

Burke Rehabilitation Hospital: Improving Neurological Outcomes Through Individualized Rehabilitation

AT BURKE REHABILITATION HOSPITAL, MEDICAL STAFF AND RESEARCH SCIENTISTS SHARE THE MISSION TO ENSURE EVERY PATIENT MAKES THE FULLEST POSSIBLE RECOVERY FROM DEBILITATING CONDITIONS, SUCH AS STROKE, OR TRAUMA, SUCH AS SPINAL CORD OR BRAIN INJURY.

“**R**EHABILITATION MAKES A difference, and it’s the vehicle to improve neurological outcomes following devastating neurological impairments,” says Barry Jordan, M.D., M.P.H., Assistant Medical Director, Director of the Brain Injury Program, and Director of the Memory Evaluation and Treatment Service at Burke Rehabilitation Hospital, and associate professor of clinical neurology at Weill Cornell

Medical College. “That’s what Burke is designed for — to get people functioning again by providing an individualized care plan.”

Accredited by The Joint Commission and the Commission on the Accreditation of Rehabilitation Facilities, Burke Rehabilitation Hospital serves the greater New York City area, Westchester County, Hudson Valley and beyond. It is the only hospital in Westchester County solely dedicated to rehabilitation medicine.



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Burke Rehabilitation Hospital brings together top medical experts and uses the latest equipment to help patients make the fullest possible recovery. Standing in the neuro gym from left to right are: Argyrios Stampas, M.D., Director of the Spinal Cord Injury Rehabilitation Program; Barry Jordan, M.D., M.P.H., Assistant Medical Director, Director of the Brain Injury Rehabilitation Program, and Director of the Memory Evaluation and Treatment Service; Michael Reding, M.D., Director of the Stroke Rehabilitation Program; and Mark Herceg, Ph.D., Director of Neuropsychology.



Dr. Herceg and Mar Cortes, M.D., a researcher at the Burke Medical Research Institute, deliver noninvasive, transcranial magnetic stimulation to a patient's brain as part of a research study showing that stimulation enhances the benefits of therapy.

More Therapy, More Technology

Burke Rehabilitation Hospital's interdisciplinary team is composed of a range of medical specialists, including neurologists, physiatrists, internists, rheumatologists, pulmonologists, neurophysiologists, therapists, social workers, neuropsychologists, pharmacists and dietitians, all of whom are an integral part of ensuring patients make maximum gains during their acute inpatient rehabilitation programs.

Recognizing the importance of individualized treatment, Burke Rehabilitation Hospital therapists daily provide patients with at least three hours of individual therapy including physical therapy, occupational therapy and speech therapy. In addition, Burke Rehabilitation Hospital utilizes a program model that involves a specialized team working with each patient on a one-on-one basis. This team is assembled based on specific needs as determined by the patient's diagnosis and goals. For instance, a patient who has dysphagia due to a stroke will work with a speech therapist to learn swallowing techniques and improve throat function, as well as a nutritionist to develop a dietary plan that ensures optimum nutrition through the incorporation of easy-to-swallow foods into the patient's diet and education about food preparation. Added to this condition-specific approach is a comprehensive armamentarium of state-of-the-art therapeutic technology designed to improve function, reduce muscle atrophy and stimulate nerves, such

as the Zero-G Lite, which was tailor-made for Burke Rehabilitation Hospital and is the only one of its kind in the Northeast.

"The whole theme of the acute inpatient rehab program is to provide the maximum amount of therapeutic intervention the patient can tolerate," says Michael Reding, M.D., Director of the Stroke Rehabilitation Program at Burke Rehabilitation Hospital and assistant professor of clinical neurology at Weill Cornell Medical College. "The more therapy the patient gets, the faster and better the outcome."

Physical therapists focus on improving functional mobility in relation to specific

"I have an expression I use for all the folks with whom I work. It's the simple concept that the brain injury, spinal cord injury or stroke shouldn't define who they are, so within the whole rehabilitation process, they don't lose sight of their true selves. The deficits should not be reflective of them as individuals. Often, they focus so much on the deficit, they forget they have remaining strengths. My role is to help the mind, spirit and sense of self heal during the course of rehabilitation."

— Mark Herceg, Ph.D., Director of Neuropsychology, Burke Rehabilitation Hospital



Dr. Reding and Dr. Stampas assist a patient using a wrist robot that helps patients with paralysis with forearm rotation and wrist and hand movements.

LATEST TECHNOLOGY ENHANCES BURKE'S PATIENT THERAPY

TO OPTIMIZE PATIENT outcomes, Burke Rehabilitation Hospital uses the latest technology, including:

- + **Zero-G Lite** — Allows spinal cord patients with paralysis to walk while being supported in a harness. This equipment was tailor-made for the hospital and is the only one of its kind in the Northeast.
- + **EMPI Electric Stimulators** — Used to relax muscle spasms, increase local blood circulation, maintain or increase range of motion, and retard or prevent muscle disuse atrophy.
- + **RT300 Functional Electrical Stimulation Cycle Ergometry System** — Provides electrical current that stimulates nerves to evoke muscle contractions in the arms and legs, enabling muscles to work and perform active cycling even if voluntary control of muscles has been lost.
- + **LiteGait Partial Weight-Bearing Gait Therapy Device** — Allows patients to comfortably walk in a secure environment, preventing falls.
- + **InMotion Technology Upper Extremity Robot** — Assists patients experiencing reduced mobility from stroke or brain injury to gain better movement and dexterity.
- + **WalkAide System** — A battery-operated medical device that uses myo-orthotics technology, the combination of electrical stimulation and orthotics, to treat foot drop.
- + **Saeboflex** — A custom-fabricated orthosis that allows patients suffering from neurological impairments to use their hands by supporting the weakened wrists, hands and fingers.
- + **NESS H200 Hand Rehabilitation System** — A neuro-orthotic and rehabilitation system that provides electrical currents to stimulate nerves and muscles to increase hand function, prevent muscle loss, re-educate muscles, increase blood circulation, reduce muscle spasms, and increase or maintain the hand's range of motion.
- + **NESS L300 Plus Foot Drop System** — A neuro-orthotic and rehabilitation system that provides electrical currents to stimulate nerves and muscles to assist with obtaining a more natural walking pattern, reduce muscle spasms, reduce muscle loss, maintain or improve range of motion, and increase local blood circulation in the treatment of foot drop.



Dr. Stampas evaluates a spinal cord injury patient's walking ability during a physical therapy session.

tasks. Using a combination of muscle strengthening, flexibility improvement and balance training, therapists teach patients how to get in and out of bed, transfer to and from a wheelchair, and step up and down stairs. Occupational therapists combine these techniques with a thorough evaluation of each patient's visual and perception skills to retrain him or her to perform daily tasks, including dressing, bathing, brushing teeth and eating with utensils.

Burke Rehabilitation Hospital also incorporates therapeutic recreation into the total concert of therapy programs. Recreational therapists focus on functionality relating to social involvement and leisure pursuits, incorporating complementary programs such as adaptive yoga and humor therapy. In conjunction with the Montessori Children's Center, the hospital has also developed the Intergenerational Group program that provides opportunities for patients to interact with children through recreational activities such as story time, crafts, games, art and horticulture.

According to Argyrios Stampas, M.D., Director of the Spinal Cord Injury Rehabilitation Program at Burke Rehabilitation Hospital and assistant professor at Weill Cornell Medical College, when these complementary therapies are factored in, patients ultimately benefit.

"It's almost more rare for patients to have just three hours of therapy a day," he says. "They're typically getting more than four hours of therapy. They usually sleep well after having a full day of therapy."

The medical team also works with

families and caregivers to prepare them for the next stage of the rehabilitation process. For patients being discharged to their homes, therapists at Burke Rehabilitation Hospital teach caregivers exercises, stretches and other therapeutic techniques that will equip them to assist with at-home therapy. This helps reduce the feeling of burden and empowers the caregiver to tangibly contribute to the patient's ongoing recovery, which also has positive implications for the caregiver's own psychological and physical wellbeing.

"We're not only looking to rehabilitate patients," says Dr. Stampas. "We're looking to restore our patients. Many of our training systems theoretically provide restorative properties to help heal the neurologic system. However, we can't keep patients here forever. We are obligated to send them back out into the world, so we do also focus on function. We try to incorporate a lot of these restorative measures with functional improvement."

Treating the Spirit

Acknowledging the shock to the psyche that a life-changing injury or illness can cause, Burke Rehabilitation Hospital's Director of Neuropsychology, Mark Herceg, Ph.D., provides services to patients shortly after admission to often well after discharge.

Dr. Herceg assesses whether a new patient's behavior, cognition or emotional state will interfere with treatment. Even if the impediment is a biochemical response in the brain, Dr. Herceg says it is important to acknowledge a patient's struggles.



Dr. Jordan, Burke Rehabilitation Hospital's new Assistant Medical Director, helps develop and implement policies, procedures and best practices for improving patient care, and coordinates the training and continuing education of the medical staff.

“A central nervous system injury is such a shock for patients who, for the most part, were previously independent,” Dr. Herceg says. “Now, all of a sudden, they’re in wheelchairs. They can’t go to the bathroom on their own. They can’t feed themselves. That adjustment to needing help is an incredible weight. They struggle to cope with that, and it fuels anxiety and depression.”

Dr. Herceg meets weekly with patients and works to help provide them with tools to deal with their emotions. And, he says, a full agenda of physical, occupational and speech therapy can prompt neuropsychological improvement.

“The structure of the therapy itself allows them to piece things together,” he says. “Slowly, over the course of a week or two, they’re able to see their progress. They can start to feel themselves getting better, and in that process, they feel better.”

Dr. Stampas believes there is a benefit to a patient’s improved outlook.

“It’s always surprising to me how patients’ attitudes really guide their rehabilitation,” Dr. Stampas says. “I find those who are more optimistic and hopeful anecdotally respond better to therapy. Even when I follow up with them as outpatients, I know they have deficits and they’re by no means beating the odds epidemiologically, but they seem to cope better, and, in the end, quality of life is the best thing we can add to the patient’s care.”

From the Bench to the Bedside

Burke Rehabilitation Hospital is one of the only rehabilitation hospitals in the

United States with an affiliated medical research institute on campus, and the institute has dedicated basic, translational and clinical research programs.

Dr. Stampas and Dr. Reding both cite the institute’s study of transcranial magnetic stimulation and its potential for lateral pulsion.

“There has been some literature to suggest that when you get repetitive stimulation to your brain, you learn a task better, so we’re looking into developing protocols to see if it makes a difference in patients’ progress,” Dr. Stampas says.

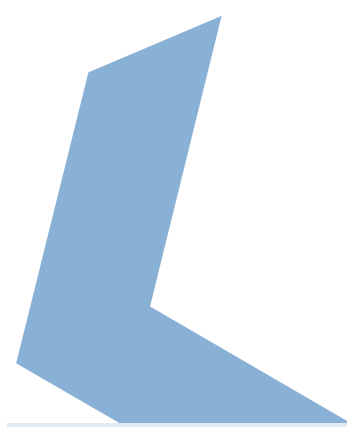
Ultimately, Burke Rehabilitation Hospital’s research efforts have enormous potential benefits, says Dr. Reding.

“It puts us on the cutting edge of molecular biology, neuropharmacology and neurological repair and recovery following stroke, traumatic brain injury and spinal cord injury,” he says.

From robotic training for upper limb recovery to the management of post-injury depression, the research under way at Burke Rehabilitation Hospital provides patients not only the benefits of the latest research but also the opportunity to continue therapy.

“It gives patients an opportunity to get involved with clinical trials, and it also assists in developing translational medicine,” says Dr. Jordan. “We go from the bench to the bedside.”

For more information about the services of Burke Rehabilitation Hospital, visit www.burke.org. ■



CROSS-POLLINATING RESEARCH AND EXPERIENCE

AS ASSISTANT MEDICAL Director, Director of the Brain Injury Program, and Director of the Memory Evaluation and Treatment Service at Burke Rehabilitation Hospital, Barry Jordan, M.D., M.P.H., assists in developing and implementing policies, procedures and best practices for improving patient care; coordinates the training and continuing education of the medical staff; and helps ensure the hospital complies with all federal, state and local laws.

Dr. Jordan also serves as Chief Medical Officer of the New York State Athletic Commission, as team physician for U.S.A. Boxing and as a member of the NFL Players Association’s Traumatic Brain Injury Committee.

These multiple roles support one another.

“I’m particularly interested in the link between chronic neurological conditions such as Alzheimer’s disease, Parkinson’s disease and motor neuron disease as it relates to repetitive brain injury,” says Dr. Jordan, who is also associate professor of clinical neurology at Weill Cornell Medical College. “So, these roles afford me the opportunity to look in further detail at the link between traumatic brain injury and memory, cognitive and behavioral problems, which relates to my being in charge of Burke’s memory evaluation and treatment service.”