

Neuro-Rehabilitation



The Barrow Neuro-Rehabilitation Center is a leader in the use of neuro-robotics, which mimic normal human movements and adapt to support and challenge a patient's abilities.

→ **MILLIONS OF AMERICANS** suffer traumatic brain and spine injuries each year. The Barrow Neuro-Rehabilitation Center often serves as the first point of contact for people recovering from a stroke, traumatic brain injury, or a spinal cord injury. The program is committed to providing the right therapeutic services to the right patient at the right time. Each year, Barrow Neurological Institute records more than 30,000 outpatient visits in the Neuro-Rehabilitation Center and nearly 850 people receive inpatient care. Specially trained physical therapists, occupational therapists, and speech pathologists help Barrow patients on the road to recovery. Patients work tirelessly to regain function and maximize independence sometimes beginning in the intensive care unit and then progressing all the way to outpatient rehab and the Center for Transitional Neuro-Rehabilitation. In addition to traditional therapies, Barrow leads the way in neuro-robotics. Customized robotics assist patients learning to walk again or relearning how to use an arm or hand, by providing resistance or repetitive motion.



About **14 MILLION**
Americans live with a
disability caused by a
brain or spinal cord injury



TWO-THIRDS
of stroke survivors
require rehabilitation



#1 goal of rehabilitation
is to maximize
INDEPENDENCE

ABOUT BARROW
NEUROLOGICAL INSTITUTE



#1 IN ARIZONA
#11 IN THE UNITED STATES
for neurology and neurosurgery



CLINICAL IMPACT

92,515

BNI Clinic visits

3,135

number of neurosurgeries

1,578

number of spine surgeries

\$2.8 MILLION

amount of charity care



GLOBAL IMPACT

54

visiting scholars, research fellows and observers from Mexico, India, Egypt, Pakistan, UK, Russia, China, Chile, Spain, Brazil, Japan, France, Italy, Kingdom of Saudi Arabia, Indonesia, Turkey, Germany, Poland, Colombia, Philippines, Israel, Argentina and Thailand.

PROGRAM ACCOMPLISHMENTS

The goal of neuro-rehabilitation is to identify the right therapy at the right time for every patient. With that in mind, Barrow Neuro-Rehabilitation is always introducing programs, technology, and services to improve the lives of patients. The Barrow Bridge Program is designed to deliver rigorous and customized therapy in an integrated team outpatient setting. The program focuses on helping patients reach maximum independence. Neuro-optometry is also a new resource for patients with vision disorders or injuries. This specialty service will be part of Barrow’s comprehensive, multi-disciplinary assessments and care plans.

Barrow collaborates with bio-medical engineers around the world on devices to aid in the recovery and improve the function of those affected by neurological conditions. One such partnership with Arizona State University’s Ira A. Fulton Schools of Engineering led to the development of a brace to help patients compensate for muscle weakness following a stroke. For the third year in a row Barrow clinical teams were paired with an engineering team to solve problem statements. With input from the experts at Barrow, a group of bio-engineers at The National University of Singapore created EsoGlove, a device to activate and retrain pathways in the brain allowing stroke patients to maximize the use of their hands.

Neuro-robotics assist patients by using repetitive and goal-oriented therapies. Patients have access to a new treadmill that simulates the challenges of walking in crowds or on uneven surfaces. The addition of an off-road vehicle called a Terrain Hopper allows people with mobility challenges to take part in outdoor activities like hiking or camping. The vehicle is allowed anywhere pedestrians are permitted.

Barrow Neuro-Rehabilitation successfully completed an accreditation process from the Commission on Accreditation of Rehabilitation Facilities. CARF assesses an organization’s commitment to ongoing quality improvement, a commitment to excellence, and a strong focus on the patient experience. This voluntary accreditation process applies a rigorous set of standards to the organization to ensure that it is providing the highest quality of care possible.

The accredited programs include inpatient, outpatient, and community re-entry programs for brain injury, spinal injury, and stroke.

At the recommendation of CARF, two delegations from China, including physicians and hospital administrators, came to Barrow to learn about rehabilitation in the U.S. Barrow shared its knowledge of neuro-robotics while the experts from China shared ancient medicine practices including herbs and acupuncture.

“After Alec’s car accident, we thought he would need round the clock care. After months in neuro-rehabilitation, Alec volunteers at St. Joseph’s Hospital and Medical Center and he is job hunting. He is getting better and better everyday thanks to Barrow!”

LISA HOYT,
BARROW PATIENT ALEC HOYT’S
MOTHER AND CAREGIVER



Alec Hoyt, Barrow Neuro-Rehabilitation Patient ↑

RESEARCH ADVANCES

Barrow is working with students from Northern Arizona University in perfecting a process of relieving shoulder pain following a stroke. The team is developing an assessment and taping process to relieve the pain so patients can begin therapeutic rehabilitation.

ON THE HORIZON

To improve patient care and provide specialty training, Barrow is adding Neuro-Rehabilitation psychology and Neuro Physical Therapy residency programs. The program offers mentored clinical experience in a variety of settings including acute rehab and outpatient rehab and research opportunities.

The renovation of Barrow Neuro-Rehabilitation continues. The new lobby and entrance were unveiled. Next upgrades will be our main treatment gym. This new space is designed to maximize the independence of our patients staying at Barrow Neuro-Rehabilitation. The Ashlyn Dyer Aquatic Center will also be renovated, including a new water management system and the addition of an underwater treadmill. The pool is another important tool for patients needing assistance with strength and flexibility.



RESEARCH

320

active research studies

839

patients enrolled in
clinical trials

\$9 MILLION

in federal research
grant support



DONOR IMPACT

\$3.98 MILLION

for basic and
translational research

\$3.65 MILLION

for strategic initiatives
including Barrow
Aneurysm & AVM Research
Center, Barrow Artificial
Intelligence Center,
neuroimaging and stroke

\$1.26 MILLION

for education and
fellowship programs

\$2.52 MILLION

for community
outreach programs



THANK YOU FOR YOUR SUPPORT

When treating patients with complicated neurological injuries, it is imperative to have the best neurosurgeons, neurologists, physiatrists and therapists working together. Generosity like yours allows Barrow to offer our patients the latest, most innovative tools as they recover from strokes, brain injuries, and spinal injuries.

We are improving the independence and quality of life of thousands of patients with neurological challenges. We could not do it without you.

With Gratitude,
Christina Kwasnica, MD
PHYSICAL MEDICINE AND NEURO-REHABILITATION
MEDICAL DIRECTOR, BRAIN INJURY SPECIALIST

↑ *Dr. Christina Kwasnica with patient Melissa Izzio. Though we rely on technology to help our patients recover, our expert care is what sets Barrow apart.*

Barrow Neurological Foundation raises awareness and funding for patient care, medical education, community outreach and research offered at Barrow Neurological Institute. Barrow is an internationally-recognized leader in neurology, neurosurgery and neuroscience research, treating patients with a wide range of conditions, including brain and spinal tumors, concussion and brain and spinal traumas, neuromuscular diseases, stroke, cleft and craniofacial disorders, and cerebrovascular disorders. It is home to several centers of excellence, including the Ivy Brain Tumor Center, Muhammad Ali Parkinson Center and Gregory W. Fulton ALS and Neuromuscular Disease Center. www.SupportBarrow.org



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