

Concussion and Brain Injury



Dr. Glynnis Ziemann received the Palatucci Leadership Award for Advocacy at the American Academy of Neurology (AAN) national meeting for her work with domestic violence and concussive disorders.

→ **EVERY 15 SECONDS**, someone suffers a traumatic brain injury – a blow to the head or body that causes the brain to move rapidly inside the skull. If these injuries are not quickly recognized and treated properly, even seemingly minor bumps can lead to serious long-term consequences.

The Barrow Concussion and Brain Injury Center is the first of its kind in the nation. The center offers comprehensive, compassionate, cutting-edge treatment and rehabilitation for adolescents and adults with concussions, traumatic brain injuries and spinal cord injuries.

The center is home to novel programs that educate people about concussions and treat patients with traumatic brain injuries. One innovative program treats homeless individuals who have sustained a traumatic brain injury because of domestic violence. The center created this life-changing program after identifying a three-way link between homelessness, domestic violence and traumatic brain injury.



Every
15 SECONDS
someone suffers a
traumatic brain injury



Concussion
SYMPTOMS
include headache,
fatigue, confusion



In any given season
20%
of high school players
suffer brain injuries

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 Barrow Concussion and Brain Injury Center provides multidisciplinary, comprehensive care to a variety of patient populations including professional athletes, student athletes, women escaping domestic violence, and senior citizens.

In Arizona alone, more than 100,000 high school students participate in organized athletic competition, and an estimated 7,000 to 12,000 students suffer from one or more concussions annually. Barrow's 2019 survey of parents and high school athletes in Arizona shows a decline in contact sports participation because of concussion concerns. Three in 10 teens said they decided not to play a sport because of concussion, a 50 percent increase since 2016. In 2019, 40 percent of Arizona parents said they would not allow their children to play football, up from 30 percent two years ago. The fourth annual survey garnered local and national news coverage.

The Barrow Concussion Network is a comprehensive program that provides education and guidelines for student athletes in Arizona and California. Although clinicians consult with patients in both states, the goal of the program is to provide testing and treatment to athletes in rural areas who may not have access to immediate health care. *Barrow Brainbook* is the nation's first mandated education and testing module for student athletes. Arizona is the first state to require all AIA high school student athletes to undergo concussion education and pass a test before they can play. *Barrow Brainbook* has provided concussion education to more than **one million high school athletes** in Arizona since 2011.

In addition to education, Barrow offers baseline computerized cognitive testing via the IMPACT Assessment. The test measures an athlete's normal cognitive performance and can be referenced to see the effects of a concussion should one occur. **More than 250,000 athletes** in Arizona have undergone the baseline testing.

Glynnis Zieman, MD, received the Palatucci Leadership Award for Advocacy at the American Academy of Neurology (AAN) national meeting. Dr. Zeiman was lauded for her work with domestic violence and concussive disorders. Barrow collaborates with women's shelters in the Valley to identify women who have suffered a traumatic brain injury due to domestic violence and offers free, state-of-the-art neurological care to survivors.

RESEARCH ADVANCES

Besides taking care of patients today, Barrow researchers are conducting research to improve brain injury prevention and care for



“It’s very important to take care of your body and try not to battle through it, especially when it comes to concussions, fighting it only makes the symptoms worse and the recovery process longer. The earlier you say something, the faster you can start to heal.”

CHRISTIAN KIRK, WIDE RECEIVER, ARIZONA CARDINALS

Completed the *Barrow Brainbook* as a high school athlete

Arizona Cardinals wide receiver Christian Kirk (center) is believed to be the first professional athlete to have completed the Barrow Brainbook program as a high school player. He presented with Dr. Javier Cárdenas (standing) at the 2019 Barrow Beyond Genius Bar. ↑

tomorrow. Barrow experts are continuing to explore the correlations between domestic violence and traumatic brain injuries. Barrow is also developing a tissue bank to better understand these injuries and the best ways to treat them.

ON THE HORIZON

The center would like to expand education and outreach to many more victims of domestic violence through Brains Club, a support group for victims learning how to survive with a traumatic brain injury. The club brings cognitive assessment and training into the shelters, rather than requiring a clinical visit. The program teaches through the cognitive model, which states that thoughts, feelings and behavior are all connected, and that individuals can move toward overcoming difficulties and meeting their goals by identifying and changing inaccurate thinking, problematic behavior and distressing emotional responses.

Barrow is one of the only institutions in the country to offer fellowship training to the next generation of concussion and brain injury specialists. The Sports Neurology Fellowship expands in 2020, when there will be two fellows. They will learn to treat and manage sports-related brain injuries, provide athlete and patient education, and conduct research.

BY THE NUMBERS



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

The mission of the Barrow Concussion and Brain Injury Center is to help as many patients as possible, whether they are athletes or victims of domestic violence, overcome neurological injuries. We lead the way in concussion education and will continue helping our patients reclaim their lives. We could not do it without your generous support.

With Gratitude,
Javier Cárdenas, MD



↑ *The Arizona Cardinals Football Club selected Javier Cárdenas, MD, director of the Concussion and Brain Injury Center, as the recipient of the NFL's Hispanic Heritage Leadership Award. As part of the award, a \$2,000 grant is awarded to the Arizona Athletic Trainers' Association on behalf of Dr. Cárdenas.*

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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