



Helping patients breathe easier

Carolin Rehabilitation offers new diaphragm pacing system

About 12,000 new spinal cord injuries occur each year in the United States, according to the National Spinal Cord Injury Statistical Center (NSCISC). In total, more than 250,000 people in the United States are living with spinal cord injuries.

The NSCISC also reports that an estimated 3,700 individuals were living with high C1-C3 tetraplegia in 2006, with an additional 500 new cases per year. Many of these patients depend on a ventilator for respiratory support.

Carolin Rehabilitation is proud to be one of only 30 spinal cord injury treatment centers in the United States approved to offer a new program for ventilator-dependent spinal cord injury patients. Along with facilities such as the Rehabilitation Institute of Chicago, Kessler Rehabilitation and Craig Hospital, Carolin Rehabilitation now offers a Food and Drug Administration (FDA)-approved Humanitarian Use Device (HUD), called the diaphragm pacing system (DPS). The FDA approves the clinical use of a HUD when it does



not pose a significant risk of injury to the patient, and when the potential benefit of the device outweighs the risks of its use.

The NeuRx DPS™, manufactured by Synapse Biomedical, Inc., is designed to decrease the patient's reliance on a ventilator, increase day-to-day independence and maximize freedom. Unlike a mechanical ventilator, the NeuRx DPS provides a gentle electronic stimulation to the diaphragm, causing it to contract.

The system stimulates the diaphragm to imitate more natural breathing.

In a clinical trial of this system, 96 percent of patients were able to breathe for at least four hours a day without the use of their mechanical ventilator.

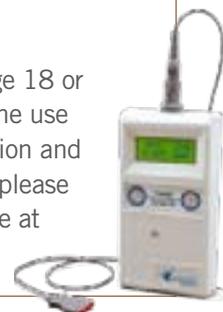
"The DPS will be an excellent option for those with tetraplegia who require a ventilator to have greater functional independence," says William Scelza, MD, director of the Spinal Cord Injury Program at Carolin Rehabilitation.

In most cases, an overnight hospital stay is needed to implant the device's four electrodes (two to each side of the patient's diaphragm). The electrodes are connected to an external stimulator that provides electrical stimulation to the diaphragm. A Carolin Rehabilitation physician oversees the implant process and its follow-up, in conjunction with a pulmonologist at Carolin Medical Center.

"We are excited to be able to offer this to our patients," says William Bockenek, medical director of Carolin Rehabilitation and principal investigator of this project. ■

⇒ COULD YOUR PATIENT BENEFIT?

Candidates for the diaphragm pacing system must be age 18 or older and have sustained a spinal cord injury requiring the use of a mechanical ventilator to breathe. For more information and to see if your patient could benefit from this procedure, please call Carolin Rehabilitation at **704-355-3558** or toll free at **1-877-REHAB51**.



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Taking advantage of every minute

Hard work put Danny Aker's recovery on the fast track

Last year's Fourth of July fireworks show at the Aker residence created a lot of excitement and left spectators aghast—but for all the wrong reasons. One of the more powerful fireworks misfired and struck 40-year-old Danny Aker in the head, resulting in a trip to Carolinas Medical Center's (CMC's) emergency room with EMTs holding parts of Aker's skull in place. Surgery was immediate. His wife, Kathleen, and 5-year-old daughter, Kayla, waited anxiously for Danny's outcome.

The good news was that Aker was alive. Doctors were able to patch up the damaged area without complications. The bad news was that the entire right side of Aker's body was paralyzed—much like the effects of a severe stroke. Aside from the new difficulties Danny, Kathleen and Kayla faced, there was also the anxiety of managing Aker's auto-paint business, which had only a few employees. The Akers were caught in a vortex of emotional, financial and physical fear, but they found a staff at Carolinas HealthCare that would patiently walk them through the long process of recovery.

MAKING STRIDES IN THERAPY

Four days after the accident, Aker was transferred from CMC to Carolinas Rehabilitation to begin inpatient rehabilitation. He had no sensation in or ability to move his right arm and leg. His vision was severely impaired, and headaches were severe and constant.

"When Danny got here, he couldn't do much on his own," says Kristi Preston, Aker's occupational therapist. "He couldn't even sit up." Preston, along with physical therapy assistant Christy Findlay, put together a rehabilitation program that first took aim at Aker's mobility. "Aside from the obvious tasks of sitting up, getting out of bed and walking, Danny was concerned about the steps around his home," says Findlay. "But he never refused to do



"Danny's positive attitude was a very important part of his recovery. He always put forth 110 percent and was a pleasure to take care of."

—Lori Grafton, MD



anything we asked, and he always kept a great attitude." There was plenty of walking and step climbing, as well as aquatic therapy, cognitive testing, weight lifting and using the Nintendo® Wii™ for coordination, balance and reaction time. "The Wii was great. I had gotten so good at bowling that I could beat anyone," says Aker with a smile.

As a matter of fact, when listening to Aker it's easy to tell that he actually enjoyed his time in rehab. "The staff was very supportive, and they went out of their way to make me comfortable and build my confidence," he says.

ON THE MOVE

By the time Aker left for home—he would continue his outpatient program at Carolinas Rehabilitation in Pineville—he was moving around fairly well with a quad-base cane. He had regained a substantial amount of control and feeling in his arm and



Lori Grafton, MD, has helped Danny Aker get back to his life and family after a fireworks accident left him with severe mobility and visual impairments.

leg, and his vision had improved significantly. Aker had attained the status of a modified independent, which means he doesn't need anyone to help him but does need an assistive device or extra time to complete daily tasks.

On August 19—Kayla's first day of kindergarten—Aker was able to fulfill his promise of walking her to the bus stop. It was a simple feat that took on profound meaning for the family. Today, he continues to work hard at returning his family's life to normal. The time for impressive gains is over, and improvements are more gradual. He hopes to return to work in July.

Aker has a message for others who face the consequence of a debilitating accident: Maintain a positive attitude and work hard with your therapists. "You have to take advantage of every minute with the staff because when you get home, you're going to need every one of the skills that they've helped you learn," he says. ■

PHYSICIAN FOCUS

Carolinas Rehabilitation welcomes three new physicians

Carolinas Rehabilitation would like to welcome three new specialists to our hospital: Jennifer Camp, MD, Jesse Lieberman, MD, and Judi Tassone, MD.



Jennifer Camp, MD, comes to Carolinas Rehabilitation from M.D. Anderson Cancer Center, where she completed her cancer rehabilitation fellowship. She received her medical degree from Virginia Commonwealth University School of Medicine and completed her residency at Baylor College of Medicine.

Dr. Camp will be available for consults at Carolinas Medical Center and will see patients in our outpatient clinic.



Jesse Lieberman, MD, returned to Carolinas Rehabilitation after completing his spinal cord injury fellowship at University of Pittsburgh Medical Center. He received his medical degree from Wake Forest University and was a resident at Carolinas Rehabilitation. Dr. Lieberman will be available for consults, see patients in the

outpatient clinic and work with our research department.



Judi Tassone, MD, joined our musculoskeletal, spine and sports medicine practice, Carolinas Back and Sports Specialists, in August. She received her medical degree from the University of Medicine and Dentistry of New Jersey and completed her residency at the Rehabilitation Institute of Michigan. She will see patients in

several of our outpatient clinics and provides consults at skilled nursing facilities.

Our vision to remain at the forefront of medicine and share the touch of healing requires individuals who embrace our passion for uncompromising excellence and commitment to care. We are fortunate to have such gifted physicians join our hospital. ■

⇒ MEET OUR DEDICATED STAFF

Visit www.carolinasrehabilitation.org to learn more about our physicians and other medical staff members.

PA training

Carolinas Rehabilitation partners in unique program

Carolinas Rehabilitation is proud to partner with Wingate University's Physician Assistant (PA) Program, one of 100 PA academic programs in the nation. Through this partnership, Carolinas Rehabilitation will provide instruction to PA students and grant them exposure to the field of physical medicine and rehabilitation.

"It's an excellent learning environment," says Wingate PA student Katie Gombar. "I was given the freedom to put what I learned into practice and interact with patients on my own."

Carolinas Rehabilitation provides Wingate students exposure to geriatric

and restorative medicine. Students begin with a brief shadowing period with a Carolinas Rehabilitation PA. They learn the general layout of the treatment facilities and charting procedures and gain familiarity with daily inpatient progress notes, running care teams and the admissions process.

"We're very pleased that some of our students will be rotating through various departments and clinics within Carolinas HealthCare System," says Gary R. Uremovich, MPAS, PA-C, director of the Wingate Physician Assistant Program.

The students will begin their five-



▲ PA student Megan Smith (right) receives training from Carolinas Rehabilitation's Jeff Wiggins, PA.

week clinical rotations at either Carolinas Rehabilitation–Mount Holly or Carolinas Rehabilitation–Mercy. There, students are under the supervision of Douglas Thommen, MD; Salih Otey, MD; or Leon Chandler, MD. The rotation covers the management of patients with long-term medical issues such as heart disease, diabetes and renal impairment. ■

OUTPATIENT SERVICES

IMPROVING LYMPHEDEMA

Since 1996, Carolinas Rehabilitation has served as a major treatment center for patients experiencing lymphedema due to conditions such as cancer or trauma.

Led by Vish Raj, MD, and Sharon Kanelos, MD—two of the few physicians in the country to treat lymphedema—the treatment team uses compassion and expertise to treat children, adolescents and adults. Skilled physical and occupational therapists initiate a compression program consisting of manual lymphatic drainage, wrapping and garments.

Our lymphedema staff has significant experience in the area of lymphedema management, as proven by their certifications through the Vodder School of North America and

the Academy of Lymphatic Studies and the Lymphology Association of North America, as well as their affiliation with the National Lymphedema Network. And our program works closely with Carolinas Medical Center's Blumenthal Cancer Center, one of the area's top cancer programs.

ABOUT THE PROGRAM

Carolinas Rehabilitation's lymphedema treatment begins with an initial evaluation by a physician and/or

therapist to determine the individualized course of treatment. Therapeutic techniques, including exercises and massage, and compression help to enhance lymphatic drainage and reduction of limb volume. With the aid of compression bandages and garments, patients often find their lymphedema better controlled. Patient education is also provided to instruct the patient in long-term lymphedema management.

"At Carolinas Rehabilitation, we strive to use the latest techniques and innovation to improve lymphedema in our patients, thereby improving their overall function, comfort and quality of life," says Dr. Raj. ■

⇒ A COMPREHENSIVE CONTINUUM OF CARE

Treatment for lymphedema is located at our main Blythe Boulevard location. For more information, call 704-355-3558 or 1-877-REHAB51.

Charlotte Continence Center at Carolinas Rehabilitation

Where patients receive expert, comprehensive care for incontinence and pelvic pain

Many who suffer with incontinence symptoms think surgery is the only option. Fortunately, the Charlotte Continence Center provides non-surgical treatments and a variety of therapies to cure or relieve symptoms of prolapse; urinary or fecal incontinence; or other pelvic floor dysfunction symptoms.

The Charlotte Continence Center specializes in treating patients who have:

- > incontinence
- > prolapse
- > emptying disorders
- > pelvic or bladder pain
- > overactive bladder

TREATMENT OPTIONS

Michael J. Kennelly, MD, FACS, the center's medical director, is a nationally known neurourologist with expertise in urodynamics testing, urinary incontinence and bladder dysfunction. Based on a patient's condition, he may advise conservative or surgical therapy depending on the severity of the case and the patient's general health.

Conservative options include medications, pelvic exercises, behavioral and/or dietary modifications and vaginal devices (also called pessaries). Biofeedback and electrical stimulation may also be recommended. Certified physical thera-

pists educate, evaluate and instruct patients on proper isolation and exercise of their pelvic floor muscles for increased bladder control. Using biofeedback technology, a computer recorder monitors the progress and strength of the patient's pelvic muscles. In severe cases of an overactive bladder, a specialist will investigate the possibility of surgery.

The Charlotte Continence Center is also proud to have new videourodynamics equipment. This state-of-the-art equipment allows improved lower urinary tract imaging capabilities to help evaluate and diagnose pelvic floor disorders.

ABOUT THE MEDICAL DIRECTOR

Dr. Kennelly was recently named president-elect of the American Spinal Injury Association. He was also nominated as one of America's Top Doctors, Best Doctors in America and Charlotte's "Top Doctor" by *Charlotte* magazine. Dr. Kennelly is one of only three physicians in North Carolina to sub-specialize in female urology and neurourology. He is also involved

in numerous clinical trials, testing innovative therapies for the treatment of urinary incontinence, pelvic prolapse, bladder reconstruction and pelvic pain.

A STRONG PARTNERSHIP

Carolinas Rehabilitation is proud to work with the Charlotte Continence Center and provide specialized pelvic physical therapy services in five outpatient locations surrounding Charlotte. With the most pelvic physical therapists in the area, Carolinas Rehabilitation's physical therapists employ treatment interventions such as relaxation techniques, core strengthening, stretching, manual therapy and recommendations for lifestyle changes that can help patients who suffer from a variety of pelvic floor disorders, including chronic pelvic pain, stress incontinence and interstitial cystitis/painful bladder syndrome. ■

▼ **The Charlotte Continence Center team offers a variety of treatment options for incontinence problems, including physical therapy, medications and surgery.**



⇒ SKILLED SERVICES, RIGHT HERE

For more information about services at the Charlotte Continence Center or to make an appointment, please call **704-355-4455**.



Carolinus Rehabilitation

Uncompromising Excellence. Commitment to Care.

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Charlotte, NC 28203

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AWARDS, ACCOLADES & PUBLICATIONS

- Many of our faculty hold positions in numerous national organizations, showing our commitment to the advancement of rehabilitation medicine.
- ◆ **William Bockenek, MD**, was recently elected vice president of the Academy of Spinal Cord Injury Professionals. He is also the president of the American Paraplegia Society and the director of the American Board of Physical Medicine and Rehabilitation.
- ◆ **Michael J. Kennelly, MD**, is president-elect of the American Spinal Injury Association.
- Carolinus Rehabilitation, together with fellow rehabilitation hospitals across the country, founded the Exchange Quality Data for Rehabilitation (EQUADR). EQUADR establishes benchmarks for specific quality indicators for things such as pressure ulcers, DVTs/PEs, hospital-acquired infections, Code Blue and rapid response teams for rehabilitation hospitals.
- Mark Hirsch, PhD, part of Carolinus Rehabilitation's research faculty, will have a poster presented at an international conference on amyotrophic lateral sclerosis (ALS, also known as Lou Gehrig's disease) in Berlin, Germany. The poster presents research completed on visual and proprioceptive postural control in persons with ALS.

HOW TO REACH US

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E-MAIL: referraldevelopment@carolinus.org

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Adaptive Sports and Adventures Program goes waterskiing!

What a wonderful and wet summer we had with adaptive waterskiing! More than 50 waterskiers graced the water this past summer. Many skiers were able to conquer fears and ski for the first time, while several others were able to reach a personal goal. Some first-time skiers were even able to ski without outriggers. (Skiing without outriggers is a major progression in adaptive skiing because the skier is relying more on their control of the ski than on the ski itself.)



▲ **ASAP waterskiier Robbie Parks shows off his waterskiing skills.**

ASAP would like to thank our dedicated volunteers who make adaptive waterskiing possible. It takes about eight volunteers and staff to assist each skier. Duties include driving the boat, driving the Jet Skis, being a jumper and operating the quick release system. The Jet Skis are used as safety boats, and the jumper helps the skier in becoming upright and getting set to ski again. We would also like to thank the Lake Norman YMCA, which kindly allows us to ski on their waterfront. We appreciate your support! We had a phenomenal summer and are already looking toward warmer weather. ■

