

NEW YORK-PRESBYTERIAN REHABILITATION MEDICINE

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New Technologies Take Center Stage at Hospital

The field of rehabilitation medicine is in the midst of a technological revolution, and the Department of Rehabilitation Medicine at NewYork-Presbyterian Hospital is at the leading edge of these advances. From the noninvasive analysis of chest wall motion to anesthetic delivered via discography to wireless functional electrical stimulation, technology is improving patient's lives.

NewYork-Presbyterian Hospital/Columbia University Medical Center is only the third center in North America to acquire the optoelectronic plethysmography (OEP) system (BTS Bioengineering)—a new method to measure chest wall movement.

"It provides a noninvasive motion analysis of the chest wall," said Matthew N. Bartels, MD, a physiatrist who specializes in cardiac and pulmonary rehabilitation. "It will allow us to evaluate the mechanics of breathing in patients with a variety of conditions, including neuromuscular diseases, scoliosis, end-stage lung cancer, and spinal cord injuries."

The OEP system uses 4 to 6 optical cameras to track up to 70 reflective markers placed on the patient's thorax. The system measures mechanical breathing by recording the 3-dimensional motion of the chest wall while the patient is performing various functional tasks in the examination room. The device is not currently FDA-approved, but Dr. Bartels and colleagues anticipate research studies will commence in 2008.

see Technology, page 4

Cancer Survivors Benefit From Rehabilitation Strategies

More than 1.4 million new cases of cancer will be diagnosed in the United States by the end of this year. Advances in diagnosis and treatment have improved 5-year relative cancer survival rates. The Department of Rehabilitation Medicine at NewYork-Presbyterian Hospital offers a variety of clinical programs to address the physical and psychological challenges associated with prolonged survival in patients with cancer.



Joe Russo, PT (foreground), guides a patient through a series of Eastern meditation exercises.

"Cancer rehabilitation demonstrates and incorporates every aspect of our specialty," said Nancy E. Strauss, MD. Cancer-related disabilities are often a result of the malignancy itself or its treatment, whether from surgical resection, chemotherapy, or radiation treatment. Rehabilitation specialists focus on pain control, gradual mobilization, and the reduction of psychological stress. Techniques include oral and injected medications, orthotics and prosthetics, lymphedema treatment, and therapeutic exercises.

Due to the debilitating effects of tumors and treatment, some patients may resist physical mobilization. If a patient declines therapy because of pain, fatigue, or anxiety, Joe Russo, PT, begins with breathing or relaxation techniques to help alleviate these symptoms. "Twice a week, I lead an integrative exercise class for patients with cancer in which I present elements of the Eastern practices of tai chi, qigong, and mindfulness meditation to help promote healing of both mind and body," said Mr. Russo. "I've found that they can be particularly beneficial for patients with cancer. As one of my patients said after a session of mindfulness, 'everything else has been about getting rid of discomfort. This is the first thing that's helped me to find comfort.'"

Some treatments require highly specialized training. For a patient with lymphedema following surgery for breast cancer, complete decongestive therapy is offered by Linda Tomkow, PT, one of several lymphedema-certified therapists on staff at the Hospital. She uses manual techniques to mobilize lymph and instructs patients on how to apply compression bandages to facilitate skin care. Patients who are compliant

see Cancer, page 2

INSIDE

Women's Health

2 Rehabilitation specialists treat pregnancy-related health issues.

Department News

3 Information on clinical trials, new faculty, and recent publications.

Symposium 2008:

Advances in Stroke Rehabilitation:
Innovations for Practice
April 4-5, 2008

Brain Attack and Cerebrovascular Disease
Update 2007 (CME Credits: 8)
November 9, 2007; Grand Hyatt Hotel, New York, NY

Please visit www.nyrehabmed.org

UPDATES

Women's Health: Rehabilitation Brings Relief During Pregnancy

There are numerous health concerns facing women before, during, and after childbirth. When those concerns involve back pain or pelvic floor dysfunction, rehabilitation medicine plays a central role in treatment. Specialists at NewYork-Presbyterian Hospital diagnose and treat health conditions during this special time in a woman's life.

"We see a high prevalence of back pain in pregnancy," said Andre Panagos, MD. Causes of back pain during pregnancy are often difficult to pinpoint. Common etiologies include discogenic pain, a preexisting problem or pathology of the hip, or an underlying spinal problem, such as spondylolisthesis leading to ligamentum strain. "Fortunately, there is a low incidence of lumbar disc herniations during pregnancy, with a rate of 0.05%," he said.

The team at NewYork-Presbyterian Hospital/Weill Cornell Medical Center helps women manage pain during pregnancy. "We cannot perform imaging or prescribe medication [to pregnant women]. Physical therapists treat biomechanical aspects of pain," said Dr. Panagos.

Alyssa Rutchik Padiak, PT, MS, OCS, works on biomechanics with women. "When it comes to pelvic floor dysfunction, it almost always correlates with a musculoskeletal component," said Ms. Padiak. "We want to get the word out to women and primary care practitioners that leaking [urine] or living with chronic pelvic pain is neither normal nor inevitable," she said. Pelvic pain is often accompanied by urination or bowel function problems or sexual dysfunction. Ms. Padiak collaborates with physiatrists, obstetrician-gynecologists, and urogynecologists to treat this condition.

Physical therapists also teach women to access their rectus and transverse abdominal muscles and the deep back and pelvic floor muscles. "Pregnant women need to be able to find these muscles to help them stabilize joints and balance their new center of gravity," said Ms. Padiak.

To minimize deconditioning and loss of joint range for women with high-risk pregnancies on bed rest, The Morgan Stanley Children's Hospital of New York Presbyterian/Columbia University Medical

Center instituted the "Mothers on Bedrest" program in 1999. A team composed of obstetricians, and occupational and physical therapists created the program. "Our goals are to minimize the loss of range of motion, strength, and conditioning during bed rest in an effort to keep patients physically prepared to go through labor, and then take care of the baby and themselves," said Robin Winn, PT, MS, PCS. Activities to prepare mothers to carry and care for their babies postpartum focus on lower-extremity range of motion and upper body exercises. Bed rest can range from several days to 10 weeks of complete immobility. The goal is to leverage biomechanics to roll over, sit up, get out of bed, and walk to the bathroom.

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Cancer

continued from page 1

with the skills taught by Ms. Tomkow have an excellent chance for a faster and more complete recovery.

Although many interventions can be provided in the outpatient setting, more than 25% of patients admitted to the inpatient rehabilitation units (IRU) at the Hospital have a malignancy. Tumors of the nervous system are especially common. "Patients with brain tumors are similar to stroke patients with regard to neurological deficits. But, since most receive aggressive treatment with steroids, chemotherapy, and radiation, fatigue makes the rehabilitation effort more chal-

lenging," said C. David Lin, MD. The IRU team adapts common stroke rehabilitation techniques, like partial body weight-supported mobilization, functional electrical stimulation, and the use of oral neurostimulants, for persons with brain tumors.

"Our goal for one patient may be returning to full active function, whereas with another patient it may be training the caregiver so that the patient can return home," said Dr. Strauss. "As rehabilitation specialists, we contribute to managing the patient with an emphasis on quality of life."

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Update: Dept. Of Rehabilitation Medicine

For the sixth consecutive year, the Department of Rehabilitation Medicine at NewYork-Presbyterian Hospital has been named one of the best in the country by *U.S. News & World Report*. Among the 6,000 institutions eligible, NewYork-Presbyterian Hospital was ranked sixth in the nation and was 1 of only 4 hospitals in the country to be ranked in every specialty surveyed. Many thanks to our physicians, therapists, nurses, and staff dedicated to the highest caliber of patient care.

Michael W. O'Dell, MD, was elected to the Board of Governors at the 2006 Annual Assembly of the American Academy of Physical Medicine and Rehabilitation in Honolulu, Hawaii. At the same meeting, **Matthew Bartels, MD**, was elected to the Education Research Fund Committee of the Foundation for Physical Medicine and Rehabilitation.

Kerri A. Morris, MA, OTR/L, announced that recruitment is under way for the clinical trial "Group Cognitive Interventions for Persons With Multiple Sclerosis." The trial is based at NewYork-Presbyterian Hospital/Weill Cornell Medical Center and funded by the Katy Curtin MS Foundation. The 10-week intervention will evaluate whether a modular group education program can help participants understand, manage, and use cognitive strategies to improve everyday life. For more information on this trial, please visit www.nyprehabmed.org.

Heidi Klingbeil, MD, has joined the faculty in the Department of Rehabilitation Medicine at NewYork-Presbyterian Hospital/Columbia University Medical Center. Dr. Klingbeil, the current President of the New Jersey Society of Physical Medicine & Rehabilitation, brings a wealth of experience in geriatric rehabilitation and pain management to the Department. She previously served on the faculty of the University of Colorado



Photo courtesy of Amelia Penico.

Left to right: Joseph Fins, MD, Michael W. O'Dell, MD, Bob Woodruff, Andre Panagos, MD. Mr. Woodruff, the ABC newsmen who sustained a severe traumatic brain injury while covering the war in Iraq, presented at the Rehabilitation Medicine Grand Rounds at NewYork-Presbyterian/Weill Cornell Medical Center on July 10, 2007. Mr. Woodruff has made a miraculous recovery. Unconscious for 36 days, he is now back to work at ABC News after completion of his rehabilitation course.

and as Chief of Geriatric Rehabilitation at the Kessler Institute for Rehabilitation. She is also the founder of Physical Medicine and Rehabilitation Volunteers Overseas Inc.

Several NewYork-Presbyterian Hospital Department of Rehabilitation Medicine faculty and therapists will be participating in the Boston American Academy of Physical Medicine and Rehabilitation meeting in September 2007. **Michael W. O'Dell, MD, Kerri A. Morris, MA, OTR/L, and Lisa Finnen, MS, OTR/L**, will present a course on the management of common symptoms in multiple sclerosis; **C. David Lin, MD**, will present clinical pearls in stroke rehabilitation; **Matthew N. Bartels, MD**, will speak on his extensive experience with rehabilitation in patients with heart and lung transplants; and **Andre Panagos, MD**, a member of the Program Planning Subcommittee, will monitor the presentations on musculoskeletal disorders.

Selected Faculty Publications: 2006-2007

Cooper G, Bailey B, Bogduk N. Cervical zygapophysial joint pain maps. *Pain Med*. 2007;8:344-353.

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Stern M. Non-traumatic spinal cord injury. In: Brust J, ed. *Current Diagnosis and Treatment in Neurology*. New York, NY: McGraw-Hill; 2007:262-287.

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Klingbeil H, Blake DJ, Scott D. The employment of persons with disabilities. In: Braddom RL, ed. *Physical Medicine & Rehabilitation*. 2006. Philadelphia, PA: W.B. Saunders Company, 2007.

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Polesin A, Stern M. Post-anoxic myoclonus: a case presentation and review of management in the rehabilitation setting. *Brain Inf*. 2006;20:213-217.

Braciclovic A, Nihal A, Houston V, Beattie AC, Roseberg ZS, Trepan E. Effect of foot and ankle position on tarsal tunnel compartment volume. *Foot Ankle Int*. 2006;27:431-437.

Technology

continued from page 1

Andre Panagos, MD, a physiatrist specializing in spine and sports medicine, uses the converse of discography (the Discyphor™ Catheter; Kyphon) to delineate the source of back pain. NewYork-Presbyterian Hospital/Weill Cornell Medical Center is the first center in Manhattan to use functional anesthetic discography as an evaluatory tool in lower back pain.

“Lower back pain is not a diagnosis,” said Dr. Panagos. “When physical exam and testing do not uncover the source of the pain, we selectively anesthetize the suspect discs, and then ask the patient to move in a way that has been causing pain; when the patient stops feeling pain, we know the disc we just anesthetized is the source,” he said. Sometimes patients with normal magnetic resonance imaging come to the Spine Center. “Often their pain is so debilitating they are not able to perform normal activities. That is when we need to be more aggressive in diagnosing the source,” he said. In one case, the Discyphor allowed a 19-year-old to avoid spinal fusion surgery. With a new diagnosis, Dr. Panagos was able to initiate a non-surgical treatment plan for the patient.

Another new technology, the Ness L300 (Bioness) functional electrical stimulation device, is changing the approach to gait training in neurological rehabilitation.



Gina Sauro, PT, uses wireless technology to fine tune the stimulation parameters on the L300 functional electrical stimulation device.

“This is really the first foot-drop stimulation device that is convenient for both the patient and the therapist,” said Gina M. Sauro, PT. The L300 is used in patients with stroke, multiple sclerosis, traumatic brain injury, Parkinson’s disease, and cerebral palsy, among others. NewYork-Presbyterian/Weill Cornell is the only center in the New York metropolitan area providing treatment with this device.

The cuff device fits just below the knee. A stimulating surface electrode

rests laterally over the peroneal nerve wirelessly connected to a sensor in the heel of the patient’s shoe. With heel rise just before swing phase, the common peroneal nerve is stimulated, resulting in both dorsiflexion and eversion of the foot. “It helps patients walk more naturally and easily, with better balance,” said Ms. Sauro. Some patients have been able to normalize gait to the point of no longer needing a cane or ankle foot orthosis.

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Important news from the Department of Rehabilitation Medicine at NewYork-Presbyterian Hospital—advances in diagnosis, treatment, and clinical research.

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