

RUSK

Capturing the Momentum of Rehabilitation Medicine
at NYU Langone Medical Center

SPRING 2011



**Rusk Institute of
Rehabilitation Medicine**

NYU LANGONE MEDICAL CENTER



From The Chairman

In the wake of any great success there exists a choice: revel in the accomplishment and collect the deserved accolades, or capitalize on the momentum and strive for ever greater achievements. Although our past successes at Rusk Institute of Rehabilitation Medicine could surely sustain a reputation of excellence, we opt instead to embark on initiatives that strengthen and ensure our long-term position as a leading, world-class center for clinical care, research, education and advocacy for people of all ages with disabilities.

The Rusk Institute was founded in 1948 by Howard A. Rusk, MD, as the first university-based rehabilitation program in the world. Under his visionary leadership, Rusk established a reputation as one of the leading physical medicine and rehabilitation programs, worldwide. For more than five decades, Dr. Rusk's legacy has been maintained by the tireless efforts of our clinical, research and education staff, who continually strive to advance the care of people with physical and cognitive disabilities. Rusk has consistently been ranked within the top ten rehabilitation hospitals in the United States, and as the best in New York State, by *U.S. News & World Report* for 21 consecutive years.

Much has been accomplished since I came to Rusk as Chair three years ago. As you will read in this inaugural issue of *RUSK*, our Women's Health and Limb Loss Programs have been infused with new talent, and these young physicians have rapidly taken the lead in advancing rehabilitation care within their specialties. Our Brain Injury Program has benefited from the addition of three new physicians, a new Director of Psychology, and several research faculty who are examining issues ranging from concussion and motor recovery to cognitive dysfunction following brain injury and stroke. Our Pediatric Program recently became the recipient of a Lokomat, one of few such devices available in the Northeast for use in clinical care and research.

Plans are currently underway to expand Rusk's reach into the community to better meet the needs of our patients by providing physical medicine and rehabilitation services where and when they need them. Our musculoskeletal/spine interventional program is being strengthened by the state-of-the-art Musculoskeletal Institute, a joint venture of the Departments of Orthopaedic Surgery and Rehabilitation Medicine and the Divisions of Rheumatology and Anesthesiology. The facility is slated to open in December 2011.

Despite the multitude of challenges facing healthcare today, the vision for an increasingly strong Rusk is fueled by our staff's tireless dedication to the very best quality care and our patients' limitless will to improve their lives. We are excited to forge ahead with our plans to advance clinical care, research and education as we enter the second decade of the 21st century. I trust you will enjoy reading about the Rusk Institute of Rehabilitation Medicine in *RUSK* and look forward to sharing more of our progress with you in the future.

Steven R. Flanagan, MD

Chairman, Department of Rehabilitation Medicine
Medical Director, Rusk Institute of Rehabilitation Medicine

Top Five at Rusk

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From the Minutiae, Keys to Motility: Putting Research Into Action at the Motor Recovery Lab

Four years ago, a compelling observation was made by Preeti Raghavan, MD, and her colleagues while studying motor control in stroke patients. They found that patients with hemiparesis did not easily learn the relationship between an object's weight and the amount of fingertip force needed to grasp and lift the object — until they practiced with their unaffected hand first. The work suggested that one approach to treating functional deficits in patients with hemiparesis may be to use

the strong, unaffected hand to teach the weaker, affected hand.

At Rusk's new Motor Recovery Research Laboratory (MRRL), which had its first open house on July 29, 2010, Dr. Raghavan now examines how the insights gained in research can be put into practice to yield the best results for patients. With the creation of MRRL, physiatrists are developing effective therapeutic strategies for recovering and regaining movement after brain injury.

Dr. Raghavan, an NIH-funded physician-scientist, is director of the lab. Her singular perspective is formed by studying the minutiae of fingertip forces and finger movements. Effectively reverse-engineering a brain injury, she traces the discrete pathways of an injury back to the brain to understand in greater detail how individuals are affected and what future treatments may help restore hand function. A study of how patients shape their hands around an object, for example, helped physiatrists at the lab see that stroke victims use a different set of joints than healthy individuals do.

By opening a window into the origins of motor impairment, the lab's clinicians and researchers improve understanding of the applicability and viability of proposed treatments.

In the rehabilitation of brain injuries, it's critical to understand that no two stroke victims are affected identically. The unique factors underlying each patient's functional challenges vastly complicate treatment selection and, as a consequence, guidelines for rehabilitation have historically hinged on the past experience of a therapist. Advances by Dr. Raghavan's team, such

as the development of a rating scale to measure upper-extremity impairment, signify progress in learning how specific problems impact an individual's ability to function.

Progressive studies at the new lab are also investigating how overuse injury may be prevented in musicians and, separately, how music can help stroke patients relearn motor skills. The latter research stems from an unconventional willingness to explore the relationship between emotion and a patient's ability to control hand movement. "To move, you have to set yourself free," says Dr. Raghavan. "I'm interested in any approach that helps bring the body into that state."

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Care and Community for Amputees: Forging a Path Toward a Model Limb-Loss Program

Technology and education are the co-drivers of progress, both within rehabilitation medicine and far beyond.

At Rusk, effective pairing of the two has propelled the limb-loss program to the forefront of amputee care. Led by Jeffrey Cohen, MD, and Jeffrey Heckman, DO, the multidisciplinary program is proving influential, on a national scale, in the advancement of medical and functional outcomes for limb-loss patients.

The program has long capitalized on technology to improve treatment options. In 2009, marking the country's first such use of mobile technology, the department launched a comprehensive platform to assist amputees and their caregivers with community access, peer support and community reintegration through a real-time web portal. Additionally, a recent clinical study utilized 7T MRI (ultra-high-field MRI technology) to gain deeper insight into disuse osteoporosis following limb loss; further understanding of the impact of prosthetics and weight on bone integrity may allow physiatrists to better tailor medical and rehabilitation therapies.

Leveraging technology, education and interdisciplinary collaboration has resulted in dramatic progress in the program, measurably improving patient satisfaction, comprehension of one's condition, comfort when returning home, and avoidance of secondary complications.

Web-based interactivity has also been a touchstone for patient education at the limb-loss program, which aims to provide an array of services to maximize reintegration and progression. The entire interdisciplinary team has contributed to an interactive model designed to enhance inpatients' understanding of subjects ranging from prevention of secondary

complications to prosthetic options and psychosocial issues. Furthermore, the program's peer-support initiative educates and provides opportunities for amputees as well as their friends and family. Under the direction of a physiatrist and other key member of the interdisciplinary team, the initiative has grown enormously and continues to expand its presence in the New York region.

As Rusk undergoes its physical transition in the NYU Langone Medical Center campus transformation project, the limb-loss division will set ambitious goals, promising to push the Rusk amputee program's influence to new heights as its specialists continue to achieve extraordinary patient outcomes.

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Loko-Motion: Pediatric Lokomat Advances the Science and Medicine of Rusk's Pediatric Care

When the ceiling of our pediatric gym was raised in December to accommodate a significant new piece of equipment, the removal of overhead

obstacles was one part necessity, one part metaphor. The installation of a pediatric Lokomat® — a treadmill orthosis designed to help recover walking ability — equips Rusk physiatrists to raise the bar on pediatric rehabilitation and to remove some limitations for children who lack voluntary control of their lower body.

Donated with exceptional generosity by Mark and Mindy Dehnert, the Lokomat is a proud acquisition. Rusk is the only hospital in the New York area with a pediatric Lokomat, and there are fewer than fifteen of the devices across the entire United States.

The Lokomat works by providing body-weight support to patients who cannot stand on their own while helping them walk on a treadmill. A robotic, computer-guided exoskeleton assists the child with walking by moving his or her legs in a predetermined pattern. With the Lokomat, the pattern can be accomplished even if the patient has little or no voluntary ability to control the legs or trunk — a common problem resulting from conditions such as spinal cord injury, brain injury, stroke, multiple sclerosis and cerebral palsy.

The Lokomat further provides the child with range of motion, muscle strengthening, cardiovascular conditioning, gait training and, importantly, a sense of well-being.

The child's limbs are moved in a predetermined manner that mimics a normal gait cycle. This is a very important aspect of the device because children with congenital disorders or those injured at a very young age differ from adult patients in that they typically have not learned proper and efficient gait patterns.

The Lokomat helps to ensure that proper mechanics and movement patterns are consistently maintained throughout an entire treatment session, with the goal of teaching the child proper walking mechanics. Unlike other walking systems, the Lokomat can be operated by a single physical therapist once the patient is set up.

Beyond clinical applications, the Lokomat's integrated software enables data to be collected for research. Preliminary studies in pediatric subjects indicate the Lokomat provides favorable results in terms of gait, spasticity and endurance. Rusk researchers plan to begin controlled studies in pediatric subjects in the near future.

With the state-of-the-art Lokomat in use as of February 2011, the pediatric unit at Rusk is outfitted with the clinical means to further benefit hundreds of children, plus a research modality to help therapists gain a greater understanding of motor and ambulation recovery following illness and trauma.

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Recovering Pride and Reducing Pain through Women's Rehabilitation

Women's rehabilitation, though gaining increasing attention, remains a nascent field. One of the few of its kind in the country, the Women's Health Rehabilitation program at Rusk is dedicated to addressing the unique musculoskeletal needs of women.

Led by Rusk physiatrist Jaclyn H. Bonder, MD, and a team of allied specialists, it is centered on a personalized, participatory ideology that empowers women to take active roles in their own healing.

The team gives deep consideration not only to each woman's anatomic and physiologic profile, but to the daily behaviors and activities that signify the course of her treatment.

The attention paid to a patient extends beyond her physical condition to how she lives her life.

Pelvic girdle pain, defined as pain between the gluteal folds and the iliac

crests, exemplifies why independent care is essential and how the expertise of a specialist serves the most difficult cases. Similar to other musculoskeletal regions, the pelvic girdle is prone to muscle weakness and injury, which can lead to pain or dysfunction such as incontinence. With a thorough musculoskeletal exam and an understanding of the array of possible diagnoses that may mimic traditional back or hip pain, rehabilitation specialists can intervene and dramatically improve a woman's quality of life. Pain relief techniques—which range from pelvic floor exercises to trigger-point and botulinum toxin injections—can have great effect on daily comfort and, ultimately, self-esteem.

Dr. Bonder and her colleagues are dedicated to treatment, research and education in the rapidly evolving discipline of women's rehabilitation. Employing multiple specialties, the group has spearheaded several initiatives including:

- A CME course for physiatrists to enhance understanding of conditions specific to women; how to diagnose them; and when to refer to a specialist
- Presentations at national conferences to share research on the impact of musculoskeletal conditions and the efficacy of relevant treatments
- Community discussions designed to educate women on options for care and improving quality of life
- An innovative, real-time technology portal to empower patients through improved access to education, community and resources

Combining broad-based outreach with a personalized approach to care, the Rusk Women's Health program is poised to make significant advances for this specialized area of rehabilitative care.

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Spotlight On: Dr. Mary Hibbard, Acclaimed Expert on Brain Injury and Recipient of The Champion of Hope Award

Rusk announces with pride that Mary Hibbard, PhD, Professor of Rehabilitation Medicine and Director of Rehabilitation Psychology, was granted the Champion of Hope Award in November 2010, at the Brain Injury Association of New York State's 3rd Annual Journey of Hope Gala. Dr. Hibbard, an international leader in rehabilitation psychology, received the Award in recognition of her many years dedicated to brain injury patients and their families.

The arc of Dr. Hibbard's career has been a long and graceful one, with enviable accomplishments in the realms of research, education and clinical care. She has been instrumental in increasing awareness and understanding of her specialties: brain-injury recovery and rehabilitation psychology. While the Champion of Hope Award honors Dr. Hibbard for advancing her field into the future, so too is she appreciated for inspiring the generation of specialists to follow.

Dr. Hibbard indicated the honor she felt at being recognized with the award: "In my three decades within the brain injury community, I've always been inspired by patients, families, and my professional colleagues. It's immeasurably rewarding to know that my work, in turn, can inspire that same community with hope."

Though her work is internationally renowned, Dr. Hibbard has, for more than three decades, cultivated her career from a New York City office. Back in 1979, she formally began her professional life right here, at Rusk, as a clinical research psychologist, and by 1986 had attained the position of Senior Clinical Research Psychologist. Following eleven years uptown at Mount Sinai School of Medicine, Dr. Hibbard was welcomed back to Rusk in 2009 to assume her current role as Director of Psychology.

"Dr. Hibbard is an outstanding neuropsychologist who has demonstrated her commitment to the field, and to patients, for decades. This award from the Brain Injury Association is a well-deserved honor that truly reflects her skills and compassion," said Dr. Steven Flanagan, Medical Director of Rusk and a longtime colleague.

With deep connections to Rusk and longstanding dedication to the people of New York City, Dr. Hibbard's career is characterized equally by loyalty and far-reaching achievement. Rusk warmly congratulates Dr. Mary Hibbard for being a true champion of hope.



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212-263-8830 • www.ruskinstitute.org