Each year in the United States, an estimated 2.8 million people sustain a traumatic brain injury (TBI), 795,000 suffer a stroke, and approximately 17,700 sustain a spinal cord injury (SCI).

Acute neurologic injuries are among the most difficult injuries to treat. Even when they aren’t fatal, the ability to recover from them is limited.

### Traumatic Brain Injury
A disruption in the normal function of the brain caused by a blow or jolt to the head, an explosive blast, or from a penetrating head injury. Can be lethal, result in coma, and/or leave victims with permanent severe disabilities based on the region of brain that is injured.

### Stroke
When blood flow from an artery supplying the brain is stopped by a blockage, resulting in the loss of function in areas controlled by that region of the brain. Another major type of stroke occurs when the wall of an artery in the brain breaks, causing blood to leak out.

### Spinal Cord Injury
When the spinal cord is affected by an accident or other situation leaving it partially or permanently damaged. Depending on the level of the injury, this can result in partial or complete paralysis of the limbs as well as varying degrees of respiratory difficulty.

### Sources


During a brain injury, blood flow to the brain is often restricted. When the blood flow is restored, toxic free radicals are generated and can cause cell damage. The MitoLUX helmet uses infrared light (IRL) to modulate the brain's mitochondria to prevent the generation of these free radicals.

Proteins and other unique biomarkers can be found in the blood that leaks out of the brain during a brain injury. MCIRCC is developing a microfluidic device that will allow for the bedside detection of these biomarkers, giving care providers a timing advantage in the diagnosis and treatment of these injuries.

For more information

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