

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 2006



TRANSFORMING LIVES THROUGH
**INNOVATIVE
TECHNOLOGIES**

THE QUALITY OF LIFE TECHNOLOGY
ENGINEERING RESEARCH CENTER

FACETS SCHOOL OF HEALTH AND REHABILITATION SCIENCES

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FALL / WINTER 2006



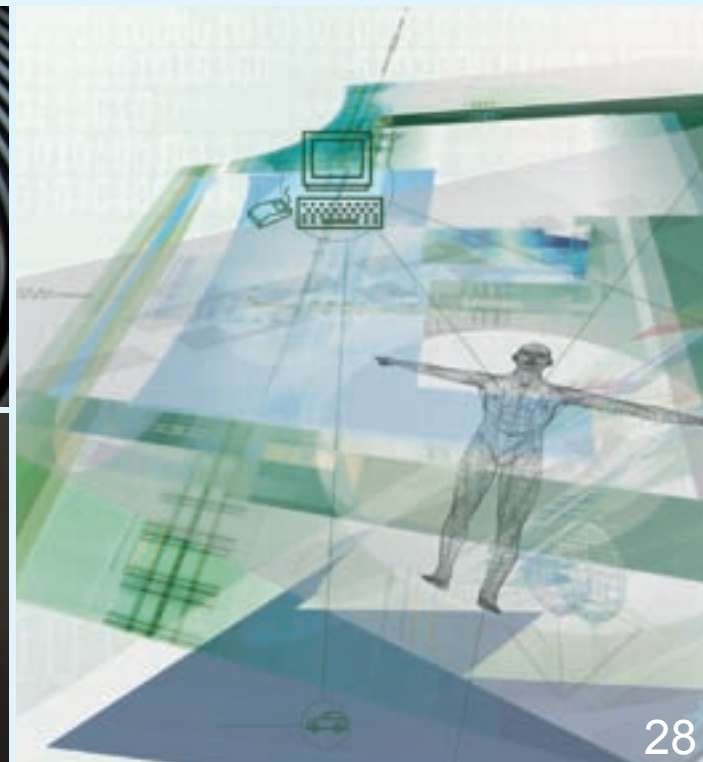
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FROM THE DEAN



Cliff Brubaker

I trust that you, too, experienced a sense of satisfaction upon learning of the distinctions recently accorded to our university. (See Top 100 Global Universities: www.msnbc.msn.com/id/14321230/site/newsweek/).

An analysis conducted by *Newsweek* to determine the global hierarchy of leading international institutions has ranked Pitt 20th among U.S. Public Institutions and 37th in the world. Such lofty acknowledgement is not given lightly, and in this instance, this high acclaim serves also as confirmation of an earlier analysis that focused substantially on performance and accomplishment in science and technology by the Shanghai Jiaotong University, which ranked the University of Pittsburgh 48th in the world.

I am pleased to note that SHRS has been a significant and consistent participant in events that have contributed to the university's ever expanding capabilities and the recognition that has followed. Our most recent accomplishment has been the award of a National Science Foundation (NSF) Engineering Research Center for research on *Quality of Life Technology (QoLT)*. Only five ERCs were awarded from the nearly 500 applications received from institutions in this most recent competition. The QoLT ERC award made jointly to Pitt and CMU is unique among these prestigious awards by NSF, which typically focuses more narrowly on a developing area of science and engineering. QoLT is based on a concept of enabling self-determination of older Americans and people with disabilities. The uniqueness of this program results from the integration of technology into the environment and personal spaces of people in an unobtrusive and transparent manner. This project is further unique in combining sophisticated science and technology in a manner to include the perspectives and participation of the consumers of the technology while maintaining a critical view to insure review in the context of cultural, social, economic, regulatory, and market considerations.

The issue of an aging populace is of relevance for everyone. The very human desire to remain independent despite any age-related infirmity is not constrained by geographic boundaries. The cutting edge research and technology that will emanate from this program has the potential to change the way we experience the inevitability of aging and coping with disabilities. The success of this Center in realizing its mission has the potential for universal benefit.

I shall direct your attention to the articles within for a more extensive view of the nature and prospects for this Center.

"The cutting edge research and technology that will emanate from this program has the potential to change the way we experience the inevitability of aging and coping with disabilities."

With kindest regards,

Cliff Brubaker
cliffb@pitt.edu



giving

With the University of Pittsburgh's *Discover a World of Possibilities* fundraising campaign now at more than \$960 million – fast approaching its \$1 billion goal about a year before its June 30, 2007 scheduled conclusion – Pitt's Board of Trustees passed a resolution at its annual meeting this summer authorizing the university to extend the campaign to \$2 billion.

Discover a World of Possibilities is already the largest and most successful fundraising campaign in the history of Southwestern Pennsylvania. By adopting this new goal, Pitt's campaign is the largest publicly announced campaign in Pennsylvania and has advanced the university into the ranks of only eight other American universities currently pursuing goals of \$2 billion or more.

The importance of the university campaign cannot be stressed enough. A look at these noteworthy statistics helps put the current results into perspective.

- 325 new endowed scholarship funds for a total of 742
 - 29 new endowed fellowships for a total of 87
 - 15 new endowed professorships for a total of 49
 - 51 new endowed chairs for a total of 91
 - 422 new named faculty and student resource endowments for a total of 762
- (Faculty and student resource endowments are used to support such activities as research projects, research travel, book purchases, and student academic projects.)

SHRS alumni, faculty, staff, and friends have made significant contributions towards the success of the university's campaign. Thanks to your support, we have realized a number of new endowed funds to support our students, faculty and facilities; major gifts earmarked for general use as well as specific departments and programs, and annual contributions bolstering our academic programs and various multi-donor campaigns including the SHRS Alumni Endowed Scholarship Fund, the Sports Medicine Student Resource Fund, and the Victoria Green Endowed Student Resource Fund.

With the university campaign extending into this new phase, your continued support takes on even greater importance. You'll be seeing more in the months to come about the campaign and ways in which you can participate. I hope you choose to be a part of this exciting time as Pitt and SHRS continue to grow and develop.

Sincerely,

Patty Kummick
Director of Development

412-383-6548
pkummick@shrs.pitt.edu
4031 Forbes Tower
Pittsburgh, PA 15260

Victoria Green Fund Surpasses Goal

Thanks to the many alumni of the D.T. Watson School and SHRS Department of Physical Therapy, and family and friends of Vicki Green, the Victoria Green Endowed Student Resource Fund surpassed its goal. In a matter of weeks, the \$10,000 goal was reached and the fund now stands at almost \$20,000, with gifts continuing to be received. The success of this campaign serves as a true testament to the life of this remarkable woman.

Special thanks to Ellen Green Morton and Michael Green, Vicki's grown children, who initiated and directed the campaign with much grace and dignity. Their desire to perpetuate their mother's memory in this lasting way was obvious in their very personal appeal.

While Vicki touched the lives of many of her classmates and students through the years, her legacy will continue as her memorial fund provides financial support for physical therapy students long into the future.

Gifts can be made to the fund at any time, enabling it to grow and produce greater awards for present and future PT students. To learn how you can support the fund, contact Patty Kummick, director of development, at 412-383-6548, pkummick@shrs.pitt.edu or SHRS, 4031 Forbes Tower, Pittsburgh, PA 15260.



ACCESS

DR. KATE SEELMAN

Quality of Life Engineering Research Center

During his 2006 State of the Union address, President George W. Bush acknowledged that he was one of the roughly 75 million Americans who would be turning 60 this year. By 2030, the last year in which this baby boom generation reaches the traditional retirement age, one out of every five adults in this country will be age 65 or older.

This is a generation that will expect to maintain the quality of life they enjoyed in their younger years. They will want to remain independent, to pursue their individual goals, and to fully participate in society, despite any reduction in functional capabilities that might occur due to aging or disability. Helping them to maximize independence will be user-friendly, intelligent systems; individual devices carried by people and technology embedded environments that will monitor and communicate with them, understand their daily needs and tasks, and provide the reliable assistance they need to compensate and substitute for their diminished capabilities.

Such systems will be developed at the Quality of Life Technology Engineering Research Center (QoLT ERC), a joint effort of Carnegie Mellon University and the University of Pittsburgh. After a highly competitive process, the National Science Foundation awarded the grant, which could be worth \$30 million over the next 10 years, to Carnegie Mellon and Pitt to initiate work on these cutting edge technologies.

I've asked my colleague, Dr. Takeo Kanade, the U. A. and Helen Whitaker University Professor of Computer Science and Robotics at Carnegie Mellon University, to outline the vision for the Center and to preview some of the exciting technologies that could emerge. Dr. Kanade will be co-directing the Center with Dr. Rory Cooper.

If there is one word that captures the goal of the QoLT ERC, it is independence. Our vision is to use technology to help restore the independence of people whose ability to perform activities of daily living have been compromised by age or condition as well as to preserve the independence of a rapidly aging population.

The QoLT ERC will create the scientific and engineering knowledge base that will enable systematic development of human-centered, intelligent systems that co-exist and co-work with people, particularly people with disabilities.

Imagine a service robot that is not only completely reliable, but is "soft" both physically and metaphorically; a service robot that is human-friendly – that interacts with us in a safe, natural way. Or, consider an advanced exoskeletal device that not only helps someone with a mobility impairment to walk, but anticipates what they want to do and reacts accordingly.

Certainly, we're not the first group to attempt to use sophisticated technology to improve the human condition. But most have fallen

short because the scientists and engineers involved had limited understanding of disability. They were unable to integrate their technical and clinical expertise with the very real needs of the end user.

Our critical difference is the partnership between the University of Pittsburgh and CMU. This is genuine joint effort. This team has the technical strengths in intelligent systems and rehabilitation engineering, and world-class clinical expertise, plus we have access to real-world test sites such as assisted living centers, independent living programs, and vocational rehabilitation and training facilities. The end user – the consumer – will be at the heart of our work from the very beginning, a concept espoused in the engineering field but not often practiced.

Our primary technological research and development activities will focus on three areas: mobility and manipulation, monitoring and modeling, and human system interaction and interface.

The needs of the person and society will encompass all of these areas. So when we develop a mobility device such as a wheelchair or prosthetic, it will not be just technologically-advanced, it will be human-centered. It will have evolved from keen observation of how people live and interact, and how they respond to technology. It will not be enough to create technology that is safe and reliable. It must be technology that will be widely accepted.

In fact, one of the major thrusts of the QoLT ERC focuses on this person-and-society aspect of Quality of Life Technologies. We will be taking a holistic look at the needs of individuals and health care systems relative to aging and disability, examining the impact these needs will have on society as a whole. We'll look at how to integrate people with technology. What is the learning curve for the use of technology? What are the privacy issues? What are the economics of social integration? What is the cost/benefit relationship of having these technologies available? We anticipate that our work will have a profound impact on the national, state, and local economies since not only will it enable more people to remain gainfully employed; it will reduce and delay the need for managed care.

This project is significant in its size, breadth, and depth. With this grant from the National Science Foundation, we will have a critical mass of people working toward the same goal with the same mind set. We expect our work will attract additional dollars, which will expand the scope even further. We have an industry consortium whose members already include a wide spectrum of companies with products and services that impact daily life: medical devices, assistive technology, information technology, consumer electronics, health care, and insurance. We believe the QoLT ERC will catalyze a large and technologically sophisticated industry sector that will help all of us to function more capably, perceptively, and intelligently.



Department News

The **Department of Communication Science and Disorders** was the recipient of a book fund established by AVADA Hearing Care, Butler, Pa., to benefit students in the Audiology program. The fund provides one student in each of three terms an award to help underwrite the cost of books. The fund was established thanks to the efforts of Russell B. Hearn of AVADA.

The University of Pittsburgh Student Occupational Therapy Association was one of the top fundraisers for the Arthritis Walk for the Western Pennsylvania Chapter of the Arthritis Foundation. They raised over \$1,300 and fielded 17 walkers at the May 20 event.

The OT student organization also participated in the Spina Bifida Association's Annual Kennywood Day, May 31. Masters in Occupational Therapy (MOT) students **Jennifer Balkey**, **Christina Cossa**, **Natalie Forbes**, **Dana Gais**, **Celeste McMichael**, **Janna Olszewski**, **Katie Peck**, **Kathryn Purdy**, **Louise Santoro**, **Devon Smedley**, and **Amy Vergason** provided assistance transferring individuals on and off roller coaster rides and engaging individuals in park activities.

Dr. Denise Chisholm, assistant professor, and **Pam Toto**, adjunct professor of the Department of Occupational Therapy, and 19 masters in occupational therapy students assisted local organizations in rebuilding and repairing homes of low-income homeowners in Allegheny County through Rebuilding Together. In the weeks preceding National Rebuilding Day, occupational therapy students and faculty worked with contractors and home owners to identify homeowner needs, home safety issues, and make recommendations for environmental accommodations.



SHRS welcomes three new faculty members: **Bambi R. Brewer**, visiting assistant professor, Department of Rehabilitation Science and Technology; **Geoffrey V. Fredericks**, assistant professor, Department of Communication Science and Disorders; and **Ketki Raina**, assistant professor, Department of Occupational Therapy.

We extend best wishes to **Sally Samuels**, secretary, Department of Communication Science and Disorders, on her recent retirement. Her smiling face will be missed by faculty, staff, and students alike.

Dan Hefley, a high school junior and lead peer mentor with Tech-Link, a non-profit organization whose mission is to introduce students with disabilities to careers in math, science, and technology, displays the group's award-winning design in the First Lego League Robotics Competition. Sondra Balouris, an instructor in the Department of Rehabilitation Science and Technology, is Tech-Link's executive director.

Hefley represented Tech-Link at the FISA Foundation booth during the Council on Foundations Annual Conference, held in Pittsburgh in May of this year. Over 1500 fundraising professionals from across the country attended the three-day meeting.

In commemoration of the fifth anniversary of 9/11, 25 students in the Athletic Training program delivered lunch to the firefighters of Truck Company 14 on McKee Place. The firefighters shared their recollections of that fateful day and expressed their appreciation that their fallen brothers had not been forgotten.



Dan Hefley



Student News

Dana Gais, masters in Occupational Therapy (MOT) student, received the American Occupational Therapy Foundation: Ethel Beard Burstein Scholarship.

Lana Gealy, MOT student, was awarded the Reba M. Sebelist Scholarship of the Pennsylvania Occupational Therapy Association.

Shannon Hellested, MOT student, received the 2006 Department of Occupational Therapy Award of Professional Excellence for her promotion of occupational therapy through state and community service events.

Lindsey Detwiler, CDN undergraduate student, won the 2006 Pittsburgh Dietetic Association Leadership Development

Award. The award recognizes emerging leaders among current graduates of dietetics programs. Criteria include leadership ability, scholastic achievement, and communication skills. Detwiler received up to \$1,000 to attend the American Dietetic Association's Annual Meeting.

Cherael Crenshaw and **Shayla Hayes**, MOT students, were awarded scholarships by the Provost's Office of the University of Pittsburgh.

Avi Kouzi, MOT student, received the department's Excellence Award for his promotion of occupational therapy through community service and interdisciplinary activities.

MOT students, led by **Kate Kozdra**, participated in the 2006 University of Pittsburgh Wellness Fair. The students developed a booth that promoted awareness of OT.

Amol Karmarkar, a student in the Department of Rehabilitation Science and Technology, and **Stephanie Hackett** and **Daihua Xie Yu**, students in the Department of Health Information Management, served as fellows in the eight-week Jewish Healthcare Foundation's Summer 2006 Patient Safety Fellowship. Fellows visited area health-related organizations and learned from key administrators how patient safety principles have been applied to improve processes and patient safety in their facilities.

CALENDAR of Events

October
November

Saturday, Oct. 21
University of Pittsburgh Homecoming Pitt vs. Rutgers

Saturday, November 11
SHRS Open House Forbes Tower
10 a.m. – 1 p.m.

November 16 – 18
American Speech-Language-Hearing Association Convention Miami Beach, FL
The Department of Communication Science & Disorders will host a welcome reception for CSD alumni, Friday evening, Nov. 17, time TBA. (Sponsored in part by the SHRS Alumni Society)

February

February 2, 2007
Winter Academy Ritz-Carlton Naples, FL
Sponsored by the Schools of the Health Sciences Alumni Relations

February 14 – 18, 2007
APTA Combined Sections Meeting Boston, MA
The Department of Physical Therapy will host a welcome reception for PT alumni; date and time TBA. (Sponsored in part by the SHRS Alumni Society)

Thursday, February 15, 2007
Thornburgh Family Lecture
featuring Professor Ruth Colker, Michael E. Moritz College of Law, Ohio State University, 1 p.m., University of Pittsburgh School of Law

March

March 2007
International Seating Symposium Orlando, FL

March 20, 2007
Schools of the Health Sciences Alumni Reception Biotechnology Center, Research Triangle Park, NC.
Sponsored by the Schools of the Health Sciences Alumni Relations

April

April 29 – May 1, 2007
Pennsylvania Dietetic Association Annual Meeting Pittsburgh, PA
The Clinical Dietetics & Nutrition program will host a welcome reception for CDN alumni; date and time TBA. (Sponsored in part by the SHRS Alumni Society)



Faculty News

Dr. Nancy A. Baker, assistant professor, Department of Occupational Therapy, was invited to serve as a member of the World Federation of Occupational Therapy Evidence-Based Practice International Advisory Group.

Baker also presented two talks: "Ergonomics for Managing Activities to Minimize Fatigue with Fibromyalgia," at the *Arthritis 2006: What's New in Treatment* sponsored by UPMC, and "Ergonomics and the Dental Health Professional" as part of the Continuing Dental Education Program at the University of Pittsburgh Titusville campus.

Dr. Elizabeth Skidmore, assistant professor, Department of Occupational Therapy, successfully competed to participate in the 2006 Summer Research Institute in Geriatric Psychiatry sponsored by the University of California-San Diego and funded by the National Institutes of Mental Health. The Institute provides junior investigators the opportunity to interact with senior researchers from leading institutions in behavioral health research and receive targeted feedback to advance their research programs.

Also this past summer, Skidmore presented "What's New in Neurorehabilitation: Applying the Research to Your Clinical Practice" for the Centers for Rehabilitation Services Continuing Education Program.

Dr. Denise Chisholm, assistant professor, Department of Occupational Therapy, and master of OT students **Dana Gais**, **Emily Itzel**, and **Katherine Kozdra** presented an education session on "Group Activity Development for Occupational Therapy" at Mayview State Hospital.

Dr. Margo B. Holm, professor, and **Dr. Ketki D. Raina**, post-doctoral associate, Department of Occupational Therapy, presented "Performance Assessment of Self-Care Skills" training to faculty from the University of South Florida and the Tampa Veterans Medical Center for their research on "Validation of the *Actiwatch* as a Pain Treatment Outcomes Measure."

Dr. Joan C. Rogers, professor and chair, Department of Occupational Therapy, and **Mary Lou Leibold**, **Baker**, **Chisholm** and **Skidmore**, assistant professors in the department, presented at the 86th Annual American Occupational Therapy Association Conference in Charlotte, NC.

Rogers, **Holm** and **Raina**, presented a poster titled "Actigraphy as an Objective Outcome Measure" at the Institute for Rehabilitation and Research Day 2006, Pittsburgh.

Dr. Mark Schmeler, instructor, Department of Rehabilitation Science and Technology, **Emily Zipfel**, doctoral student in RST, **Ana Allegretti**, doctoral student in OT, and **Dr. Fabrisia Ambrosio**, former doctoral student in RST and current faculty member in the School of Medicine, made presentations at the First Brazilian Seating and Mobility Conference, San Paulo, Brazil. The conference was attended by some 400 therapists, physicians, people with disabilities, engineers, and manufacturers from South America. Schmeler and Allegretti initially visited Brazil in 2003 and made recommendations for better designs for wheelchairs and service delivery. The strides made in manufacturing, collaboration, and research in the past three years were very impressive, according to Schmeler.

Dr. Sara Piva, assistant professor, Department of Physical Therapy, was awarded a Multidisciplinary Clinical Research Career Development Award Grant (CRSP) from the National Institutes of Health. Piva is the first scholar from SHRS to receive this award. She is part of the second group of scholars in the University of Pittsburgh's K12-funded CRSP. Pitt's CRSP is one of only 12 such programs funded in the United States and is one of NIH's most prestigious and prominent programs. The program is designed to develop a new wave of clinical researchers who approach research questions with a multi-disciplinary collaborative perspective.

Piva's multidisciplinary team of mentors includes **Anthony Delitto** and **Kelley Fitzgerald**, Department of Physical Therapy, and members from the School of Medicine.

Piva was also granted three other awards within the university to support research testing the feasibility and effectiveness of balance training as an adjunct to the traditional exercise program to improve function following total knee arthroplasty. Funding sources include UPMC Health System Competitive Medical Research Fund, the Central Research Development Fund, and the Pepper Center Scholars Pilot Program.

Dr. Malcolm McNeil, professor and chair, Department of Communication Science and Disorders, was named Distinguished Service Professor of the University of Pittsburgh in Communication Science and Disorders. Distinguished Professor is the highest recognition accorded to a member of the professoriate by the university. McNeil also made 11 presentations this past summer in Taiwan, Australia, and the Netherlands.

Dr. Kate Seelman, professor and associate dean for disability programs, presented a keynote address at the Assistive Technology Research Institute, College Misericordia, Dallas, Pa. Seelman also received The Disability Pride Award presented by Three Rivers Center for Independent Living (TRCIL), and a proclamation for her work with the disability community from the Allegheny County (Pa.) Council. In addition, Seelman has been named to the Editorial Board of the World Health Organization's *World Report on Disability and Rehabilitation*.

Dr. Rory Cooper, professor and chair, Department of Rehabilitation Science and Technology, and **Dr. Shirley Fitzgerald**, assistant professor in the department, served as presenters at the State of the Science Conference, in conjunction with the 2006 Annual Meeting of the American College of Sports Medicine. The conference provided a forum for discussing innovative technologies and increasing health and function through safe and effective exercise and recreation for people with disabilities.

Cooper once again competed successfully in the 2006 National Veterans Wheelchair Games in Anchorage, Alaska. He received gold medals in the 50-yard backstroke, 50-yard breaststroke, 50-yard butterfly, 100-yard individual medley, and slalom.

Dr. Anthony Delitto, professor and chair, Department of Physical Therapy, will be one of four keynote speakers at the 15th International Congress on the World Confederation for Physical Therapy, to be held in Vancouver, BC, June 2-6, 2007.

Dr. Katya Hill, associate professor, Department of Communication Science and Disorders, was a presenter at the International Society for Augmentative and Alternative Communication Conference in Germany.

I N M E M O R I A M DIANNE MIZAK

"When I think about Diane, caring is the first thing that comes to mind. Diane cared. She cared about herself, about others, about the nation, and about the world."

This is how Dianne Mizak will be remembered by Dr. Jessie VanSwearingen, associate professor, Department of Physical Therapy. Mizak, who died this summer after a brief illness, was an administrator in the department, but to VanSwearingen and her colleagues, she was much more.

"Not only did she provide oversight for our students," says Tony Delitto, professor and department chair, "she got to know them on a personal basis. I always found out about students who were having personal struggles or difficulties through Diane."

Tina Fuller, department administrator, concurs. "She would go out of her way to help students, faculty, maintenance, or the guard in the lobby. Diane always had a smile on her face."

VanSwearingen recalls a story that Mizak loved to tell.

"Diane had decided to restart her life by relocating from Colorado to be closer to family in Pittsburgh. As she was packing up the car and kids for the cross-country journey, her four-year-old son spotted a chipmunk that had made its home in their yard and had become somewhat of a family pet. 'Who will feed Chippy when we're gone' he cried. Diane consoled her son, assuring him that Chippy would be fine.

"Several days later, as they pulled up to their new Pittsburgh home, her son spotted a chipmunk scampering up the driveway. 'Look, Mom,' he yelled, 'Chippy found us!'

"Diane took great joy in telling the story. For her, its message was hope; that there always will be a better tomorrow."

She will be missed.



Alumni News

LTC Gerald Gruber (HIS '02) and **Major Eric Wallis (HIS '03)** were inducted into the Order of Military Medical Merit. The Order recognizes individuals who have clearly demonstrated the highest standards of integrity and moral character, displayed an outstanding degree of professional competence, served in the Army Medical Department with selflessness, and made sustained contributions to the betterment of Army medicine. Members of the Order are generally considered to be in the top 10 percent of their corps and field.

Wallis was also selected to take command of the Headquarters Company of the 32nd Medical Brigade, Fort Sam Houston, Texas.

Dr. Mary Ellen Buning (RST '01) is a member of the faculty of the Department of Rehabilitation Medicine at the University of Colorado Health Sciences Campus, Denver, Colo. Prior to her move back to Colorado (rejoining her two grown sons), Buning was on faculty at SHRS teaching the foundational courses in assistive technology, coordinating clinical learning experiences, providing clinical services as an OT in the Center for Assistive Technology, developing and maintaining WheelchairNet and VA Wheelchair Info Web sites as virtual communities, and coordinating education and dissemination for the RERC on Wheelchair Transportation Safety. She previously practiced assistive technology as an OT in Colorado.



SHRS Dean Cliff Brubaker (left) presents a certificate of appreciation to Karl Gibson in recognition of his tenure on the SHRS Alumni Society Board.

Lori Cherok (CDN '01), Meghan Bartlett (CSD '00), Karl Gibson (PT '76, '83), Phillip Holowka (EM '99), and Alicia Koontz (RST '01) were recently recognized by SHRS for their service on the SHRS Alumni Society Board. Gibson was feted for his participation in all levels of leadership and for 12 years on the board.

Peter DeComo (HRP '77, '80) was named a 2005 Legacy Laureate by the University of Pittsburgh. DeComo, nominated by SHRS, was one of 13 university alumni selected for this honor. The Legacy Laureate program was created to publicly acknowledge the outstanding achievements of a select group of alumni and to provide students with the opportunity to be personally inspired and challenged by them.

Huei-Ming Chai (PT '86) co-authored "Effects of Repetitive Shortwave Diathermy for Reducing Synovitis in Patients with Knee Osteoarthritis: An Ultrasonographic Study," published in the February 2006 issue of *Physical Therapy*.

Z. Altug (PT '89) recently published a book titled *"The Anti-Aging Fitness Prescription."* Altug lives and practices as a licensed physical therapist in Los Angeles.

Dr. Bakheet Aldosari (HRS '00, '03) is serving as assistant professor and coordinator of the newly established Health Informatics Master Program, Center for Health Informatics, King Saud Bin Abdulaziz University for Health Sciences, Saudi Arabia. A Health Information Management undergraduate program is also in the works.

Tom and Christine Namey (PT '02) are currently living and working in the Seattle, Wash. area and are willing to talk to alumni or students considering relocating to the Northwest about the region, employment opportunities, and the lifestyle. They can be reached at namey1177@alumni.pitt.edu.

John Duffy (PT '91) currently works as a manager for NovaCare South Hills Sports Medicine and hosts a web site for physical therapists that features abstracts on PT-related articles and demonstrations of some therapies.

Dr. Therese Willkomm (RST '97) has authored a detailed how-to book titled *"Assistive Technology Solutions in Minutes."* Willkomm is a clinical assistant professor in the Department of Occupational Therapy at the University of New Hampshire.

Dan Sedory (ED '82) received the Most Distinguished Athletic Trainer Award from the National Athletic Trainers Association at its annual meeting in Atlanta this past summer. The award comes on the heels of his recognition as New Hampshire's Most Distinguished Athletic Trainer of the Year. Sedory is a clinical associate professor of athletic training at the University of New Hampshire and has served as curriculum director for athletic training within the department of kinesiology.

Dr. Kevin Guskiewicz (ED '92) received the Medal for Distinguished Athletic Training Research from the National Athletic Trainers Association at its annual meeting in Atlanta. Over the past 13 years, Guskiewicz's research has focused on sports-related concussion. He is a professor and director of the Sports Medicine Research Laboratory at the University of North Carolina at Chapel Hill. He also serves as the chair of the Department of Exercise and Sports Science, is a core faculty member for the UNC Injury Prevention Research Center and the UNC doctoral program in Human Movement Science, and the research director for the Center for the Study of Retired Athletes.

Dr. Brian Fay (RST '01) recently attained his certifications as an assistive technology practitioner (ATP) and rehabilitation engineering technologist (RST). Brian serves as the assistive technology coordinator for North DuPage Special Education Cooperative, Roselle, Ill.

LETTER FROM ALUMNI PRESIDENT

A few years ago, Don Walkovich, former president of the Pennsylvania Occupational Therapy Association, shared a story offered by Mort Crim, a radio personality who hosts a motivational radio series *Second Thoughts*:

"A carpenter was ready to retire. He told the contractor he worked for that he finally was going to leave the house-building business, live a more leisurely life and spend time with his wife, his children, and his grandchildren. The contractor was sorry to see this good and skilled worker leave. He asked the carpenter if, as a personal favor, he'd consent to build just one more house. The carpenter agreed, but his heart wasn't really in it. Instead of his usual careful craftsmanship, he got by with as little effort as possible. He even selected inferior materials. The result was a rather shoddy house.

It was a sad ending to an outstanding career – but even more unfortunate than the carpenter could have anticipated. Because the day he finished the job, his boss came to inspect it and then handed the carpenter the front door key. 'This house is yours,' he said. 'You've been a great employee, and it's my gift to you.' The carpenter was shocked and ashamed. How could he have known that with each board he sawed, each nail he drove, he was building his own future? What a tragedy" (Pennpoint, p. 1).

This story challenges us to consider the type of "house" we are building in our individual professions and also as a school of health and rehabilitation science in both the University of Pittsburgh and in the world. SHRS continues to grow in terms of scholarship, opportunity, and recognition. As alumni of this school, we can proudly acknowledge our affiliation with the school in terms of its many successes. Yet, we also share a responsibility to support SHRS and our respective programs in order to perpetuate an expectation for excellence.

There are many ways to demonstrate your pride and commitment. Consider volunteering to serve on the SHRS Alumni Board. Short on time? Contribute to the SHRS Scholarship Fund and help to support students and future colleagues of your profession. Need to focus more on the clinical or administrative side of things? Allow a student to "job shadow" or agree to provide clinical internships at your worksite. Share your professional successes that reflect benefits of receiving your education at the University of Pittsburgh. Opportunities are limited by only your imagination!

The SHRS "house" can maintain and fortify its solid foundation through your efforts and WE NEED YOU! If you'd like to get involved or find out information about ways to become more active in SHRS, please contact Juli Gasperi, coordinator of alumni affairs at juli@shrs.pitt.edu.

Pamela E. Toto, MS, OTR/L, BCG, FAOTA
President
SHRS Alumni Society

Walkovich, D. (2003). To the point.....what kind of houses are you building?
Penn Point, Fall, p. 1-2.

SHRS Donors 2006

Thanks to all of our alumni, faculty, staff, and friends for their generous support of the School of Health and Rehabilitation Sciences during fiscal year 2006. Your contributions enabled us to grow the SHRS Alumni Endowed Scholarship Fund, establish other endowed scholarship and student resource funds, provide student awards based on need and academic merit, and provide program support, graduate research assistance, and services to the community.

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Following commencement, many graduates migrate to where the jobs are. For Karen (Jones) Wager, a 1982 graduate in Health Information Management, the question she faced was not *where* she was going, but *how* she was going to get there.



Wager and a friend, another recent graduate, knew that they wanted to relocate from their hometown, Pittsburgh, to a warmer climate, preferably in the

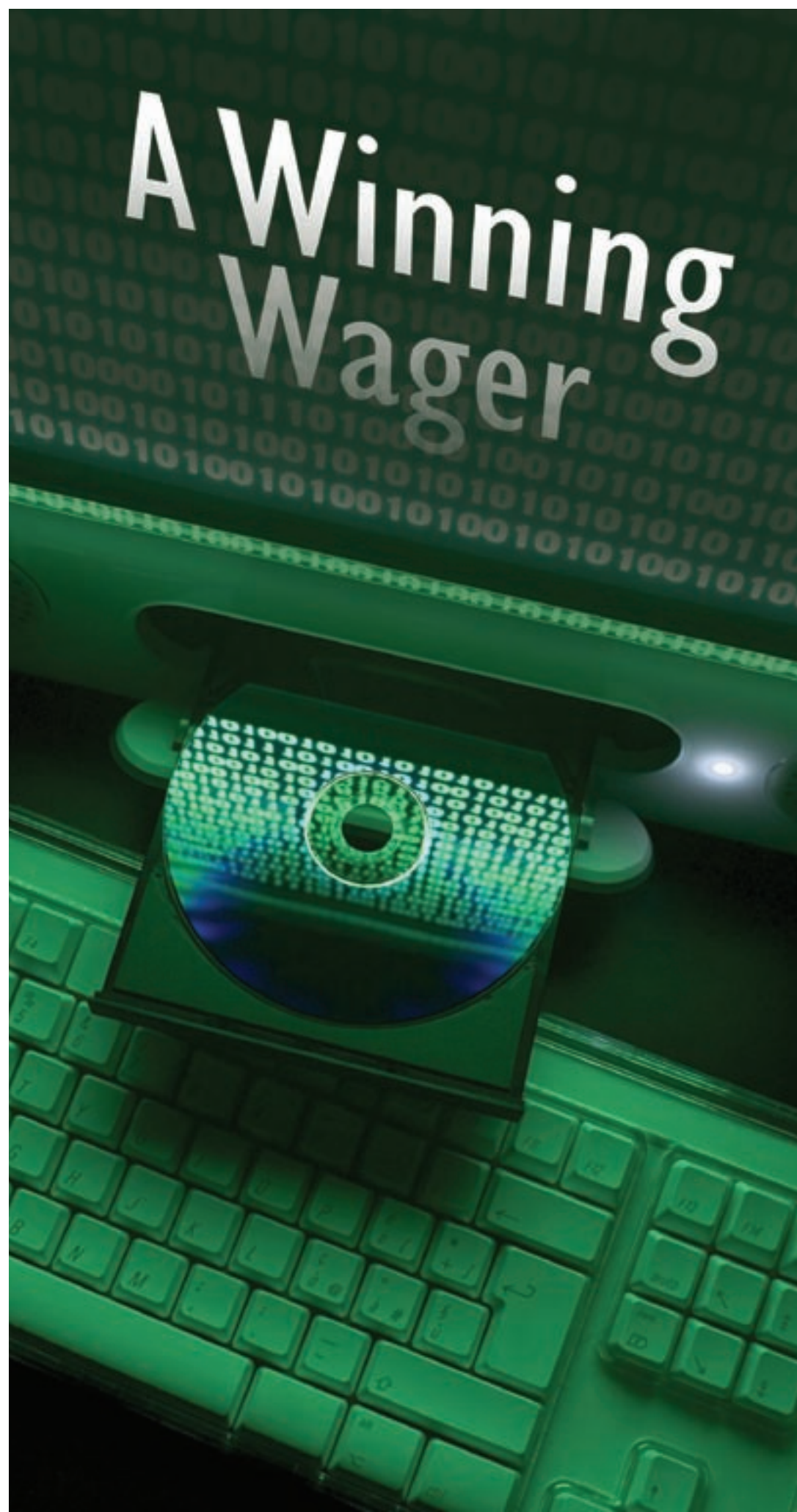
Southwest. Beyond that, the duo had no particular destination in mind. Then, they heard about a one-way auto drop-off program. Two cars were available; a Corvette that was destined for Phoenix, and a Monte Carlo headed for Dallas. The Corvette, they decided, was too small to accommodate their luggage and other personal belongings. So it was Dallas by default.

"We weren't totally irresponsible," Wager emphasizes. "We had done some research regarding job opportunities."

Within 24 hours of arriving in Big D, Wager had an interview with St. Paul Medical Center, and she was soon working as the evening supervisor of the Medical Record Department. A year later, she switched to the day shift, and at night, began a masters degree in Health Administration from Texas Women's University.

At St. Paul Medical Center, Wager managed coding, which in the early 1980s was a function that had become extremely important. "This was the advent of DRGs," says Wager. "Suddenly, there was a real interest in coding, since it drove reimbursement. We moved from the basement to the administrative offices."

It was also during this period that her interest in education was sparked. One of her job duties was to conduct seminars and workshops for physicians and their



Wager sees Health Information Management graduates as playing a pivotal role in bridging the gap between information technology and the clinician community.

office staff on the intricacies of the reimbursement system. She vividly remembers her first such session. "We expected between 50 and 60 attendees, and over 200 showed up. We had to scramble to find additional space."

Not long after, she heard about an open faculty position at the Medical University of South Carolina (MUSC) from two colleagues who were alumni of the school. In July 1985, she made the move east, and has been in Charleston ever since. While working on the faculty at MUSC, Wager went on to earn a masters degree in health sciences and a doctorate in business administration, with a minor in information systems. Most recently, she co-authored a textbook with Frances Wickham Lee, DBA, and John P. Glaser, Ph.D. entitled *Managing Health Care Information Systems—A Practical Approach for Health Care Executives*. (Jossey-Bass, 2005)

IMPROVING OUTCOMES

During her 20-plus years in the field, Wager has seen significant changes in the reimbursement system. "Originally, the intent of DRGs was to cap health care costs," she explains. "It worked for an inpatient model, but had to be adapted when the trend toward outpatient care took hold."

"Now, the move is toward 'pay-for-performance,' and different models are being tested. Rather than payment based on a diagnosis, patient outcome is paramount. For instance, under the DRG system, with a heart attack you were paid for the diagnosis, no matter how well the patient did. With pay-for-performance, there is an incentive to have a positive outcome; to look at the quality and the appropriateness of care."

A driving force behind this new model, she says, is business, which picks up the health care tab for many Americans. "Business is demanding that health care do better. Quality and cost of care are key issues. General Motors, for instance, spends more on health care than they do for the steel that goes into their cars."

She acknowledges that replacing traditional paper records with Electronic Medical Records (EMRs) will help to improve quality and reduce medical errors and costs, but "they're not the silver bullet," she emphasizes.

One problem, she explains, is that there is no common technology platform for EMRs. "We need to set standards, and we need certification of the technology vendors, so that health care settings have some assurance that they are purchasing a quality EMR product."

She points out that this is particularly important to the smaller physician practices – those with five or fewer doctors – that deliver roughly two-thirds of the medical care in the United States.

"The cost to transfer to EMRs can be prohibitive for small physician groups," she says.

"Products can cost between \$15,000 and

\$40,000, plus an additional 30 percent for maintenance. It's hard to make a business case for this huge investment, particularly when paper records are adequate for small physician practices. If they do make the investment, they need some assurance that the product they purchase is based on some standard."

THE TECHNOLOGY CHALLENGE

Another impediment is the lack of information technology experience among the office staff in most small practices. "They know the billing system," she explains, "but not how to troubleshoot hardware and software problems."

She notes that there are some Web-based systems that require less of a front-end investment, but with the lower prices comes a loss of control and customization. "Frankly, there has been very little research done on which systems work best. It really comes down to individual practice goals."

Wager emphasizes, however, that despite the obstacles, adoption of EMRs by these small practices is critical. "An Institute of Medicine report estimated that between 44,000 and 98,000 deaths per year are attributable to medical errors. Many are prescription errors, which is of particular concern for the elderly. These seniors may see their primary care physician, and then a specialist who would not necessarily have access to their medical records, lab test, x-rays, and the like. The specialist could order duplicative services, or a new prescription that might negatively interact with an existing medication."

Wager, who is currently on sabbatical from her Health Administration teaching duties, is working full-time on EMRs. She sees Health Information Management graduates as playing a pivotal role in bridging the gap between information technology and the clinician community.

"They have an understanding of technology and coding, but they also understand the patient care process. They can function as liaisons between the physicians and the technology folks. It's an exciting opportunity."





For Bill Pukansky, it started with a bad bout of the flu. The then 45-year-old manufacturing coordinator at an extrusion tool making facility was sidelined for a week by the virus, but he couldn't shake the residual dizziness that brought on waves of nausea every time he rolled over in bed, sat up, or tried to stand.

What followed were months of doctor visits, medications, and what Bill describes as "every test under the sun." The results were all negative and, eventually, the dizziness disappeared.

But only months later, the room again began spinning, and he was once again debilitated. Even the minor head movements involved in driving – glancing at the side and rear view mirrors, looking at the speedometer, checking the gas gauge – would trigger an episode. Going to work was out of the question. Pukansky was confined to his living room chair, where he'd sit stock still, afraid to move.

Eventually, the episode ended, and he returned to his normal routine. But five years later, the vertigo returned – this time for eight weeks – and then after a three-year reprieve, returned again in May 2006.

Among other disorders, Pukansky suffers from Benign Paroxysmal Positional Vertigo (BPPV), the most common cause of dizziness, and according to Dr. Sue Whitney, associate professor, Department of Physical Therapy, one of the easiest to treat. Whitney, who is also program director of Rehabilitation, Center for Rehab Services Vestibular Disorders Clinic at the University of Pittsburgh Medical Center, estimates that she sees 10 patients a week with BPPV. Many of them have searched for a solution for years.

"I had one woman who had suffered from BPPV for 22 years," relates Whitney. "The dizziness had started with the birth of her first child. Like Bill, she had seen numerous physicians, underwent exhaustive testing, and taken any number of medications, but the dizziness remained. People thought she was crazy."

Whitney knew she wasn't, and within weeks, had, as she puts it, "fixed" the problem.

FREE-FLOATING EAR ROCKS

In patients with BPPV, small crystals of calcium carbonate – otoconia or "ear rocks" as they're more commonly known – are dislodged from the utricle and migrate into one of the semi-circular canals of the vestibular labyrinth. When there is a change in head position resulting from such common activities as rolling over or getting out of bed, bending over, or looking upward, these

free floating particles move, causing alterations in the motion signals to the brain, resulting in dizziness or vertigo.

There is no single reason why these particles break free from the utricle, which is one of two gravity-sensitive structures in the inner ear. For patients under age 50, the most common cause is a head injury. For older patients, degeneration of the vestibular system of the inner ear could be the culprit. Viruses that affect the inner ear, minor strokes, and Meniere's disease can also induce BPPV. However, in roughly half of the cases, there is no apparent cause.

A diagnosis of BPPV is generally based on a patient's history, findings on a physical examination, and the results of vestibular and auditory tests. Often, the Dix-Hallpike test is used, in which a person is brought from a sitting to a

Pukansky was confined to his living room chair, where he'd sit stock still, afraid to move.

supine position with the head turned 45 degrees to one side and extended about 30 degrees backward. In a positive test of the posterior (back) canal, the eyes jump upward as well as twist so that the top part of the eye jumps toward the down side. The test can be made more sensitive by using Frenzel or video goggles.

Whitney says that while roughly nine out of every 100 older persons have loose crystals, BPPV is often overlooked or the resulting dizziness dismissed as simply a sign of old age. "Dizziness is not normal,

no matter what the age," she emphasizes. "It can be treated."

A particular problem, she says, is that physicians often fail to ask their patients relevant questions that could reveal the condition. "And if you don't ask the right questions, you don't get the right answers," she notes.

Whitney recently completed a study that underscores the relevance of her Socratic diagnostic theory. She points out that her research paper was among the top "hits" on the *Otology & Neurotology Journal* web site.

"You ask two questions," she says. "Do you get dizzy when moving from a lying to a sitting position, and do you get dizzy when you roll over in bed? If you answer 'yes' to both of these questions, then the probability that you have BPPV is off the charts."

TREATMENT OPTIONS

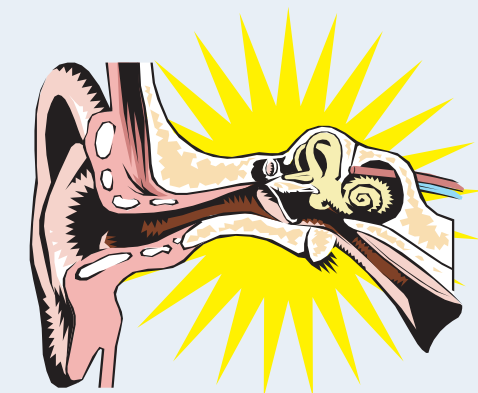
Whitney says that thanks to direct access, patients suffering from dizziness or vertigo can bypass their physician and refer themselves directly to a physical therapist who has been trained to not only diagnose the condition, but also to treat it. She acknowledges, however, that treatment is not necessarily a permanent fix. "About 30 percent of patients do have a recurrence within three years," she explains.

Since BPPV is considered self-limiting because symptoms often subside or disappear within two months of onset, "waiting it out" is an option. Patients are advised to avoid sleeping on their affected side, to get up slowly, and sit at the edge of the bed for a minute before rising. They're also cautioned to avoid bending down to pick things up and to refrain from activities where the head is leaning backwards, such as having their hair washed at a beauty salon, especially when they are symptomatic.

However, for those who opt for treatment, Whitney says there are two alternatives: the Semont Maneuver and the Epley Maneuver. Both are highly effective,

with a roughly 80 percent cure rate. Each takes about 15 minutes to complete and, generally, between two and four office visits are required.

Both maneuvers are designed to move the free-floating crystals from the posterior canal back into the utricle. With the Semont maneuver, the patient is rapidly moved from lying on one side to lying on the other. The Epley maneuver – most commonly used here in the United States – involves sequential movement of the head into four positions, with the patient staying in each position for approximately 30 seconds.



For those 20 percent of patients for whom neither maneuver is effective, a more rigorous home-based regimen – the Brandt-Daroff exercises – are prescribed. They are successful in 95 percent of cases, but require the patient to perform three sets of exercises per day for two weeks. In most cases, symptoms are completely relieved in 10 days. However, roughly one-third of these patients have a recurrence of BPPV within one year.

Whitney tries to avoid the self-exercise protocol for her patients. "There are just too many variables," she explains. However, she has encouraged Pukansky to replicate certain maneuvers at home to help resolve his condition.

Pukansky, who has returned to the job following an evaluation of his work environment by Whitney, follows her advice. "BPPV," he says, "is something that I don't want to get again."





The Sound of Music

When Pete Townshend, legendary lead guitarist for The Who, admitted that his hearing was “shot,” it was a wake-up call for musicians world-wide. Townshend is now one of a cadre of musicians who is taking to the airways, beating the drum to urge young music lovers to protect their hearing now – far preferable to losing it later.

But it's not just rockers and rappers who are the targets of this campaign. Even a seemingly innocuous piccolo can produce 95-112 decibels (dB). While the cellist produces a slightly more modest 82-92 dB, he or she could be sitting in front of the noisy timpani. Prolonged exposure to levels at 85 dB or higher can result in hearing loss. It's clear that musicians of all types are at risk.

Recognizing the threat, in 2003, the Eye and Ear Institute established the UPMC Musicians' Hearing Center. “People who are exposed to constant loud noises, such as factory workers, wear ear plugs or other protective devices that are generally required by the Occupational Safety & Health Administration,” said Dr. Catherine V. Palmer, associate professor, Department of Communication Science and Disorders. “But no one requires musicians to protect their hearing.”

Noise-induced hearing loss is insidious. It comes on gradually; so gradually that you may not recognize it until it's too late. Along with the actual hearing loss, however, can come ringing or roaring in the ears – tinnitus – for which there is no cure. It's been estimated by the American Academy of Audiology that 12 percent of all children ages six to 19 have noise-induced hearing loss, which, according to Palmer, is “100 percent preventable.”

Palmer, who is also director, Audiology and Hearing Aids, Department of Otolaryngology, UPMC, notes that traditional ear plugs aren't a good option for musicians – they distort and muffle the music. She and her colleagues use the Musicians' Earplug, developed by Etymotic Research Inc., which allows the sound to be heard at the same quality level as the original, only quieter, while reducing the overall sound.

PLAYING IT FORWARD

Virtually every school has an orchestra, a marching band, or both. So the Pitt team approached the Pittsburgh Public Schools, offering to help their student musicians. “Teachers and parents would never consider allowing football players to take the field without helmets and other protective gear,” states Palmer. “Why shouldn't we ensure that we're protecting musicians?”

Through in-service presentations, music teachers were introduced to the concept and given free earplugs for their students. Etymotic supplies them at cost to the program.

They come in a small carrying case that can be attached to the instrument and are connected by string, similar to that used by people who wear reading glasses. The earplugs can even be matched to a school's colors.

While these are “off the shelf” models, custom earplugs can be designed, particularly for professional musicians who spend their lives on stage or in the orchestra pit. Some parents of devoted young musicians have also opted for the custom plugs.

“The success of the program is directly proportional to the enthusiasm with which the teachers accept and embrace the earplugs,” notes Palmer. One music teacher-turned-evangelist for the program is Nancy Addy, a music teacher at Pittsburgh's Langley High School. She is the first recipient of an award given by the Musicians' Hearing Center to the person in western Pennsylvania who has done the most to encourage healthy hearing habits during the previous year. Along with having her name on a plaque that hangs in the Department of Audiology, Addy received a \$1,000 check from Etymotic to be used to enhance the Langley music program.

STARTING YOUNG

While the focus of the program has been the high schools in Pittsburgh, Dilworth Traditional Academy, an elementary school with a drumming program, has also embraced the program. Two speech-language pathology graduates from the Communication Science and Disorders Department, Teddy Porto and Emily Crowe, were working at Dilworth and identified the hearing risk. “Even the smallest third-grader was able to use the standard earplugs with no problem,” Palmer points out. “The feedback from teachers and students has been very positive. Initially, some expressed skepticism, but in the end, those who use the earplugs are very happy with the experience.”

She indicates that some students report they are even practicing more since they are more comfortable while playing.

As the word has spread, other school districts in the region as well as some parents and individuals have called to get involved. “We're also interested in getting the word out to pediatricians, who may not be aware that young musicians are at risk,” Palmer states.

What other target audiences are at risk?

“What about the people who work in bars and clubs, like bartenders and the wait staff? Hearing damage is a product of both decibel level and time of exposure; the average patron may be there for just an hour or two, but the employees are there night after night, and should be protecting their hearing,” she concludes.





We've all experienced it at one time or another, often during the coughing phase of the common cold. The raspy throat. The hoarse voice that barely rises above a whisper.

At any given time, it's estimated that between three and nine percent of the population has some type of voice problem, be it simple vocal fatigue, hoarseness, or a traumatic change brought on by throat clearing, coughing, yelling, or prolonged loud talking. Voice problems are the most common communication disorder.

One group particularly hard hit by voice problems is teachers. Of the roughly seven

million teachers in the U.S., anywhere between 20 and 47 percent experience some kind of voice abnormality on any given day, a far higher percentage than any other traditional occupation. As many as one out of three teachers reports missing work because of a voice problem, and one out of 10 teachers has been forced to leave the profession because of the condition. Conservative cost estimates for therapy, surgery, and substitute teaching personnel top \$2 billion annually in the U.S. alone. Equally important, some evidence indicates that voice problems in teachers can reduce cognitive functioning in students.

Yet the problem is drawing little attention, says Dr. Kittie Verdolini, associate professor, Department of Communication Science and Disorders. "Given the importance the government places on safety in the workplace, coupled with the recent emphasis on improved student performance, it is surprising that there is no legislative mandate to protect teachers from voice problems, which is their only known occupational risk."

Verdolini also notes that the problem has been all but ignored by researchers until very recently. "There have been few studies on the production of and safety factors associated with the types of

heightened speech required of teachers. The problem is epidemic for teachers, but because the victim is otherwise healthy and the root cause virtually invisible, the problem is too often overlooked."

TREATMENT OPTIONS

Verdolini says that historically, treatment for phonogenic voice problems like those experienced by many teachers has focused on voice reduction. "Voice conservation has been the cornerstone of treatment," she explains. "The therapist attempts to train the teacher to minimize the amount and loudness of phonation."

Called Voice Hygiene Education (VHE), teachers are taught to speak with what she describes as a "quiet, breathy voice," which decreases the cumulative impact of stress between the vocal folds.

While she agrees with the logic of the approach, the problem, Verdolini points out, is in the implementation. "As one of my colleagues noted, asking a teacher to reduce her voice use makes about as much sense as asking a ballerina not to get on her toes or a football player not to get tackled," she chuckles.

Verdolini says that there is specific evidence that teachers trained to speak in this whispering way tend to ignore the recommendation once they get back in the classroom. "The clinical value is questionable," she concludes. "Basically, the teacher is functionally incapacitated either by the disease or by the cure."

Because of this conundrum, Verdolini says that some clinicians have moved away from VHE and turned instead to other types of therapies that teach teachers how to use their voices loudly, yet safely. One systematic approach is called Lessac-Madsen Resonant Voice Therapy (LMRVT), which is built on principles favored by those in the most vocally demanding professions: singing and acting. "The goal here is to train the voice to be loud, for extensive durations, without vocal injury," she explains.

WHICH IS BETTER?

Verdolini is midway through a randomized study funded by the National Institutes of Health to determine not only if LMRVT improves the functional vocal status of teachers with voice problems, but if it also contributes to the development of a strong, clear, resonant voice. Also being questioned is whether LMRVT improves both laryngeal appearance and conversational voice quality while reducing the occurrence of laryngeal microsurgery and the number of work days lost due to voice problems.

"If the LMRVT doesn't produce better results than a more traditional approach that focuses on quiet, breathy voice, then we may be able to spare future patients and insurers the time and cost of a complex clinical training program," she explains. "On the other hand, if it does produce better results, we can conjecture that the source of the benefit is the LMRVT itself."

Verdolini began participant recruitment in October 2005 and to date, about one-third of the 114 full- and part-time primary and

Between 20 and 47 percent of teachers experience some kind of voice abnormality on any given day.

secondary school teachers needed for the research either have or are completing one of the two therapies. Most of the participants are female, which is reflective of the demographics of the teaching profession. To be eligible for the study, the teacher had to have had a moderate or worse voice problem lasting continuously for one month or more, with no other known medical or psychiatric condition.

All participants receive four 90-minute therapy sessions in either LMRVT or a complementary program initially emphasizing quiet, breathy voice, and four weekly Casper-Based Confidential Voice Therapy (CBCFT) sessions. Follow-up occurs at five-week, three-month, and 52-week intervals. The clinicians providing the therapy are licensed speech-language pathologists specializing in voice therapy and trained in both models.

Verdolini's working hypothesis is that LMRVT may produce better outcomes for teachers, although the jury is still out because the more traditional CBCFT has been modified to include louder voice training in its final session. "I do believe that resonant voice therapy can maximize intensity and minimize injury," she states. But she acknowledges that informal impressions to date indicate that most patients are achieving good results with both therapies. "In follow-up sessions, most participants in both groups indicate an overall improvement in the quality of their lives as a result of the voice therapy, no matter what the type."

One somewhat surprising finding, she says, is that some teachers have an easier time with one therapy over another. "It would be logical that participants might have difficulty with resonant voice therapy since it requires more skill," she explains. "But we're finding that that is not always the case. There seem to be clear preferences."

Verdolini expects her research to wrap up by the middle of next year, with data compilation and analysis completed by December 2007.

Giving Teachers a Voice





Living *with* Disability

Margaret Leech is, by all accounts, an ordinary woman. At 72, she still lives in the house she and her late husband bought early in their marriage. Her four children are grown with their own families; three live in the Pittsburgh area, but her youngest daughter left for greener pastures years ago and rarely returns.

For her 46 married years, Margaret stayed home to ensure that the house was clean, the clothes were pressed, and dinner was on the table every night at six sharp. So it's no wonder that now, living alone with increasingly less connection to the world around her, Margaret has little desire to toil in her tiny kitchen every night.

Feeding Margaret's isolation is her bipolar disorder, which causes episodes of mania and depression that can last for days. She may not want to cook because she's too depressed to even think about food, let alone prepare a meal. Or she may be so manic that she can't concentrate long enough to open a can.

Margaret sees a therapist at Western Psychiatric Institute & Clinic (WPIC) once each week and, unlike a lot of bipolar patients, takes her medication as prescribed. But despite the medication and treatment, she continues to experience episodes of depression and mania, although less frequent and severe than in the past.

MISTAKING DEPRESSION

Margaret Leech is a composite of a group of subjects currently involved in a study entitled "Cognition in Euthymic Older Adults with Bipolar Disorder," being conducted in part by Dr. Denise Chisholm, assistant professor, Department of Occupational Therapy.

"It's been estimated that mental illness will be the leading cause of disability by the year 2020," states Chisholm. "And with people living longer – and living longer with disabilities – this could place an extreme financial burden on our community, particularly in western Pennsylvania, with one of the oldest populations in the U.S."

Mental illness in older adults often looks different than in younger people, notes Chisholm. "We often overlook or 'forgive' older people who are forgetful, or mistake their depression for just being quiet or lonely."

Dr. Ariel G. Gildengers, assistant professor of psychiatry in the School of Medicine, is the principal investigator of the five-year study, which is funded by the National Institutes of Mental Health. Its purpose, as the title suggests, is to compare the cognitive abilities of older adults with bipolar disorder to like control subjects without the mood disorder. This project follows a pilot study by Gildengers that was funded by the Center for Late Life Mood Disorders at UPMC.

The study will eventually involve 80 subjects: 40 who are 50-65 years old, and 40 who are 65-plus. Forty control subjects will be divided into the two groups.

Subjects are referred from therapists at WPIC and elsewhere in the community. Once selected, patients undergo an extensive five-hour battery of comprehensive neuropsychological tests to create a

"It's been estimated that mental illness will be the leading cause of disability by the year 2020."

benchmark. Those tests evaluate factors such as information processing speed and visual motor skills.

Once they have been tested, Chisholm evaluates them in their homes to assess the functional outcomes of the study: activities of daily living and instrumental activities of daily living. These serve as a measure of the effectiveness of the interventions.

ASSESSING LIFE SKILLS

The basis of the evaluation is the PASS – Performance Assessment of Life-Care Skills – an internationally recognized performance-based, criterion-referenced tool for measuring occupational performance in the clinic and home. The PASS was developed by Dr. Joan C. Rogers, professor and chair, and Dr. Margo B. Holm, professor and director of post-professional education, Department of Occupational Therapy.

While The PASS was created more than a decade ago, it is designed to be easily adaptable to changing times. "There are subjects we need to evaluate for their ability to use an ATM card or a cell phone, for example," notes Chisholm, hardly commonplace items for seniors when the test was created.

In all, she assesses some 17 skills, everything from balancing a check book to medication management. Activities of daily living include routines such as getting dressed, getting in and out of the bathtub, cooking, and ironing.

"We actually observe people performing these tasks, not relying on self-reporting as a measure," notes Chisholm. "A client can say they're capable of trimming their toenails, and maybe they were in the past. But it's now a question of balance and safety, so I need to see that they can accomplish the task."

"We evaluate their ability to perform basic functions such as dressing themselves, paying bills, and shopping," says Chisholm. "While they may not be directly responsible for doing the shopping, it represents something they'd have to do to live independently."

Her first visit constitutes the baseline; subjects are reevaluated at year one and year two.

This research project is similar to the work Chisholm did for her doctoral program, which she completed last year, where she examined mood disorders, particularly depression, among older adults. In that research, she was particularly interested in people who were slower to process information. Chores that were both physical and cognitive challenged their abilities. "Tasks like taking out the trash, which requires you to carry the garbage, open the door, and get the trash out the door, can be difficult for people who are slower processors."

"Disabilities are so complex," Chisholm continues. "There are a variety of issues that, in virtually unlimited combinations, can manifest themselves differently. Environmental factors, physical conditions, living alone – all mean that there is no magic recipe for treatment. Every individual is different, and the more we can isolate variables, the better chance we have to help people continue to live independently."



**Maria Sharapova.
Michelle Wie.
Mia Hamm.
Sheryl Swoopes.**

A generation ago, these female athletes would have been known only to the most ardent of sports enthusiasts, but today, they are celebrities – instantly recognizable to anyone who turns on a television or leafs through a magazine. They are role models for the millions of girls who have made sports an integral part of their lives since the passage of Title IX of the Educational Assistance Act in 1972.

In the 30-plus years since this landmark legislation mandated gender equity in sports, the number of females participating in high school athletics has increased from an estimated 300,000 to over 2.8 million.

However, with this explosive growth has come an alarming increase in the number of anterior cruciate ligament (ACL) injuries suffered by young women. Each year in the U.S., roughly 38,000 female athletes are felled by an ACL injury. Related surgery and rehabilitation costs have skyrocketed to over \$646 million annually.

According to Dr. Timothy Sell, assistant professor, Department of Sports Medicine and Nutrition, female athletes who participate in pivoting and jumping sports such as basketball and soccer suffer ACL injuries at a rate that is four to six times higher than males playing the same sport. And for over a decade, Sell and his colleagues at the Neuromuscular Research Center at the UPMC Center for Sports Medicine have been researching

the reasons why these injuries occur and how they can be prevented.

“Most ACL injuries in female athletes occur during a non-contact episode,” he points out, “usually during deceleration, lateral pivoting, or landing.” He acknowledges that these movements are common to both male and female athletes. “The mystery is why the incidence of injury is so much higher for females,” he notes.

Sell says that researchers have examined three risk factors that could potentially contribute to the gender disparity in injury rates: anatomical, hormonal, and biomechanical/neuromuscular.

“A number of studies have focused on such anatomical measures as quadriceps angle and femoral notch

width, while others have considered hormonal factors, particularly those linked to the menstrual cycle,” he explains. “But the results have been largely inconclusive. The primary focus of our research is the neuromuscular and biomechanical risk factors, due to the potential for modification through training and intervention programs. There is increasing evidence that suggests that poor or abnormal neuromuscular control of the lower limb biomechanics, and in particular the knee joint during the execution of potentially hazardous movements, is a primary contributor to the female ACL injury mechanism.”

TRAINING FOR PREVENTION

Typically, ACL injury risk factors are divided into two categories: those that can be modified through training, such as strength and flexibility, and non-modifiable factors such as femoral notch width and generalized joint laxity.

While some researchers contend that it is the non-modifiable factors that make ACL injuries in females so disproportionate, numerous injury prevention programs have targeted the modifiable factors and have been successful in reducing the number of knee ligament injuries. Sell and a team of colleagues led by Dr. Scott Lephart, chair, Department of Sports Medicine and Nutrition, have added to this body of evidence by demonstrating that the neuromuscular characteristics of the lower extremities can be improved with a basic exercise program, thus potentially reducing the risk of injury during a drop landing. In addition, they found that a plyometric program involving exercises like bounding, hopping, and jumping in order to build muscular power, agility, and flexibility, can also be helpful in reducing injury risk.

“While there are any number of training programs available,” says Sell, “there’s been a real absence of hard data on what type of program is better for improving the landing mechanics of female athletes, which is when many injuries occur.”



Research indicates that female athletes land with less knee flexion, less time to peak knee flexion, greater knee valgus, greater vertical ground reaction forces, and less hamstring activation than male athletes. Females also have been shown to have decreased hamstring and quadriceps strength as well as decreased proprioception – awareness of the position of their body.

Participants in the study – 27 female high school athletes from the Pittsburgh area – were randomly assigned to either a plyometric or a basic resistance group. They then participated in an eight-week training protocol designed specifically to address deficient neuromuscular and biomechanical mechanisms that contribute to inadequate dynamic knee stability.

The training was divided into two, four-week phases. Both groups engaged in the first phase, which consisted of six lower extremity flexibility exercises, 11 resistance exercises, and three balance exercises. In phase two, the basic resistance group upped their number of repetitions, while the other group switched to 11 plyometric and seven agility exercises. Each exercise component was performed three days a week, with the average session lasting roughly 30 minutes.

PUTTING THEORY INTO PRACTICE

While Sell acknowledges that a larger number of participants would be necessary to determine the true effect of plyometric and basic resistance

training on ACL injury prevention, the findings from this smaller sample support a previous study that reported a reduction in knee injuries after a strength training program.

He also points out that all of the research that has been conducted to date has occurred in a laboratory setting. “There is no way to test whether athletes will mimic learned landing when reacting in a game situation.”

That fact notwithstanding, the team has introduced an injury reduction training program that not only incorporates elements from the research, but also exercises that can help change the way female athletes move, particularly in cutting and landing. The program, which is designed to be implemented by an athletic trainer, lasts eight weeks, with three sessions per week, 25 to 45 minutes per session. Copies of the program have been supplied to a number of athletic trainers in the area.

One stumbling block to widespread adoption, Sell explains, is the time constraint inherent in high school athletics. “The dilemma facing coaches is where should they spend their time? Teaching sport-specific strategy and tactics, or focusing on injury prevention? There isn’t sufficient time available to do both.”

Compounding the problem, he says, is lack of awareness of the problem. “Many coaches don’t know that their female athletes are at greater risk, nor do they know that training programs are available that could prevent ACL injuries.”

Sell believes that training should begin as soon as the female starts playing sports – high school is almost too late. “I’d recommend they start in junior high,” he notes.

The efficacy of starting injury prevention training at an even earlier age has piqued Sell’s interest, but here, he says, his research would take a slightly different twist. “There are no differences in the incidence of ACL injuries between boys and girls before the age of 10,” he points out. “The question is why.”

Keeping Female Athletes on their Feet



A Tale of Two Cities

**Johnstown, Pennsylvania, USA, “The Friendly City”**

Population:	24,000
Location:	55 Miles East of Pittsburgh On the Little Connemaugh and Stonycreek Rivers
Highlights:	Johnstown Flood, 1889
Average High Temperature:	63.7 degrees

**Ramadi, Sunni Capital of Anbar Province, “The Wild West of Iraq”**

Population:	400,000
Location:	100 Kilometers West of Baghdad On the Euphrates River
Highlights:	Bitter Battles
Average High Temperature:	105 degrees

The roughly 4,000 young men and women of the Keystone Division of the Pennsylvania National Guard and Reserves who live in and around the Johnstown area truly have seen the best and worst of times. Leaving the relative safety and security of the idyllic Laurel Mountain region with its ski slopes, hiking trails, and scenic beauty, they traveled halfway around the world to an area of intense sun and sand, considered by many to be the most dangerous place on earth,

Soon, they all will be returning home, each with a different experience and reaction to his or her time in combat. Each will be coming home to a unique family unit, employment situation, or educational picture. And with 4,000 soldiers returning to the region at virtually the same time, they could potentially strain the threads of the “seamless transition” that each military branch is committed to providing, and tax the services and the infrastructure of a rural region trying to welcome and reintegrate its sons and daughters.

For the last 18 months, dozens of organizations and individuals have been meeting monthly, anticipating the needs of returning soldiers – regular military as well as reservists – to their Laurel Highlands communities. Veterans organizations, physicians, rehabilitation scientists, psychologists, educators, employers, state and federal senators and representatives, are among those who have been establishing a “community practice” for soldiers disabled in war. In 2005, the group formalized their efforts and created the Pennsylvania Disabled Veterans Rehabilitation/Vocational Retraining Project (PDVR/VRP), and held their first national symposium in May (see sidebar).

REHABILITATING SOLDIERS – THE EVOLUTION

As long as there have been wars, there have been soldiers returning to their families and communities. Those serving in Iraq, however,

are particularly challenged. Virtually the entire country is the front line, thanks to improvised explosive devices (IEDs), booby traps, and landmines that permeate the country, increasing stress and anxiety levels – not to mention devastating injuries. These weapons account for 65 percent of current combat injuries, according to the Veterans Administration. Of those injured, 60 percent have some degree of traumatic brain injury (TBI). Jobs once considered support for combat troops can be just as dangerous as those assigned to root out the insurgents.

Returning to a rural area like the Laurel Highlands means limited access to some of the services available to regular military or reservists living in larger communities. For example, the Department of Defense mandates that all returning members of the military have a face-to-face Post Deployment Health Reassessment (PDHRA) and be provided follow-up care. But with thousands returning, administering the PDHRA in a timely manner could be difficult.

“Reservists who have served in Iraq or Afghanistan are posing new issues for the rehabilitation community,” says Dr. Michael McCue, vice chair and associate professor, Department of Rehabilitation Science and Technology, and an organizer of the symposium. “They don’t return to a military base; they come straight home,” once they are released from active duty and/or Walter Reed Army Medical Center, and may not have the support network available to other service branches.

His colleague, Dr. Mike Pramuka, assistant professor, also notes that the National Guard and reserve positions represent important part-time jobs for many who are returning and they want to keep them. “Admitting to post traumatic stress disorder (PTSD) or acute stress disorder could, in their minds, jeopardize their continuing employment with the guard or reserves.”

There are, of course, soldiers who return with more visible signs of combat: some have had limbs amputated; others have suffered polytrauma – severe injuries that might involve multiple systems and organs.

“These amputees may be different from those who rehabilitation professionals traditionally treat,” McCue points out. “They are young, otherwise healthy individuals who may want to return to high intensity sports or other strenuous activities. By and large, they are greatly motivated to successfully complete their physical rehab.” But there also are those amputees who may have serious head trauma or other injuries that may complicate and confound their rehabilitation.

While the current crop of military – unlike those who fought in Vietnam – generally return to a hero’s welcome, their homecoming can still be disconcerting. “The family support structure is the single most important ingredient in a successful reintegration,” continues McCue.

“Family members must understand that the returnees’ combat experiences can or may change them,” noting that issues such as PTSD may not surface for months or even years.

BEYOND FAMILY & MEDICAL CARE

Employers are also an important part of the mix. “The Laurel Highlands is lucky to have a number of defense contractors and other government-related companies that have a greater appreciation of what post deployment might be like for an individual,” states Pramuka. Companies like Lockheed Martin and Concurrent Technologies are organizational supporters of PDVR/VRP.

But not all employers are as supportive. At one time, being in the guard or the reserves meant serving one weekend per month and two weeks of summer duty. No more, as hundreds of thousands of weekend warriors have been called to active duty. Their jobs and status are supposed to be protected by the Uniformed Services Employment & Reemployment Rights Act (USERRA), but that’s not always the case. In fact, the U.S. Department of Labor’s reported complaints against employers rose 38 percent following the military build-up after September 11, 2001, declining again only after the department stepped up its efforts to educate employers about their responsibilities under USERRA.

Pramuka also noted that educational institutions are an important part of the equation. In 2005, Congress passed the Reserve Educational Assistance Program extending additional educational benefits to the reserve and guard members. “Young men and women who may not have considered higher education in the past because of monetary issues now have that option available to them,” he points out.

“Even if combat ends tomorrow, veterans will be dealing at some level with rehabilitation for years to come,” McCue notes. “We believe our efforts over the last two years will help create a model for assisting these men and women in rural areas like the Laurel Highlands.”

Laurel Highlands Plans for Returning Veterans

Nearly 200 participants gathered at the University of Pittsburgh at Johnstown in May 2006 to explore ways of improving the lives of soldiers returning from Afghanistan and Iraq. The symposium was the culmination of nearly 18 months of regular meetings at which a variety of people from all sectors of the community met to explore services available to veterans in rural Cambria and Somerset counties.

“Welcoming Returning Operation Iraqi Freedom/Operation Enduring Freedom Service Members” was initially supported by the Veteran Community Initiatives, Inc., and matched with a grant from Pennsylvania Governor Edward G. Rendell. Sponsors included the Hiram G. Andrews Center, SHRS’s Department of Rehabilitation Science and Technology, and the Uniformed Services University of Health Sciences.

According to Tom Caulfield, coordinator of the Pennsylvania Disabled Veterans Rehabilitation/Vocational Retraining Project (PDVR/VRP), “It was absolutely enlightening and comprehensive. The depth of topics covered spanned the physiological, the psychological, employment, and legal aspects of returning veterans.”

More than 20,000 men and women make up the Pennsylvania Air and Army National Guard – it’s not known specifically how many are serving in the Middle East. But some 4,000 are heading back to the Laurel Highlands, and many will need psychological counseling, physical rehabilitation, and assistance with job retraining, along with other support.

The conference attendees were welcomed by Caulfield and Honorary Chairperson Congressman John P. Murtha. Other speakers included keynoter Dr. Kenneth J. Farmer, Commander, North Atlantic Region, Walter Reed Army Medical Center; Dr. Paul F. Pasquina, director of the Amputee Program at Walter Reed Army Medical Center; Dr. Charles Engel, Walter Reed Hospital’s director of post traumatic stress syndrome; Judith Caden, director of vocational rehabilitation with the Veteran’s Administration; and, Dr. Steve Scott, director of polytrauma at the Tampa VA.

According to Michael McCue, co-coordinator of the conference, the group, which completed its recommendations in July, is proposing to develop, implement, test, and disseminate for replication a model for rural community integration. It would include a community needs assessment, outreach activities, dissemination of educational materials, and the creation of a directory of relevant services and resources. “In an area like the Laurel Highlands that is rural and widespread, it’s not enough to have the services and resources veterans require; they need to know how to find and access them,” McCue notes.

Such a model program would also include functional assessment, individual and group counseling and support, assistive technology assessment and training, pre-vocational training and job search training, and access to a full range of rehabilitation therapies.

Finally, McCue points out, it is essential that every component be continuously evaluated for its efficacy.

The group is in early discussions regarding funding for this ambitious and essential program, which they hope will progress within the next several months. McCue points to the Veterans Administration, the Department of Defense, the Hiram G. Andrews Center, and the NIDRR-funded Rehabilitation Engineering Research Center on Telerehabilitation at the University of Pittsburgh as possible sources of support for the effort.



TRANSFORMING LIVES THROUGH INNOVATIVE TECHNOLOGIES

THE QUALITY OF LIFE TECHNOLOGY ENGINEERING RESEARCH CENTER

Imagine an intelligent mobility platform that not only steadies an older person as he walks, but uses artificial intelligence and a suite of on-board sensors to help him find his destination.

Or, an intelligent support environment that can help predict when a problem is going to occur and guide an intervention through the fusion of sensors, modeling, and knowledge of natural human behavior.

These are just two of the technologies that will be investigated at the Quality of Life Technology Engineering Research Center (QoLT ERC), which was recently established with a \$15 million grant from the National Science Foundation. Close to 500 colleges and universities originally applied for the highly competitive grant, with the joint proposal by SHRS and Carnegie Mellon University coming out on top after a three-year review process.

The QoLT ERC is unique in that it will bring together members of the scientific, engineering and medical communities to work together to develop technologies that will help older adults and people with disabilities live independently and productively. The four main research thrusts will be *monitoring and modeling*, in which certain aspects of human behavior will be captured and translated into machine learning; *mobility and manipulation*, which will focus on developing new technologies that will understand the capabilities of the user in order to facilitate movement; *human system interface*, which will aid communication; and, *the person in society*, which will focus on how these new technologies can be used in the real world.

Researchers at the QoLT ERC will create a scientific and engineering knowledge base that will enable the development of intelligent systems that can co-exist and work with people, particularly the elderly and those with impairments. These intelligent systems could include devices that a person carries or wears,

a mobility system that a person rides or is accompanied by, or an environment equipped with instruments to aid people with varying types of disabilities. These devices and systems will be able to monitor the function and activity levels of people living alone, prompt failing memories, or control household appliances. Technology could be developed that will let people continue to drive safely as they age. The center will also look to improve existing technologies, like wheelchairs, by adding capabilities that provide navigational and cognitive assistance, as well as develop technologies for the workplace that will increase the employability of people with disabilities.

Quality of life issues will consume more of the nation's resources as it faces a growing proportion of older adults and people with disabilities. Today, some 12 percent of the U.S. population is over 65. By 2030, the U.S. Census Bureau estimates that more than 20 percent of a projected population of 300 million people will be 65 or older. And while today,

approximately 60 million people in this country have some kind of disability, that number is expected to grow to 75 million by 2030.

The new QoLT ERC will be co-directed by Dr. Takeo Kanade, The U.A. and Helen Whitaker University Professor of Computer Science and Robotics at Carnegie Mellon University, and Dr. Rory Cooper, distinguished professor and FISA/PVA Chair of Rehabilitation Science and Technology at SHRS.

Dr. Kanade's perspective on the QoLT ERC can be read in the ACCESS column on page 5. Here, Dean Cliff Brubaker, Dr. Kate Seelman, Dr. Rory Cooper, and Dr. Dan Ding of the Department of Rehabilitation Science and Technology, offer their views on the impact QoLT ERC will have on the school and society.

(Continued on next page)



**How will the QoLT ERC impact SHRS?**

Brubaker: We're the only ERC in North America focused on rehabilitation and people with disabilities. We're going to have resources that no one else has ever had.

Cooper: I would guess it's going to make us the number-one-funded school of its kind in the country, or at least pretty close to it. It's going to cause people to look and see what we're doing. It will influence prospective students to come and find out what's special about the school. We will have more funding opportunities for our undergraduate and graduate students; perhaps, more than at other competitive institutions.

Brubaker: It's fair to say that there isn't any other institution in the country that has been given an opportunity to do what's going to be done here. If we're able to realize the full potential of this opportunity – and I believe we will – we will have the knowledge base for a new field that has rehabilitation, assistive technology, and the whole concept of self-determination as its guiding principles. That, in itself, would set anyone apart,

and certainly would bring distinction and recognition. But more importantly, rather than thinking of it in terms of recognition specifically for our school, it's going to create a new field that addresses far-reaching issues and problems that have national and international significance.

Will the QoLT ERC fundamentally change the school?

Brubaker: Yes. There's the potential for that. Not only that, the interesting thing about this program is that it actually fits very well with some of the other things that we have in our plans for further development, such as regenerative medicine. These things now fit together and will be greatly enhanced.

Cooper: I also think it's going to create additional research resources and opportunities within the school. We have already started with research collaboration open to all of our faculty.

Seelman: And we're seeing more interaction as a result. I anticipate researchers from throughout the school partnering with their peers both within SHRS and at CMU.

Brubaker: We're actually strongly encouraging that interaction. The concept of the person in society has to be infused throughout every proposal connected to the QoLT ERC. That's a natural draw for faculty from Physical Therapy, Occupational Therapy, Communication Science and Disorders, and Rehabilitation Science and Technology.

Cooper: We're all going to be learning to think differently. And then we will teach our students to think differently, so that when they develop products, they will not only have a greater understanding of the needs of the population, they will actually involve consumers in the product development process.

Do you expect any resistance to this new way of thinking?

Ding: Probably not from our faculty, but this is a very different way of thinking for some pure engineers. They are more accustomed to developing a technology, then finding a problem to solve with it; not finding the problem, then developing the technology to solve it.

Cooper: Engineering used to be compartmentalized. You would have people engineering technologies, people integrating technologies, people in product development, people in manufacturing, people in marketing and sales. Each was a distinct branch. Then came the concept of concurrent engineering, which meant integrating all of those branches. But they never involved the end-users, the service providers, the regulators, or the payers in that process. Concurrent engineering basically involved the internal stakeholders. We're trying to get external stakeholders involved in the process as well.

Brubaker: On the other hand, I think our colleagues are fast learners. I don't think this is going to be all that difficult for them. I think they're very well-disposed to this notion. We have to remember that the QoLT ERC development and proposal process has taken three years. A lot of people have already gone a long way to change how they think about this. It's been a valuable learning experience in both directions. We've learned a great deal, and I'm sure they've learned a great deal from participation with us. I don't think we're finished with this evolution, but I think we're well past the beginning. I would expect it to go very well.

(Continued on next page)

Frequently Asked Questions**What are quality of life technologies?**

People with reduced functional capacities due to aging or disabilities have long relied on assistive technologies, such as wheelchairs, walkers, and prosthetics. But many people are unable to use these devices because of their individual circumstances. For instance, a person with a movement disorder, such as essential tremor, may have difficulty controlling a power wheelchair. The QoLT ERC seeks to expand the benefits of assistive technologies by combining them with computers, robotics, and other intelligent systems that improve their performance or adapt them to an individual's needs.

A wheelchair with quality of life technology might help guide the user, prevent the chair from getting stuck in loose soil or snow, warn of obstacles and possible collisions, help negotiate tight doorways, call for help when necessary, and include controls that compensate for tremors. An intelligent walker might not only provide support for a frail person, but also adjust to changing terrain or to the user's posture. Prosthetic arms or legs might be controlled by nerve impulses recorded by sensors embedded directly in the brain.

What new directions are quality of life technologies likely to take?

Existing information technology can be applied to the needs of older adults and people with disabilities in innovative ways. Handheld data-recording devices might prompt people with failing memory to keep an appointment or take a medication. Devices that read bar codes and translate the information into speech could help people with visual impairments as they shop. Electronic sensors can help monitor the health and behavior of individuals living alone and call for assistance when necessary.

Would quality of life technology be useful to people who aren't aged or don't have disabilities?

Many modern conveniences actually came into existence to enable people with disabilities. For example, the power sliding rear doors on minivans were motivated by wheelchair users, but are now popular among families with children. Likewise, home automation systems that enable an older adult to continue independent living in his/her residence improve safety and energy efficiency of any home in which they are installed.

(Continued on page 33)

**How will the end-user point of view be incorporated into the QoLT ERC?**

Cooper: We want to create both market-pull and market-push. We want to understand what the gaps are. What do the consumers really need, and what do manufacturers need? We also want to try to remove barriers to payment; to educate regulators and policymakers so that the technology can move readily into the marketplace.

Seelman: We're going to build on the ongoing work being done at HERL, where we've developed products with end-user input and feedback. We also want to include stakeholders such as providers, clinicians, and regulators in the input and feedback processes.

Cooper: And we're not simply going to focus on the application of robotics, artificial intelligence, integrating sensors, and machine learning. We'll also be looking at the end users in their home environment, their work environment, in their community and living environments, so that we make better policy and issue decisions.

Seelman: We've already made a really large investment in research around privacy, because it is one of the great public policy issues of our time. The privacy experts at CMU are doing research and embedding privacy technology into whatever sensors are tracking technology.

Ding: We also have built in adoption and outreach components. We want students to understand that technology alone will not work; that they have to keep the prospective user in mind from beginning to end if they want the technology to be adopted and used. We want to reach out to the practitioners, the clinicians, caregivers – even the seniors themselves. We want to draw them into the program, to educate them, so that they are willing to adopt the technology when it becomes available.

Senior citizens are notoriously technophobic. How will you get them to adopt this new technology?

Cooper: How you get them to adopt it is to involve them throughout the process so that they're stakeholders; they're part of the team.

Seelman: They may be technophobes, but perhaps what they fear even more is leaving their homes. And in order for them to maintain their homes and their independent living, they'll need quality of life technology.

Cooper: The surveys about elderly people and their acceptance of technology are usually "Would you use this technology?" But experience shows that when faced with a situation, they take the technology and they use it.

Seelman: Like e-mailing grandchildren. That really has been picked up by older adults. They want to communicate with their grandchildren, so they learn how to use a computer and log onto the Internet.

Brubaker: The other thing that you have to realize is that when you ask somebody, "Would you use something," they don't have any ability to appreciate what that something is or how it would work. They can't answer you in an informed way. The other side of quality of life technology is to make it innocuous, to make it transparent, so that it's not out there staring you in the face; it's subtle, and it does things in a user-friendly manner.

How do you see QoLT ERC evolving?

Brubaker: We have talked about this as an independent entity, something that would reach out to all dimensions of the university, something maybe like the McGowan Institute. The QoLT ERC elevates our collaboration with our colleagues at Carnegie Mellon. It allows us to develop consortiums with industries with very wide-ranging capabilities, creating new areas of study. The idea of this continuing in perpetuity seems very obvious.

Cooper: And that's actually more attractive. We want to be multi-disciplinary. Inter-disciplinary. We want to tie people together. I think it's exciting to be the first school-wide institute here, and then perhaps developing university-wide.

Brubaker: We're actually multi-institutional.

Cooper: Yes, multi-institutional. The other thing that's exciting about the QoLT ERC is that our school has always embraced diversity, but hasn't necessarily had the resources and the focus on increasing diversity in the faculty and student populations. The QoLT ERC will give us the resources to address that as well.

What are the most common disabilities?

A 2004 report by the National Center for Health Statistics (NCHS) identified 35.1 million Americans – about 16 percent of all adults – who have a hearing impairment and 19.1 million who have vision problems. Almost 32 million non-institutionalized adults have some difficulty with physical function, including 15 million adults who are unable or find it very difficult to walk a quarter of a mile. Among the growing population of people age 65 and older, many have difficulty taking care of themselves. According to the NCHS, 6.3 percent of all older adults need help with personal care. The 2003 National Health Interview Survey found that 12 percent of non-institutionalized persons had some limitation in usual activities because of chronic conditions.

Where will the QoLT ERC be located?

In the short term, the administrative, research, and clinical operation will be housed in existing facilities at Carnegie Mellon, Pitt and the University of Pittsburgh Medical Center (UPMC). For the long term, because of its unique interdisciplinary character, the center needs to be more consolidated. Several options are being carefully considered, taking into account the needs of the center and other groups. A decision should be made in the near future.

What other groups are joining Carnegie Mellon and the University of Pittsburgh in the QoLT ERC?

The QoLT ERC will address the special needs of minorities, women, rural populations and young people through partnerships, with a variety of affiliated institutions. Among them are the Florida/Georgia Louis Stokes Alliance for Minority Participation; one to three universities and colleges including Albany State University, the University of Miami, and Florida State University; and, two historically black colleges and universities, Howard University in Washington, D.C., and Lincoln University in Philadelphia. Chatham College will provide outreach to women. Tech-Link Pittsburgh and Carnegie Mellon's Robotics Academy will provide outreach to pre-college students. The special needs of rural populations will be addressed with the aid of the Center of Excellence for Remote and Medically Underserved Areas at St. Francis University in Loretto, Pa.

Will there be other sources of funding besides the NSF?

The center has created a consortium of companies engaged in assistive technologies, information technology, consumer electronics, robotics, and other products related to quality of life technology for support and will collaborate with them to help a QoLT industry emerge. The center, which will seek support from a variety of foundations, will also license the technology it develops to commercial interests.



the Real World

As a first-year masters degree student in the Rehabilitation Counseling program, Megan Heilenman was required to do a practicum in assistive technology. But unlike many of her peers who gravitated toward high tech, Heilenman opted for a high touch experience of the canine kind.

For three weeks, she participated in team training at Canine Partners for Life (CPL), a service dog provider headquartered outside of Lancaster, Pa.



Since its founding in 1989, CPL has placed over 400 service dogs with individuals with either mobility or self-care limitations. In addition, each year the organization places roughly a dozen companion dogs in private homes and group residences.

CPL's mission is to provide professionally trained service dogs that increase independence and improve the quality of life of people with mobility impairments. "Their goal is to establish a lifetime bond between the recipient and the dog," Heilenman explains. "The two become a team, with the dog performing certain tasks of daily living that otherwise might have been impossible."

The service dogs, which go through a year of specialized training prior to being placed with a recipient, are capable of performing a host of tasks, from retrieving objects as small as a dime from the floor,

to pulling a recycling bin to the curb on pick-up day. "They can even pull a basket into the laundry room and help remove clothing from the washer and dryer," she adds. "All of the tasks are done with the recipient right beside the dog, giving direction and encouragement."

EARLY TRAINING

Heilenman says that dogs – the majority are Labradors, Golden Retrievers, or a mix of the two breeds – enter the CPL kennel on their first birthday, usually from a puppy home, where they are placed at eight weeks of age. "These homes are important first links in the process of turning the young puppies into mature, stable dogs that will calmly and dependably assist their human partner," she explains.

"Being part of a miracle," is how one CPL puppy home volunteer describes the experience. In addition to providing a safe and loving environment, the puppy home volunteer is expected to teach basic obedience and crate training and expose the puppy to a wide range of experiences by socializing the puppy in public.

"The puppy homes are expected to take the puppy with them during as much of their daily living as possible," says Heilenman. "They go everywhere from the grocery store to the mall to restaurants."

Once at the CPL kennel, the trainers build on the obedience skills learned in the puppy home, increase exposure to the various environments in which the dog will work, and teach and enforce the particular skills needed to assist a person with a disability.

"The dog's training is a combination of positive reinforcement using verbal and physical praise and playtime, and negative

consequences for inappropriate behavior, usually a verbal reprimand," Heilenman explains. "The purpose of this year is to build the dog's confidence and problem-solving skills, and to ensure behaviors that will make the dog a reliable, happy, and productive partner."

Roughly three quarters of the way through the training year, the trainer makes a placement decision for the dog based both on the personality and abilities of the dog, and the needs, personality, and lifestyle of their human partner. Once the decision on the match has been made, the dog is custom-trained to meet his partner's specific needs.

The service dogs can be taught to take on any number of tasks, from retrieval and dragging to assisting in dressing, opening doors, helping with night-time bed flips to prevent bedsores, to locking and unlocking a manual wheelchair break.

"Some service dogs are trained to stand with their two front feet on high counters to give cashiers a money purse," Heilenman adds. "The cashier

makes the transaction, places the change and receipt in the money purse, and the dog then returns it to the owner."

Seizure alert is another specialized service skill. "These dogs are chosen because of a specific personality and behavioral trait that indicates they may be able to use their instincts to alert an individual to an impending seizure. However," she points out, "they need regular exposure to seizure activity, since this is not a skill that can be trained; rather, it's one that can be reinforced. Applicants for seizure alert dogs need to be experiencing some sort of seizure at least once monthly to be considered."

COMPLETING THE MATCH

Once the service dog has completed training, the human partner enters the picture. Over a three-week period, the recipient and the dog work as a team. "They are taught all aspects of dog care and handling," Heilenman explains. "Everything from the essentials of dog care and service dog etiquette to the legalities involved with service dog ownership."

The recipients are required to spend three weeks at CPL, either staying at a local hotel at their own expense or, if available, in a volunteer home. The typical training day includes lectures, obedience classes, and field trips. The latter become

progressively more adventurous, with the final trip a train ride into downtown Philadelphia. There is no cost for the training, though recipients are asked for a \$900 donation at the time of placement.

The training culminates with a certification evaluation and a graduation ceremony, but CPL's involvement doesn't end when the teams disperse to any of the 40 states across the country where canine partners are located. There is extensive follow-up, with the team's progress monitored and evaluated throughout their working relationship.

While Heilenman was impressed with the skills of the service dogs, she was most taken by the transformation that occurred with their human partners. "It was amazing how much the recipients changed," she remarks. "For example, when one man started the training, he was very tentative with his dog. By the time he did his certification evaluation three weeks later, he practically ran through the store."

She says that all of the 13 recipients who participated in this summer's session indicated that their chief motivation was a desire to do more on their own. "These are people who don't want others doing for them," she says. "As one woman put it, 'I want a service dog; not a service husband.'"



PHR/FAQs

Why should everyone have a PHR?

Members of AHIA and AMIA believe that all individuals should be able to readily access, understand, and use their personal health information. A PHR allows individuals to be more active partners in their health care, and gives them up-to-date information when and where they need it. A PHR provides a single, detailed and comprehensive profile of a person's health status and health care activity. It facilitates informed decisions about the care of the individual. It may also reduce duplicate procedures or processes – such as repeated lab tests and x-rays – saving time and money. A PHR helps people prepare for appointments, facilitates care in emergency situations, and helps track health changes.

What media should you use for a PHR? Health Information professionals encourage individuals to begin tracking their health information in whatever format works best for them, even if the choice is paper. However, they recommend that individuals use an electronic version to facilitate a timely, accurate, and secure exchange of information across health care institutions and providers. PHR information should always be stored in a secure manner just as you would store other confidential personal information such as financial information.

How can an individual choose a PHR supplier? Individuals can create their own PHR, or may be offered one by a variety of sources, such as a health care provider, insurer, employer, or a

commercial supplier of PHRs. Each supplier has different policies and practices regarding how they may use data they store for the individual. Study the policies and procedures carefully to make sure you understand how your personal health information will be used and protected. Policies to look for include privacy and security; the ability of the individual, or those they authorize, to access their information; and control over accessibility by others. If the PHR contains the same information that the doctor has seen, it has more usefulness for tracking purposes than information from insurance forms. Insurance claims information may list the diagnosis or medication but not the details (for example, actual blood pressure reading or dose of the medication taken).

What should a PHR contain? Broader than a medical record, the PHR should contain any information relevant to an individual's health. In addition to medical information such as test results and treatments, a PHR may include diet and exercise logs or a list of over-the-counter medications. A PHR should contain the following information:

- Personal identification including name, birth date, and social security number
- People to contact in case of emergency
- Names, addresses, and phone numbers of your physicians, dentists, and specialists
- Living wills, advance directives, or medical power of attorney

- Health insurance information
- Organ donor authorization
- A list and dates of significant illnesses and surgical procedures
- Current medications and dosages
- Immunizations and their dates
- Allergies or sensitivities to drugs or materials, such as latex
- Important events, dates, and hereditary conditions in your family history
- Results from a recent physical examination
- Opinions of specialists
- Important tests results; eye and dental records
- Correspondence between an individual and his or her provider(s)
- Current educational materials (or appropriate web links) relating to one's health

Where individuals should begin: A good place to begin is with a visit to www.myPHR.com (a site provided as a free public service by AHIMA) for further information on creating and managing a PHR. We suggest that people find out if their health care providers, employer, insurers, or another individual or organization offers a PHR. If an individual needs to obtain copies of medical records themselves, they can contact doctors' offices or each facility where they have received treatment.

Each person can create a PHR at his or her own pace, perhaps starting with the next medical visit. The important thing is to get started.

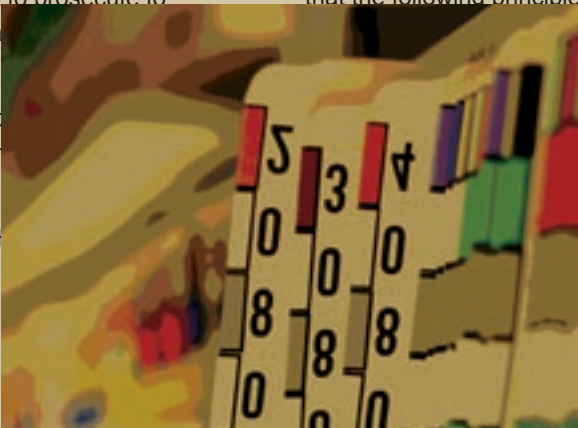
• Work with appropriate law enforcement to prosecute to the maximum extent allowable by law any individual or organization who intentionally misuses PHI.

• Continuously improved processes, procedures, and technology so that PHI practices improve over time.

Furthermore, because PHI is expected to flow across organizational boundaries through the NHIS, it is important that the following principles covering information when it is shared between organizations also apply:

• Privacy protections must follow PHI no matter where it is shared.

• Privacy protections for PHI should apply across all settings to facilitate consistent understanding of which laws and the individuals whose privacy is covered by such laws.





Even the casual sports fan can spot trainers tending to athletes on the field or the sidelines. Athletes pull muscles, dislocate fingers, or suffer more serious injuries like concussions or broken bones; unfortunate, but common occurrences in the world of competitive sports.

But what about the athlete who suffers an asthma attack, the diabetic athlete who experiences hypoglycemia, or the football player who collapses from heat exhaustion during a rigorous workout under the August sun?

It was the reality that athletic trainers are sometimes confronted by these life-threatening situations that prompted the requirement that students enrolled in the undergraduate program in Rehabilitation Science with a concentration in Athletic Training become certified as emergency medical technicians (EMTs).

"Traditional athletic training curriculum includes an extensive list of courses in anatomy, physiology, kinesiology, and exercise conditioning as well as basic first aid and safety," explains Dr. Kevin Conley, assistant professor, program director, Athletic Training Education. "However, we were finding that students were not getting enough exposure to emergency response and triage. Certified

athletic trainers are often the 'first responders' for athletes. Understanding the special needs of these athletes and responding to any medical situation that occurs on the field or at the practice facility is extremely important."

S. Robert Seitz, assistant professor in the Emergency Medicine Program, agrees.

"It is our contention that rehabilitation begins at the moment of initial intervention during an acute event," says Seitz. "Early intervention during an acute medical or traumatic event decreases morbidity and mortality, and maximizes the potential for full recovery."

ADDED BENEFITS

Guy Guimond, clinical coordinator, Center for Emergency Medicine, coordinates and teaches the rigorous EMT program, which has at its base *Mosby's EMT-Basic Textbook*, standard issue for virtually every major EMT program in the country. The text was written by SHRS faculty Dr. Walt Stoy, professor and director of Emergency Medicine, Thomas E. Platt, assistant professor and vice program director, and Debra Lejune, instructor.

Conley says that student response to the EMT requirement has been "extremely positive. They feel more prepared to

respond to any emergency situation that may arise."

He also believes that requiring the EMT certification provides greater credibility for the clinical education portion of the AT program, which commences in the junior year.

An added benefit, he notes, is that students who have already received their EMT certification have been able to parlay that credential into summer employment opportunities that both improves their professional skills and provides a reasonable wage.

MORE EMTs

Noting the success of the program, Seitz suggests that the EMT training be extended to all SHRS students. "Every student in the school has the potential to benefit the patients they encounter and themselves as a practitioner by becoming a certified EMT," says Seitz.

He points out that in virtually any physical rehabilitation, health care, athletic or public setting, an individual could experience a seizure, drug reaction, asthma attack, or other health emergency. "The more professionals who are trained as EMTs, the better chance they have to intercede should an unexpected medical situation arise," he concludes.



Dialogue

A Conversation with
Kathleen A. Helling, Esq.

Kathleen A. Helling, Esq. Medical and Health Sciences Foundation

Kathleen Helling, an attorney by training, is the director of planned giving for the Medical and Health Sciences Foundation, University of Pittsburgh and UPMC. The Foundation supports the School of Health and Rehabilitation Sciences in its fundraising and development endeavors.

Q Given the number of worthy causes competing for philanthropic dollars, what do you think motivates a donor to give to his/her alma mater?

A Everyone knows that charitable giving comes from the heart. However, I think it often comes from the head as well. When a person has enjoyed a positive educational experience – or has greatly benefited in his or her career because of what was learned at college or university – then it is a natural response for the person to want to support that institution and to help ensure that it will be able to provide similar benefits for future generations. Frequently, I have had a donor tell me that if it weren't for the scholarship assistance he had received, or maybe the special interest a particular professor showed in him, then that person would never have achieved what he has. The heart is grateful and the head says that this is a worthwhile thing to support.

Q A university receives millions of dollars from donors for naming rights to buildings or to fund chairs. What impact, if any, can the smaller donor have on the institution?

A I'm so glad you thought to ask that question. One of the really fun aspects of my job is that I get to visit with so many wonderful people. It is always a treat for me when I have the opportunity to ask someone if she realizes that she has been supporting the university with her gifts for 20...or 30...or 40 years. People don't think about what an amazing impact they have been able to make with small gifts over a long time. Also, there are any numbers of existing scholarship and research funds that donors can support. Together, people can make a big difference. Remember, too, that no matter the size of a gift, donors can always work with Patty Kummick, the director of development for SHRS, to determine exactly how they would like for their gifts to be used.

Q Why might a planned gift be a good choice for an alumnus who would like to support SHRS?

A There are several different scenarios that might apply. For example, for someone

who would like to be able to make a contribution to his or her alma mater, but is concerned about first taking care of personal or family obligations, a planned gift can offer a great opportunity to achieve both goals. A bequest in a Will, a beneficiary designation on a life insurance policy or a retirement account, or a remainder interest in a trust are easily accomplished – and these gifts do not take effect until the death of the donor. For an alum who is concerned about having an adequate income during life, there are charitable gift vehicles, such as charitable gift annuities and charitable remainder trusts, that can provide a guaranteed stream of income for the donor, with the balance eventually going to support SHRS.

Q How could the new Pension Protection Act of 2006 assist owners of Individual Retirement Accounts in making charitable gifts?

A The long-awaited passage of this Act is good news for qualified donors. First, though, it is important to understand that the IRA charitable rollover provision applies only to outright lifetime transfers to qualified charities – not to future gifts, charitable gift annuities, or charitable trusts. Also, the new rules will only apply to transfers made during years 2006 and 2007. In brief, the new law provides an exclusion from gross income for otherwise taxable IRA distributions of up to \$100,000 per year from traditional IRAs and Roth IRAs for qualified charitable distributions, when the distribution is made directly to the designated charity by the plan. The plan owner must have attained at least age 70½ on the date of the distribution to the charity. (Note that a "qualified charitable deduction" specifically excludes distributions to donor advised funds or supporting organizations.)

Q Are the laws governing planned gifts the same in every state?

A No. For example, each state has its own rules for making a valid Will, although of course, there will be many similarities. (TIP: If you move to another state, you should have a local attorney review your existing Will to make certain that it is valid in your new state of residence.)

Q Does a donor need a minimum amount in order to establish a planned gift?

A No. Anyone can make a "planned gift" of any amount. A bequest in a will, a beneficiary designation on a paid-up life insurance policy, or a future gift of securities are all examples of planned gifts that can run the gamut from modest to major – and all are greatly appreciated and can help to make a positive impact on SHRS.

Q SHRS has a number of generous alumni who make annual contributions. Given the extent to which the School relies upon these gifts, can you suggest a planned giving vehicle that could help to alleviate this loss when a contributor is no longer able to make his or her yearly gift?

A As costs of education and research continue to climb, it is an on-going challenge for SHRS to raise new funds while also "making up" for those lost annual gifts upon which the School has come to rely. As I mentioned earlier, there are caring alumni who make it a practice to give something back to the School every year. Taken as a whole, the consistent generosity of these many folks is something SHRS relies on in order to provide for such essential things as scholarship assistance, resource funds, research support, library maintenance, and technology updates. Whenever a long-time annual gift is lost, the School must somehow make up for that important loss. One way that a contributor can make certain that his or her gift will continue to support SHRS in perpetuity is by endowing his annual gift. This can be accomplished quite simply either during a donor's lifetime or through an end-of-life gift (such as a specific bequest in a will). For example, at the current interest payout rate of 4.25 % employed by the University of Pittsburgh, an endowed gift of \$24,000 would replace a donor's current annual gift of \$1,000 in perpetuity. An endowed fund of \$12,000 would provide SHRS with a yearly gift of over \$500. Either Patty Kummick or I would be most pleased to assist anyone who may have an interest in this kind of legacy gift to benefit SHRS.

First Responders on the Field



FEED YOUR NEED...



...to make a difference. You don't have to be wealthy to make a difference with your charitable giving. Whether it's an annual gift, a pledge to be paid over time, or a planned gift to be completed at some point in the future, your donation to the School of Health and Rehabilitation Sciences will ensure that our proud tradition of educating talented and caring therapists, clinicians, and researchers continues. And the good feeling you'll get from giving a gift to SHRS is the icing on the cake.

For more information, contact Patty Kummick, director of development, at 412-383-6548 or pkummick@shrs.pitt.edu.

You can ...

- support SHRS in general, or direct your contribution to a specific program or fund
 - establish a current-use or endowed fund
 - enjoy certain tax benefits
 - leave a lasting personal legacy
- ... all through a gift to the University of Pittsburgh.



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School of Health and Rehabilitation Sciences

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