

# CASE STUDY

Barrow Neurological Institute



## Early Results Prompt Barrow to Order Second Exoskeleton Within Months

### Background

Founded in 1962, The Barrow Neurological Institute at St. Joseph's Hospital and Medical Center is one of the nation's most respected treatment centers for brain and spinal issues. Throughout its history, the Institute has been a global leader in innovation and research into brain and spine injury, brain tumors, imaging, Parkinson's disease and many other categories. Its many honors include HealthGrades Specialty Excellence™ Awards for 2014 in Neurosciences, Neurosurgery and Stroke Care, and AZBusiness Magazine's Health Care Leadership Lifetime Achievement Award in 2013.

### Patient Care Objective

Already a top provider of rehabilitation in their region, The Barrow Neurological Institute was still challenged when attempting to obtain the high number of repetitions (steps) that research suggests may be necessary to achieve neuroplasticity, with their current therapeutic methods. They learned that robot-assisted therapies were under investigation as tools that may support the goal of increased repetitions, and wondered how cutting edge technology could impact their patient care. The Institute acquired a GT exoskeleton from Ekso Bionics in December 2014 and began training its staff on its use in the first quarter of 2015.

The Ekso GT is a wearable bionic suit for individuals with weakness or paralysis of the lower limbs, due to spinal cord injury (SCI) and stroke, to stand and walk over ground with a natural and full weight bearing reciprocal gait.\* Walking is achieved by the user's weight shifts to activate sensors in the device, which initiate steps. Battery-powered motors drive the legs, replacing deficient neuromuscular function. The Ekso suit provides audio cues to the user when ideal lateral and forward spatial targets are achieved to initiate a step.

### Patient Selection

Within months, Barrow was using the Ekso GT four hours each weekday for inpatient rehabilitation, providing adjunct therapy to its patients' typical three hours of daily therapy. Patients usually used the Ekso GT two to three times per week.

#### Barrow chose patients with:

- Stroke
- Incomplete spinal cord injury
- Complete spinal cord injury patients on a limited basis, based on acuity, precautions, collars, braces, etc.

About 40 patients used the Ekso GT in treatment within a few months of acquisition.

\*for full indications for use please visit [www.eksobionics.com](http://www.eksobionics.com)

**"The Ekso robotic device allows us to get patients up on their feet earlier. The gains we see are overwhelming and the positive effects on a patient's mood and motivation is unbelievable"**

Dr. Christina Kwasnica,  
Medical Director Barrow Rehabilitation Center

### Results

Clinicians noted that although they were familiar with the Ekso GT from their pre-purchase analysis, they were still pleasantly surprised with its ease of set-up, its light weight and its ability to customize treatment for each patient, thanks to its easy-to-use software.

"We were immediately impressed with the improvements we saw in patient treatment in several critical areas," said Suzanne Wheeler, LMSW, CBIS Brain Injury & Spinal Cord Injury Program Coordinator at Barrow Neurological Institute. "The Ekso GT appropriately challenged our patients and provided immediate, compelling outcomes for many of our patients – the kind of breakthroughs we hope for when we invest in new technology."

St. Joseph clinicians saw early and marked results in midline awareness, balance, motor recovery and gait pattern, with specific improvements in:

- Repetition and motor learning for patients
- Early gait training
- Postural re-education/re-learning midline
- Risk of injury to therapists
- Ambulation of longer distances, with ease for both the patient and therapist

### Conclusion and Next Steps

Barrow was so impressed with the immediate results that by summer 2015 it had acquired a second Ekso GT, this one to share between the inpatient and outpatient units. Its immediate intention was to increase patient time with the Ekso GT from four to up to eight hours per weekday.

Usage of the Ekso GT has risen in terms of the number and type of patient and the frequency of usage per patient. The institute is gathering patient data with an eye toward examining more formal clinical results with a larger number of patient cases.