean of Disability Programs and professor, attended the "Launch of WHO/World Bank first World report on disability" in New York this summer.

Tech-Link was presented a \$1,000 grant and trophy by Mitsubishi Electric Power Plant, Inc., on June 17, 2011, as one of 20 award recipients honored for its efforts to promote the full participation of young people with disabilities in society. MEPPI was one of the first supporters of SHRS's Tech-Link program working with middle school children.

Sports Medicine and Nutrition

In May 2011, the department provided a continuing education seminar on "Motivational Interviewing for Behavior Change" for the Clinical Dietetics and Nutrition program's supervised practice preceptors and mentors. The seminar was held in appreciation of the preceptors' and mentors' commitment to training and educating students in the Coordinated Masters in Dietetics program. **Anne Marie Kuchera** (CDN '96), co-founder of Collaborative Change Solutions and a senior behavior therapist for the Children's Hospital of Pittsburgh Weight Management Center, served as speaker.



HELPING HANDS IN NEW ORLEANS

The first day of summer in New Orleans proved to be a hot one. Even with a heat index of almost 100 degrees, SHRS alumni from the Athletic Training program rolled up their sleeves and got to work, helping to restore SciTech Academy, a K-8 charter school in New Orleans.

Alumni, faculty and staff were in town to attend the National Athletic Trainers Association (NATA) Annual Meeting and Clinical Symposia, and decided there was no better way to give back than to help members of their host city right then and there.

SciTech Academy is one of three schools that are being renovated to help accommodate the special needs of this community, which continues to suffer after the devastation left by Hurricane Katrina.

Alumni were divided into various groups so that many projects could be tackled at once. One group headed outside to help with the beautification of the exterior of the facility, while the largest group applied a fresh coat of paint in the main stairwell.

Inside the school, a group of recent graduates from the Athletic Training program and current graduate students headed up to the library to organize donated books while a smaller group handled some administrative items on the main floor.

After a full morning of work, the group gathered downstairs in the cafeteria to socialize and partake of some local specialties – po-boys with all the fixin’s, red beans and rice, grilled shrimp and salad.

In addition to providing manual labor, alumni contributed school supplies and much-needed medical kits. The University of Pittsburgh Book Center also donated three boxes of notebooks and miscellaneous supplies.

According to Amy Aggelou, instructor and clinical coordinator for the Athletic Training program, “This was such a great event. It was a rewarding experience that truly exemplifies the type of graduates that we have here in the School of Health and Rehabilitation Sciences.”

The following individuals and organizations contributed time, physical labor and supplies to benefit the SciTech Academy in New Orleans this past summer:

Amy Aggelou (AT ’95)
Dawn Anthony (SM ’07)
Caitlin Bender (SM ’12)
Erica Borgia (AT ’05)
Rosiei Cheng (AT ’03)
Alyssa Fisher (AT ’10)
Ryan Grove (At ’93, SM ’96)
Ashlee Harris (AT ’02)
Nick Henry (AT ’11)
Alejandra Hernandez (SM ’12)
Michael Lawther (AT ’11)
Christis Miller (SM ’10)
Keith Miller (AT ’94)
Mary Murray (AT ’94)
Saki Oyama (SM ’06)
Tina Scully (AT ’05)
Mallory Sell (SM ’13)
Kristen Sinclair (AT ’01)
Megan Turcheck (AT ’11)
Matthew Zanis (AT ’11)
Patty Kummick
SHRS Alumni Society
SHRS Dean’s Office
University of Pittsburgh
Book Center





Jamie Leuthold: A FULL – AND SATISFYING – PLATE

A typical day for Jamie Leuthold is anything but typical. The reason? Her plate is full, and her appetite for service enormous.

In her position as clinical nutrition coordinator for the Veterans Affairs (VA) Pittsburgh Healthcare System, Leuthold supervises 12 professional dietitians and one dietetic technician on three different campuses. Her overall responsibilities include meeting the nutritional needs of 479 patients with a wide range of diagnoses and physical conditions.

She expands her practice by serving on several national committees within the Veterans Health Administration. One is currently revising the National Directive Handbook on specialized nutrition support; another is setting guidelines to standardize nutrition screenings and assessments at VA facilities across the country.

This past August, she volunteered at the National Veterans Wheelchair Games, where she organized fun activities like “Midnight Chow,” where race participants enjoyed great food, lively music and dancing in their wheelchairs.

According to Leuthold, she also thrives on mentoring two SHRS students a year during their clinical rotation in the Coordinated Masters in Dietetics (CMD) program.

“Students typically arrive at the end of August and stay until April,” Leuthold explains. “They come in a little nervous, but excited. It’s wonderful to see what happens during those months. The transformation is amazing. By the time they leave here, they’re ready!”

Leuthold understands the importance of helping students take what they’ve

learned in the classroom and applying it in real-life settings. Because the VA Pittsburgh system includes an acute care hospital, a community living center and a mental and behavioral health facility, Leuthold says there are vast opportunities for students to learn.

Danielle Debias (’09 CMD) believes her rotation with Leuthold at the VA prepared her well for her current position as clinical dietitian at Vincentian Home.

“I was given the opportunity to work in many different clinical settings, give in-service presentations to the staff, and observe several procedures and clinicians from other disciplines,” recalls Debias.

Under Leuthold, students gain a wide range of experience in areas as diverse as food service management and the very specialized area of parenteral nutrition.

“Under Jamie’s leadership, the Clinical Nutrition staff is on the forefront of new initiatives and innovative practices in the field of nutrition and dietetics.”

“We start by teaching them how to become familiar with the Computerized Patient Record System (CPRS), how to review patient charts and conduct interviews with patients, and we build from there,” explains Leuthold. Expectations are high.

“Dietitians often encounter very complicated situations,” Leuthold continues. “Patients who need nourishment through a feeding tube or

IV have a lot going on medically. The dietitian is adding nutrition directly into the bloodstream. Too much potassium, for example, can be devastating. Our students must be extremely skilled.”

Lori Cherok, CDN clinical coordinator and instructor, notes that Leuthold and her staff provide excellent clinical practice experience for students year after year.

“The VA Pittsburgh Healthcare Systems has been one of our program’s most loyal supervised practice sites,” says Cherok. “Under Jamie’s leadership, the Clinical Nutrition staff is on the forefront of new initiatives and innovative practices in the field of nutrition and dietetics. This makes the experience truly valuable for our students.”

“When I was a student, I had a clinical experience at a VA hospital in Texas,” recalls Leuthold. “I enjoyed learning how to use my skills to help patients with different needs – and I had the freedom to follow doctors and learn more about how I could impact patient care.

“I feel that we have advanced the profession here at the VA Pittsburgh,” she continues. “We are part of a very strong team, and it’s great to be able to show students that there is huge potential for them to have a very advanced scope of practice in this field.”

Debias adds; “Jamie is very passionate about the field of dietetics. She loves sharing information with her staff and students, and is always encouraging them to learn something new that they can apply to their work.

“I was inspired by my experience with Jamie and her staff, and began to serve as a preceptor myself this year.”



THE GUIDING FORCE BEHIND SHRS

In his 20 years as the Dean of the School of Health and Rehabilitation Sciences, Professor Clifford E. Brubaker has been driven by an ever-expanding vision.

He has been called a fierce advocate by his faculty. A renowned scholar by his peers. A humble leader and a man of vision by members of the SHRS Board of Visitors.

He would, no doubt, shake his head to all of these appellations. Yet his record speaks otherwise.

Since he joined the University in July 1991, the School has changed dramatically. What was then the School of Health-Related Professions with 300 students in five different departments, SHRS has blossomed into a world-class educational facility. Today, more than 1,200 students are enrolled in 25 degree-granting programs – some of them among the best this country has to offer.

Five SHRS programs are currently ranked by *U.S. News & World Report* as “Best Graduate Schools” in the nation. Programs recognized include Physical Therapy (2nd), Occupational Therapy (9th), Speech Language Pathology

(12th), Audiology (16th) and Rehabilitation Counseling (23rd).

It’s no easy task to oversee six separate departments and multiple programs within each one, but this Dean treats them all as his children. According to Win Phillips, vice president for research, University of Florida, “He respects all entities, and helps each be as good as it can be.”

Brubaker’s passion for advancing technology as it relates to disability has led to an explosion of research at SHRS. Under his watch, research monies have increased at the School from less than \$300,000 in 1991 to more than \$20 million in fiscal year 2011.

Why do government agencies and private organizations feel confident in investing in research at SHRS?

Dr. Leopold G. Selker, president, NorthShore Research Institute, explains it best: “The central ingredient is that

SHRS programs consistently – and successfully – face national peer review. And that is to Cliff’s credit. When peers judge work to be at a consistently high level, that is the ultimate compliment. And research grants are the earned awards.”

Dr. Mark S. Sothmann, vice president for Academic Affairs and provost, Medical University of South Carolina, commends Brubaker’s ability to recruit and retain some of the finest faculty in the world.

“He repeatedly credits everyone for the school’s success and downplays his own remarkable leadership qualities and skills,” notes Sothmann. “In my opinion, his strongest professional quality is his vision to bring unique research interconnections together in ways others can’t envision.”

Professor Kate Seelman, associate dean of Disability Programs at SHRS, agrees. “Cliff is a man of considerable integrity. His *modus operandi* is to support and empower colleagues but his impact on rehabilitation sciences is global!”

“Cliff believes in inquiry, supports it and sets the kind of example any profession would covet,” adds Selker. “As an academic and scientific leader, Dr. Brubaker has exercised particular innovation in improving curriculum in response to needs of people with disabilities and to a growing body of knowledge.”

Dr. Ronald E. Stewart, professor emeritus, Medical Education, and professor of emergency medicine and anaesthesia, Dalhousie University, Halifax, Nova Scotia, Canada, is a huge supporter of SHRS.

“I have seen its evolution both from afar (now being a resident in my home province of Nova Scotia) and up close, as an attending faculty member with frequent visits to both the Medical School and SHRS,” says Stewart.

“Cliff’s embracing and support of new programs, in my case emergency medicine, demonstrated to me his spirit of innovation and an ability to perceive future directions in which the school could play a leading role.

“I doubt if any other school or program within the University has seen such

*“Cliff is a man of considerable integrity. His *modus operandi* is to support and empower colleagues but his impact on rehabilitation sciences is global!”*

rapid or influential development of an academic department on a national and international scale as SHRS. Most of that is due directly to Dean Brubaker and his ability to surround himself with the competent colleagues who share his work ethic, commitment and vision.”

Professor Peter G. Katona, Department of Electrical and Computer Engineering at George Mason University, says Brubaker may be the most trustworthy person he’s ever met.

“He also listens,” he adds. “Being honest and willing to listen generates respect that is a hallmark of leadership. Due to this respect, he has been able to recruit excellent faculty and staff, who, in turn, attract excellent students. Excellence gives confidence to peers and granting agencies, generating resources. This is a positive feedback, initiated by Cliff’s personal qualities, that has engendered his School’s success.”

Those who know him best say Brubaker is driven. Department of Rehabilitation

Science and Technology Professor Dave Brienza is a longtime friend, and worked with Brubaker at the University of Virginia before they both came to Pitt. He relates this story:

“I was a doctoral student 20 years ago this summer, just weeks before Cliff started in his current position. We were in Charlottesville, VA. Cliff and I were working on a Sunday afternoon, finishing up a grant that was probably due the next day. This was long before the days of electronic grant submissions.

“Applicants were required to submit multiple copies of their narratives to the granting agencies, so we finished our application and headed to the copy room to make our copies. The door is locked. Do we have a key? Of course not.

“Cliff instructs me to get a chair. He gets up on the chair and proceeds to remove ceiling tiles. With the ceiling open, we are able to see that there is an opening in the top of the wall above the drop ceiling that is big enough to crawl through.

“Cliff was always the slim, well-conditioned person he is today, so I assumed he would be the one to go into that open ceiling and crawl through the hole in the wall. But no.

“He boosted me up, I managed to get over the wall and down to the other side.

“We got that grant funded. It was the first grant we had funded at Pitt, and it started us on the path we have followed for the past 20 years.”

Thank you, Cliff, for lifting us all up, and for pushing us to unprecedented heights.



Speeding along the technology superhighway

Ten years ago, “Skype” wasn’t part of our vocabulary. Global Positioning Systems (GPS) were used primarily by the military, and there was no such thing as a “smartphone” or a “tablet computer.” Today, it’s hard to imagine our personal lives without these conveniences. Yet the tremendous advances in information and communications technology since the new millennium have resulted in even more dramatic changes in the field of rehabilitation. And the way we deliver health care.

In every department of the School of Health and Rehabilitation Sciences, new technologies are making a difference in how clinicians interact with each other and their patients. We see evidence of technology having a positive impact on research and education, clinical assessments, new treatment modalities and patient care.

In the Department of Communication Science and Disorders (CSD), for example, third-year doctoral student Tom Kovacs is utilizing new Brain Computer Interface (BCI) technology in a collaborative study designed to help people diagnosed with late-stage ALS (Lou Gehrig's disease) communicate longer and more fully.

The study, which is funded by the U.S. Department of Veterans Affairs, is the first major clinical demonstration project that collects language samples and performance data from individuals who utilize BCI systems that are built into their Augmentative and Alternative Communications (AAC) devices.

Kovacs says the unit looks a lot like a shower cap, with electrodes that attach to the user's scalp. "The BCI system can detect a response from the patient. It then uses the response to select letters to generate meaningful messages."



An important component of the BCI unit is a Language Activity Monitor (LAM). This groundbreaking software function was developed in 1999 by Associate Professor Katya Hill, Department of Communication Science and Disorders. Today, it is invaluable in its ability to collect log files to produce transcripts that allow the clinician to understand the variables influencing language performance and note changes in the user's language function.

When integrated with the BCI system, LAM offers tremendous opportunities for clinicians to measure and improve language performance.

"The language data collection system in the BCI is very cutting edge," boasts Kovacs. "For the first time we're able to collect and analyze patient language, and use what we've learned to guide treatment."

Because of its in-depth knowledge of LAM, Pitt and Hill's core VA lab has been selected to analyze language data captured across all five sites participating in the trial.

Although the study is in its early stages, Kovacs believes the technology holds much promise. "Since ALS is a degenerative disease, patients often lose their ability to communicate. With the new BCI system, they hopefully will be able to continue to communicate with their loved ones at the end stages of their lives."



New destinations through collaboration

When technology and rehabilitation intersect, Professor Katherine D. Seelman, associate dean of Disability Programs, suggests the need for more interdisciplinary collaboration.

“Rehabilitation traditionally involves a broad range of fields, including audiology and speech pathology, engineering and assistive technology, physical and occupational therapy and psychology and counseling,” comments Seelman. “Now, Health Information Management (HIM) professionals play a vital role as well, connecting clinical, operational and administrative functions, and affecting the quality of patient information and patient care at every touch point in the health care delivery cycle. HIM professionals also support clinicians in the development and use of electronic health records.”

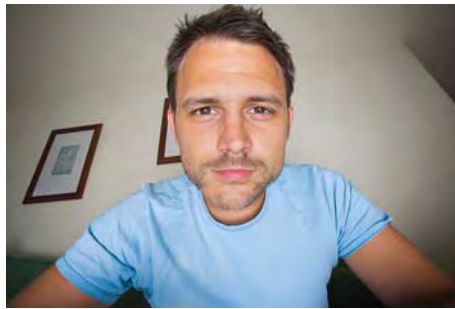
According to Associate Professor Bambang Parmanto, Department of Health Information Management, regular faculty meetings at SHRS foster collaboration and fruitful discussions that lead to innovation.

“Together we can develop applications that meet specific needs across a wide range of disciplines.”

“We’re very fortunate to have a collaborative faculty here at Pitt,” explains Parmanto. “Together we can develop applications that meet specific needs across a wide range of disciplines.”

Professor John Durrant, vice chair, Department of Communication Science and Disorders, was excited when Parmanto described a new technology – VISYTER – at a staff meeting.

“I told my colleagues about it immediately,” Durrant declares “I had an idea of how it could be applied in



our department, and invited them to think of other uses.”

VISYTER, a high-quality, high-speed multi-window televideo conferencing tool that requires no specialized hardware, quickly became the platform that supports a Virtual Observation Room (VOR) that opened in fall 2011.

Durrant sees the VOR being used for both clinical and educational purposes.

“VISYTER allows us to provide nearly on-site quality observations of working clinicians and their clients to students,” he explains. “The clinician can be in Forbes Tower, in Children’s Hospital, in rural Pennsylvania or around the world.”

A webcam provides a “talkback” feature to the clinician in the treatment room, and permits pre- and post-treatment interactions among instructor, students and on-site clinician.

Thanks to a remotely steerable camera, “we will not only have the best seat in the house, but we’ll be able to look around and monitor facial expressions and other body language,” observes Durrant.

Durrant plans to use the facility for instructional role-playing and distance learning; “This is how you bring a whole classroom of people into the clinic.” The platform also allows for the digital capture of information, so observations can be archived for future use by students and instructors.

The VOR is housed in the CSD lab operated by Associate Professor J. Scott Yaruss. He credits the ease of use and high-quality signals of the

state-of-the-art VOR system with enhancing the Department’s ability to support training, supervision, collaboration, observation, assessment and even treatment for individuals in remote locations.

“This system opens up new opportunities for interaction between clinicians, patients, teachers and researchers, while simultaneously increasing our ability to assess the validity and efficacy of telehealth applications in rehabilitation,” remarks Yaruss.

The road to wellness and self-management

Another platform, known as iMHere (mobile health and rehabilitation), was recently developed by the Department of Health Information Management to assist individuals with chronic diseases, and give them access to clinical support. The platform was developed by Parmanto, the Health and Rehabilitation Informatics (HARI) lab lead.



According to the platform developer, third-year doctoral student Gede Pramana, Department of Health Information Management, iMHere has two main and totally integrated components – a smartphone application and a health portal.

Pramana states that iMHere is different from current health-related apps on the market today. “The iMHere apps are capable of sending monitoring data to and receiving self-care plans from the health portal,” says Pramana.

Andrea Fairman, adjunct faculty member and doctoral candidate in the Department of Rehabilitation Science and Technology and former executive director of the Spina Bifida Association of Western Pennsylvania, is collaborating with Dr. Brad Dicianno, medical director of UPMC's Adult Spina Bifida Clinic, on a study of this technology among patients with spina bifida. The usability portion of the project is currently under way, and will be followed by a clinical trial with patients at the clinic. Fairman believes this intervention is client-centered, and empowers the individual to become an active partner in his or her health care.

"Our study will help to determine if smartphone technologies like iMHere will help patients with spina bifida develop self-management skills and provide support in the environments where they live, work, learn and engage in leisure activities," Fairman reports.

For example, iMHere provides spina bifida patients with apps to help them manage their medicines, monitor their skin conditions, and track bowel and catheterization schedules.

Daihua X. Yu, a fourth-year doctoral student in the Department of Health Information Management, is responsible for developing and refining the apps used in the study. She is also conducting research on how to adjust the smartphone apps to the patients' disabilities and preferences.

Yu describes the benefits of the interactive nature of the platform; "This mobile health technology will improve the relationship between patients and providers. All the information the patient enters on the smartphone will be automatically uploaded to the clinical monitoring portal on the Web. This real-time, daily evidence support will certainly help providers make the right suggestion for treatment. Similarly, patients will easily and quickly receive comments and suggestions from their clinicians through their smartphones."

Feedback from patients in the usability study has been positive. One young adult praised the app because he could see its potential to "help me even more in my already independent life."

Fairman goes on; "A persistent problem for persons with spina bifida is that the lack of self-management skills or inconsistent adherence to self-care routines quickly results in serious secondary medical issues. Through telerehabilitation, patients can be supported from a distance. With the development of self-management skills and appropriate support, many of these patients are capable of living healthy, productive lives while residing in the community."

She points out that the study will also be measuring the cost-effectiveness of telerehabilitation in light of the current shortage of health care professionals.

As new treatment and accessibility challenges arise, new technologies will emerge to solve them, thanks to the dedication of the researchers and scientists at SHRS.

Reflecting on her decision to enter the field, Yu notes, "When I found the significant difference that technology could bring to people with impairments, I chose to deepen my study in a program where I could use my knowledge and skills to improve health care through rehabilitation."



COMING TO TERMS

A quick guide to some of the many acronyms that are part of today's health care vocabulary.

ICT = Information and Communications Technology

ICT is an umbrella term that includes any communication device or application. It may include radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. Many consider ICT to be the backbone of telerehabilitation because the delivery of telerehab services depends on ICT devices and hardware and software systems.

TR = Telerehabilitation

TR is the application of telecommunication (ICT) technology to support rehabilitation services.

HIT = Health Information Technology

HIT is broadly defined as the use of information and communication technology (ICT) in health care. HIT allows the transfer and linkage of data well beyond the walls of the health care facility.

This technology supports the conversion of patient records to Electronic Health Records (EHR) and EHR systems.



MANAGING SECURITY RISKS *in* TELEREHABILITATION

One of the most complicated topics in health care today is the security of patient health information.

Most Americans are aware that the Health Insurance Portability and Accountability Act of 1996 (HIPAA) mandates privacy and sets rules and limits on who can access a person's health information. Many even have some knowledge that the Health Information Technology for Economic and Clinical Health Act (HITECH) of 2009 addresses the privacy and security concerns associated with the electronic transmission of health information. Still, questions about security arise as new technologies emerge and drive the delivery of health care services.

One question in particular looms: Is patient health information at risk when services are delivered through consumer-based, Voice over Internet Protocol (VoIP) videoconferencing systems?

Associate Professor Valerie J. M. Watzlaf and her colleagues in the Department of Health Information Management have been researching the subject for more than a year. In two thought-provoking articles published recently in the *International Journal of Telerehabilitation*, they discuss risk analysis for privacy, security and HIPAA compliance as they apply to VoIP systems used in telerehabilitation.

The discussion revolves around three types of information security risks – confidentiality, integrity and availability – that have been developed by the National Institute of Standards and Technology (NIST) and used in HIPAA regulations. Confidentiality refers to the need to keep information secure and private. Integrity refers to information remaining unaltered by unauthorized users, and availability includes making information and services available for use when necessary.

Watzlaf sees the benefits of VoIP videoconferencing systems; “They provide a tremendous convenience for patients who might otherwise not be able to receive services. On the provider side, most offer a high-quality yet low-cost alternative to office teleconferencing systems. However,” she continues, “to determine if VoIP technology is private, secure and compliant with HIPAA, a risk analysis should be performed.”

To assist with that goal, Watzlaf developed a comprehensive HIPAA compliance checklist that guides clinicians and health care facilities in determining if the VoIP software system they are using meets basic privacy and security provisions.

The checklist* addresses a multitude of issues concerning how a VoIP company handles patient health information. Can it be accessed by employees within or outside of the VoIP company? How long do they retain personal information? What is the procedure if legal authorities request information? Can information be shared in other countries? Does the VoIP contain links to other websites that may have different privacy and security policies? Is the VoIP system encrypted for security?

In addition, Watzlaf suggests that health care providers form a team of clinical, legal and HIM professionals who understand the privacy and security policies of their VoIP system and who are willing to keep up to date on changes in federal and state policies regarding VoIP use.

Watzlaf concludes that health care providers should consider using VoIP systems that are built specifically to provide telemedicine and telerehabilitation services.

Obviously, clinicians and other rehabilitation personnel should be educated and trained in all aspects of privacy and security as they relate to telerehabilitation. Watzlaf also recommends that patients sign an informed consent that explains how the VoIP software will be used and why.

“There’s a lot to consider here,” muses Watzlaf. “But there’s also a lot at stake.”

“Recently there has been much discussion about whether VoIP systems are considered ‘business associates’ of the health care provider,” she adds. “As such, they would be required to meet the new HIPAA requirements detailed under the HITECH Act.”

Watzlaf concludes that health care providers should consider using VoIP systems that are built specifically to provide telemedicine and telerehabilitation services.

Platforms like VISYTER (Versatile and Integrated System for Telerehabilitation), which was developed in the Department of Health Information Management, support high-quality telerehabilitation within the home or clinical setting. Users must log in to a private server and enter a room that is restricted to the users who have privileges in that room.

All traffic data are encrypted, and there is no public ID or personal information that is accessible to others.

Ellen Cohn, associate professor in the Department of Communication Science and Disorders and associate dean for Instructional Development, has a strong interest in telerehabilitation, and looks forward to the treatment of more patients through this technology.

“Telerehabilitation’s potential is perhaps unimaginable at this moment, due to rapidly emerging technologies and new applications, with more to come,” observes Cohn. “What is not difficult to imagine is that health information professionals such as Professor Watzlaf and her colleagues will play key roles on telerehabilitation teams – safeguarding the security and privacy of electronic health records and Internet-based telerehabilitation encounters.”

*The HIPAA Compliance Checklist may be found at <http://telerehab.pitt.edu/ojs/index.php/Telerehab/article/view/6056>.



“They’re trapped
inside a body that doesn’t work and
a mind that works beautifully.”

With that vivid, yet simple description, Associate Professor Katya Hill, Department of Communication Science and Disorders, explains her passion for improving the quality of life for patients who require Augmentative and Alternative Communication (AAC) devices.

A decade ago Hill’s development of a revolutionary Language Activity Monitor (LAM) raised the bar for the delivery of AAC services.

LAM, which is the automatic recording of AAC data, creates a log that records a time stamp, a mnemonic for how the data was selected and the content of the information that was captured. The log file can be uploaded to a computer, used to create a transcript and analyzed to measure communication performance, similar to any language sample typically collected and analyzed by speech language pathologists. Because LAM collects quantitative data, clinicians no longer need to rely on their subjective impressions of effectiveness.

Today, with improved access to high-speed Internet and mass availability of videoconferencing equipment, LAM tools are being used to help a wide range of patients with developmental, acquired and degenerative disorders not only find their voices, but communicate fully.

Telerehabilitation has opened the doors to a wider audience of AAC speakers and clinicians, both in the U.S. and abroad.

“Health care in general is moving toward more at-home monitoring,” observes Hill. “Many summary measures have been standardized, so we can offer the same kinds of assessments through telerehab that we would traditionally provide face to face. What this means is that we’re able to reach more patients – those who are physically unable to come in to our clinics, who live far from major health care institutions, or even in other parts of the world.”

Hill’s activity in international service delivery grew substantially five years ago at the first iCREATe Conference in Singapore. Her Royal Highness Princess Maha Chakri Sirindhorn of Thailand met Hill and expressed a deep interest in bringing AAC technology to her country. She invited Hill to oversee the development of a strong language-based AAC communication program in Thailand.

Since that time, Hill has also collaborated with Shanghai University of T.C.M. in China, National Chiayi University in Taiwan and START Centre



in Singapore to support AAC service delivery in those countries. Several of her students currently treat international patients as part of their clinical rotation. Many of them are children, with diagnoses ranging from Down’s syndrome to cerebral palsy to autism.

Doctoral student Kay Chen has been providing telerehab services with researchers in China and her native Taiwan since 2010. Chen uses Skype to consult with parents; provide clinical supervision, consultation and assessment collaboration; and conduct follow-up discussions with clinicians.

“The LAM system helps to collect the language data from clients via their PC, laptop or other available devices,” explains Chen. “It’s very helpful for clinicians to have the quantitative data on hand during the telerehab sessions, so they can monitor the outcomes of treatment.”

“Our students are extremely knowledgeable. They are skilled in the use of tools to support evidence-based AAC interventions.”

Rachel Harkawik, another doctoral student in the Department of Communication Science and Disorders, provides AAC evaluations, treatment, consultation and support to young boys in Ontario, Canada, and Murcia, Spain.

The boys originally came to the U.S. to have an AAC evaluation done by ICAN™ Talk Clinics of the AAC Institute, a worldwide resource for people with severe communication disorders. Although they have since returned to their native countries, Harkawik continues to follow them in her role as clinical supervisor at ICAN™ Talk Clinics.

“We have found that AAC services can be very different in other parts of the



world,” explains Harkawik. “We help educate and support families so that the caregivers who are directly working with their sons can provide the most effective, language-based intervention.”


She has traveled to their homes to teach family members how to model and prompt language development using a high-performance AAC system with the built-in LAM feature that is used for research in the AAC Performance, Testing and Teaching (PATT) Lab at SHRS.

Hill claims Chen and Harkawik are gaining valuable experience through telerehabilitation.

“In many cases, these patients have been treated using a ‘functional communication’ intervention – like a simple voice-output device to express basic needs – that failed to optimize their communication performance,” she continues. “Our students are extremely knowledgeable. They are skilled in the use of tools to support evidence-based AAC interventions.

“It’s not just a matter of helping these patients use words. It’s empowering them with language so they can say what they want to say and say it as fast as they can,” emphasizes Hill.

“The desire to communicate is universal. It’s something we all want – and deserve – for a quality life.”



**“Welcome
to my
telerehab office.”**

Once a week, Rehabilitation Counseling Instructor Jamie Schutte commutes more than 75 miles from her office at SHRS in Forbes Tower to interact with a diverse group of clients at the Hiram G. Andrews Center (HGAC) in Johnstown, PA.

As the program coordinator of the Cognitive Skills Enhancement Program at this state-run, residential vocational facility, Schutte, along with other clinicians and graduate students from SHRS, provides group and individual cognitive therapy to adults who have been diagnosed with traumatic brain injuries, ADHD, autism spectrum disorders and other conditions that result in impaired cognitive functioning.

During each 15-week pre-vocational training term, they work with 15 men and women with neuropsychological

disabilities, teaching them how to transfer important skills to the workplace.

Although the collaboration between the University of Pittsburgh and HGAC began more than 15 years ago, Schutte and other clinicians note significant improvements in their ability to help clients solve problems, thanks to the recent introduction of a new software platform known as VISYTER.

VISYTER, which is short for Versatile and Integrated System for Telerehabilitation, was developed at SHRS by Dr. Bambang Parmanto, associate professor in the Department of Health Information Management, in collaboration with the Rehabilitation Engineering Research Center (RERC) on Telerehabilitation.



Using VISYTER technology, RST clinicians can “meet” with clients on a computer screen on days when they are not in the Johnstown facility. The portal houses client information in a secure “cloud,” so that it’s readily available to the next clinician, and provides a vehicle for staff members to communicate more efficiently.

“My clients know if they have an issue, they can talk to me immediately,” remarks Schutte. “Even if I am in Johnstown, they often ask if they can visit me in my telerehab office!”

Schutte adds that VISYTER reduces some of the social demands that are difficult for clients who are on the autism spectrum. “They are often comfortable with technology and enjoy using the videoconferencing system. Computer-based therapy may provide some ‘distance’ during a counseling session, which may make some clients more comfortable.”

Instructor Michelle Sporner also commutes between Oakland and Johnstown. She adds that VISYTER makes clients feel like they’re getting more personal attention, and that in turn leads to self-confidence.

“Technology is part of our clients’ lives,” claims Sporner. “They’re used to working with devices such as the iPod Touch for organizational tasks and supports.”

Sporner has also developed applications

for the iPod Touch that she uses for coaching and memory training for her clients. “Using VISYTER is a natural progression for them.”

Dr. Michael McCue, a clinical neuropsychologist, associate professor and co-director of the RERC on Telerehabilitation, agrees that VISYTER has drastically improved his department’s ability to service clients at HGAC.

“The distance between Pittsburgh and Johnston is irrelevant now,” he acknowledges.

“We’d eventually like to have all of our rehabilitation counseling students conduct interviews using VISYTER.”

“Prior to this, we had a lot of paperwork that created some challenges in communicating with other members of the staff. VISYTER has become a tool that is essential to us, and we have noticed substantial clinical gains because of it.”

Since all client information is available on the VISYTER system, workflow is managed, sessions are scheduled and tracked, and all members of the team can collaborate with each other in real time to solve problems.

McCue credits VISYTER with helping his staff and clients consult with other professionals, like psychologists, who can give HGAC clients increased access to services and resources.

There’s also a tremendous educational aspect to VISYTER, says Schutte. “With this technology, we can help our pre-doctoral students more than ever before. I can sit in on counseling sessions between our students and their clients in Johnstown. It really helps me to refine their clinical skills.”

Sporner notes that VISYTER setups in the Rehabilitation Counseling suites at SHRS are helping faculty to review students’ mock interviews.

“We’d eventually like to have all of our rehabilitation counseling students conduct interviews using VISYTER,” she says. “It is a great learning tool as well as client therapy tool.”

“Our long-term relationship with the Hiram G. Andrews Center has been a success because we’ve always been able to provide consultation, program development and implementation of services that have not been available through state agencies,” observes McCue. “Now, we will continue to transfer our knowledge of emerging telerehabilitation technologies, such as VISYTER, to state employees at HGAC. Everyone wins – our clients, our clinicians and our partners in Johnstown.”



New tools of the trade.

It's a new day at the physical therapy treatment center. There's a freezer full of fresh cold packs. The weights are neatly arranged on the bench. The tables are immaculately clean, and every treadmill and exercise bike is ready for the patients to walk through the door.

In addition, a valuable new tool is in the hands of the therapist.

It's an iPad.



Doctoral student Joel Stevans says he began using an iPad to collect patient data, but soon discovered that the device could give him access to industry best practices and real-time decision support.

“We can use the iPad to document what the patient tells us about their symptoms and functional limitations,” Stevans elaborates. “These findings can then be incorporated with the clinical findings gathered by the therapist.

“This tool can assist the clinician’s diagnostic decision making by alerting him or her to the need for further investigation based on the combined data that has been collected.”

Stevans adds that a special application for the iPad provides recommended treatment approaches that are most likely to benefit the patients, based on their symptoms.

Christopher Bise, instructor in the Department of Physical Therapy, explains how this might help in the treatment of patients with low back pain.

“Treating low back pain is one of the biggest expenditures for American consumers and the companies that pay for their health care, yet there are many theories that guide treatment,” offers Bise. “Research conducted as far back as the early 1990s show that low back pain should not be treated with a ‘one size fits all’ approach.”

Bise observes that some patients respond to specific types of exercise, while others have more success with a hands-on approach. “A number of clinical trials have concluded that patients whose treatments were matched to their symptomatic picture experienced higher rates of success.”

This is where technology like the iPad becomes truly invaluable.

“Our overarching goal is to facilitate the translation of evidence-based principles into the clinical setting by providing



clinicians efficient tools – like iPads – that can make best practices available at the point of care,” says Stevans.

The ideal would be to have an iPad in the hand of every clinician. “The medical field is changing almost on a daily basis,” remarks Bise. “To keep up with the deluge of information, we need to have reliable support. Still, it’s hard to get people out of their patterns.”

“The easier we make it – if we provide a platform for the clinician to reference best practices – the more quickly outcomes will improve.”

Although they are still in the development phase of implementing this practice, Stevans and Bise are convinced that technology will increase the effectiveness and efficiency of care delivery, which in turn will result in better patient outcomes and provide increased value to the health care system as a whole.

According to Bise, as *U.S. News & World Report*’s number two ranked program in the nation, Pitt’s Department of Physical Therapy has a

responsibility to lead the profession in the right direction.

“The easier we make it – if we provide a platform for the clinician to reference best practices – the more quickly outcomes will improve,” says Bise.

Chair of the Department of Physical Therapy and Associate Dean of Research Anthony Delitto agrees.

Says Delitto, “We have been hearing how technology will change the way we interact with our patients. Now, we are actually seeing technology at work to improve the efficiency of care delivery and positively address the number one problem faced by all health professions: unwanted variation in care.”

The Department of Physical Therapy is currently encouraging students to use electronic tablets to collect patient data and determine best practices.

“We’re equipping these future clinicians with the tools they need to analyze data and get the support they need,” continues Bise. “We tell them, ‘we’re taking you to the point where you can see the evidence – it’s up to you to use it to become the best in your field.’”



Tired of being tired?



The American Heart Association reports that every year, emergency medical services personnel treat approximately 295,000 victims of cardiac arrest in the United States. Of this number, more than 95 percent die before reaching the hospital.

For the 5 percent who survive, life is fraught with complex and debilitating medical issues that may include brain injury and impaired consciousness as well as physical and mental fatigue.

Young Joo (Kevin) Kim, doctoral student in the Department of Occupational Therapy, is conducting a pilot study on fatigue as it relates to survivors of cardiac arrest. He believes that if he can help alleviate their fatigue, patients will experience a better quality of life.

Kim's study relies on a combination of computerized assessments and telephone interventions to help clients solve their fatigue-related problems and regain their ability to participate in the activities of daily living.

"We're dealing with chronic fatigue," explains Kim. "These are patients who are three months out from their cardiac arrest. Although they may be home from the hospital, and perhaps even back to

work, they still feel like they have no energy to complete any of their normal day-to-day tasks.”

In the first phase of the study, Kim assesses the cognitive ability of the participants using a highly sophisticated neuropsychological computer test known as the Computer Assessment of Mild Cognitive Impairment (CAMCI). The software, which was developed by Judith Saxton and Lisa Morrow at the University of Pittsburgh, is a user-friendly, self-administered and self-scoring tool that tests a variety of cognitive functions, including word and picture recall, spatial abilities and executive functioning.

Once Kim is satisfied that the participant has no severe cognitive impairment, he works with individuals to identify tasks that they would like to do but have not had the energy to accomplish. Together they set goals and develop strategies to reach them.

After the initial high-tech assessment, Kim utilizes what he calls the POT – Plain Old Telephone – system to interact with participants. He speaks with them for approximately 45 minutes two times per week, delivering up to eight sessions in all. During the sessions, Kim does a thorough activity analysis, discovering as many details as possible about the tasks that the participant would like to accomplish.

“The goals must be realistic and achievable,” adds Professor Margo Holm, Department of Occupational Therapy. “In many ways, the survivors of cardiac arrest are similar to other clients that occupational therapists work with. We try to help them understand that accomplishing meaningful tasks will come through energy conservation and work simplification.”

Kim cites a female participant who became fatigued while grocery shopping. By working with Kim, she realized that she could conserve energy by writing a more organized grocery list, and planning the order in which



she shops for the groceries in the store. She is pleased with the results because now she can do her grocery shopping without becoming fatigued.

Kim observes that energy management is a lot like money management; “I tell participants they need to budget their energy by deciding what activities they want to do. And they need to bank their energy – saving as much energy as possible on individual tasks.”

Kim is convinced that fatigue is one side effect of cardiac arrest that can be reduced, perhaps even eliminated.

Scheduling rest times during the task can help relieve physical fatigue. But often, survivors of cardiac arrest also experience mental fatigue that prevents them from problem-solving or participating in social activities like they did before. Kim’s study helps participants identify these problems as well as physical ones.

“Social interaction is a valuable part of a person’s life,” observes Kim.

Kim encourages participants to set priorities and modify their behavior so they can find the energy to enjoy activities with friends and family.

Holm adds that participation in the study is, in itself, a step toward increased social participation; “Many of these people are not able to drive because of their medical condition; others have been distanced from their friends due to the length of their recovery. They welcome the interaction between themselves and the clinician.”

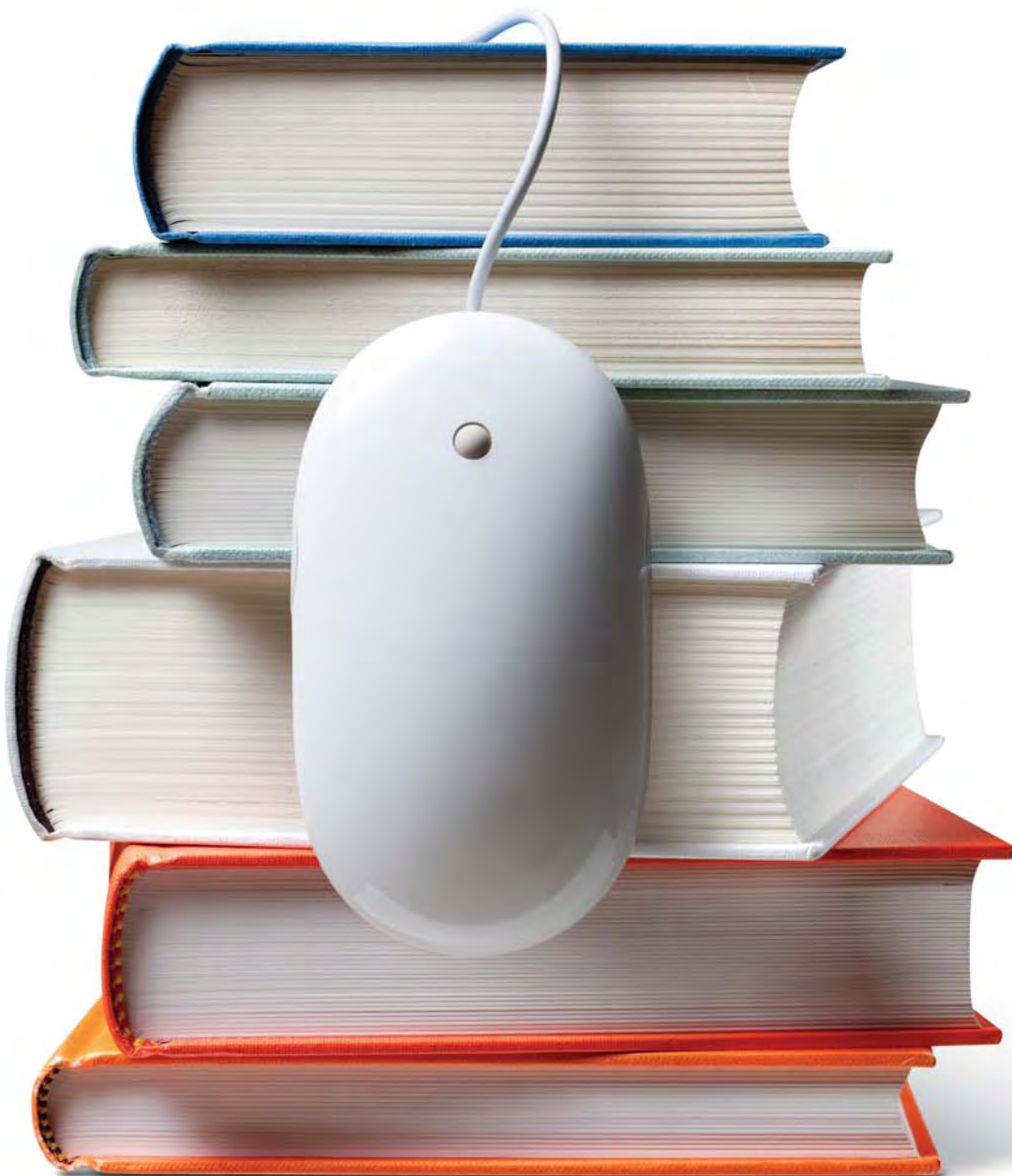
Kim is convinced that fatigue is one side effect of cardiac arrest that can be reduced, perhaps even eliminated.

According to Holm, “We are eager to learn the results of this study because the intervention, Maximizing Energy, and the method of delivery (POTs) are applicable for patients with chronic fatigue associated with many diagnoses, such as multiple sclerosis, Parkinsonism, brain injury and stroke.”





Distance Education *Clicks* with EM Students



For JT Brown (EM '11), a demanding job with the City of Pittsburgh EMS and a hectic schedule of family activities left little time for attending classes to complete his bachelor's degree.

Until the Emergency Medicine program piloted a distance learning option during the 2008–2009 academic year.

Now in its third fully operational year, the program is ideal for busy students who have other commitments during their senior year.

“The senior year curriculum in our program is all didactic, which makes it a perfect fit for an online offering,” observes Professor Walt Stoy, director of the Emergency Medicine program. “Students can take the same classes online that traditional ‘brick’ students take in the classroom, and they are held to the same high standards.”

By going online, Brown was able to keep his job while earning the credits he needed to graduate on time. “It’s a terrific program,” acknowledges this recent graduate.



The flexible nature of the program is unique. Because the model gives students the option of attending part of their classes in a traditional classroom, and part online, they don't have to worry about schedule conflicts with other classes or jobs.

Online classmate Joe Armbruster (EM '11) feels the same way.

Armbruster, who worked a 24-hour shift rotation with the Baldwin EMS, appreciates the fact that he could participate in online classes at his convenience.

"I believe I got the same education as traditional students," says Armbruster. "And I was able to complete my senior year without any problems."

Stoy recalls that he, himself, was a full-time paramedic when he came to Pitt, so he understands the value of distance education.

"We've been investigating this model for 10 years," Stoy admits. "We were determined to get it right – to ensure that our online students receive the same rigorous education as those sitting in the classroom."

Michael Reed (EM '11) of San Antonio, TX, claims that he and other online students are fully engaged.

"We participated in discussion threads and webinars," explains Reed, who worked full-time at Metro Ambulance in Schertz, TX, while attending Pitt's online program.

"We also had a group project that involved both distance and traditional students. Email was available to communicate with other students. I even spoke with a few students by phone and developed new friendships."

Paramedic Richard Bengel (EM '11) is one such hybrid student who benefited from combining on-campus classes and distance learning.

"The hybrid model worked for me because it allowed me to fulfill a prerequisite for the Physician Assistant Studies program that was scheduled at the same time as my EM class," Bengel comments. "Because I was able to sit in on part of the EM class, and make up missed class time with the online session, I was able to successfully complete both classes."

Another hybrid student, Jessica Borrell, will graduate in December with a dual major in Anthropology and Emergency Medicine. She admits that the workload is demanding. Online students are required to turn in additional written assignments every week.

"In my class, I had to listen to recordings and write short responses about the part of the lesson I missed in class," says Borrell. "But the faculty was very responsive. Any questions that I had were answered quickly via email."

Although the distance learning option is currently available only for seniors, Stoy says the program is exploring ways to offer online credit for juniors as well.

One challenge will be to convert the eight teaching sessions that take place over the two junior-year terms into virtual courses.

According to Stoy, faculty members welcome the opportunity to develop

innovative ways to teach their courses; "They have already started to capture most of their presentations in a digital format, so the transition should be an easy one."

Stoy continues, "Our faculty is doing double work when they teach both types of classes. But they are extremely committed to the students and respond enthusiastically when they see the same dedication and hard work coming back from both 'brick' and 'click' students."

The second, more complex aspect of opening up online classes to juniors will be to position outlying organizations to address the lab requirements and clinical and field rotations.

"Our junior year is really hands-on," explains Stoy. "There is a didactic component, but students are also in labs and in the field and clinical rotations. They might be working in a hospital, or on an ambulance. We're looking for ways to utilize adjunct faculty in other locations to make this both affordable and effective."

While more than a dozen other universities offer online Emergency Medicine courses, Pitt's online delivery format adds even more value to an already esteemed program.

While more than a dozen other universities offer online Emergency Medicine courses, Pitt's online delivery format adds even more value to an already esteemed program.

In the words of Reed, "Pitt is a very prestigious university, known for its research and forward thinking. I believe the EM program at Pitt is the pinnacle of emergency medicine education."



The Real World



*Mister Rogers once said,
“Play is child’s work.”*

*For Younghyun Chung,
third year doctoral student
in the Department of
Rehabilitation Science and
Technology, and 2009–2010
Fred Rogers Early Career
Fellow, these words ring true.*

For more than a year, Chung has been “playing” with children with speech impairments at The Day School at the Children’s Institute of Pittsburgh as part of a preliminary study to help improve their communications and cooperative skills.

Chung uses Lego Mindstorms bricks to create robots that are integrated with the child’s Augmentative and Alternative Communication (AAC) device.

Because the robots provide the basis for collaborative play activities that can be used purely for entertainment, or that can entertain while helping children reach educational and therapeutic goals, the technology has been dubbed “Theratainment.”

The preliminary study began with eight children, aged seven to 21, who were diagnosed with autism or other neurological disorders. In addition to their verbal disabilities, many also have difficulty controlling their bodies or accurately pushing buttons. Their physical disabilities may prevent them from independently manipulating objects, and interacting with others during play.

The idea of a robot that allows them to interact with others is a novel – and welcome – approach.

Chung's goal is to design tasks that encourage communication. He works with the children's speech/language pathologists to establish individual goals, and also to work on communicating with others.

For example, children can move a Lego robot forward or backward, and right or left, by pressing on an AAC device. They control the robot to hit a plastic box or bowling pins.

While controlling the robot, the children are encouraged to communicate with each other by making comments or directing the robot's movements to make collaborative activities possible.

"The children are extremely receptive to the idea of robots that help them to communicate," observes Chung. "They smile a lot! They're so excited!"

"Students with communication and physical impairments do not interact or play with each other in the same way or as much as typically developing children," adds Cynthia Morelock, lead speech/language pathologist at The Day School. "During the sessions with Young, the students wanted to play with the robots and that got them engaged in the activity. They used AAC devices more spontaneously and it gave them a reason – and a way – to interact with each other."

Chung became interested in assistive technology while completing his master's degree in Interactive Telecommunications at New York University. In 2007, he created an adaptive photography system and a wheelchair painting system that motivated children with disabilities to control their bodies and express themselves.

"I knew then that I wanted to pursue this kind of work for my doctoral study," says Chung. "I heard about Dr. Simpson's adaptive technology research at Pitt, and asked him to be my advisor."

Although the pilot study was too short to measure improvements in the children's communication skills, Morelock notes that most of the students were interested in the robots and were motivated to play and interact with each other using their AAC devices. "We also saw improvements in response times and button press accuracy for a couple of the students," she claims. "We all had fun!"

Because the Legos are commercially available, they are inexpensive and easy to use. "There's a minimal amount of hardware and software installation," continues Chung. "So we anticipate these robots will be used by the children at home as well as at the Day School as they play with their siblings and interact with their parents."

Associate Professor Rich Simpson, Department of Rehabilitation Science and Technology (RST), notes that projects like Theratainment can help clinicians collect more meaningful data than ever before "Instead of relying on observation and other subjective

reports, we can now put real numbers on things – how often did that child respond, how quick was the response, and so on."

The challenge, according to Simpson, is finding ways to make the new technology easy for clinicians to use.

Chung is in the process of developing new software that is suited for multiple users, so children with disabilities will be able to work together. Chung has a vision of the technology evolving through the use of 3D cameras, iPads and other devices.

"In the future, I hope to design different types of technologies that will keep children engaged," Chung says. "I envision a world where technology is not only used for leisure activities for these children, but also in an academic context."



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