DISASTER MEDICAL TECHNOLOGIES, LLC

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InfraScanner

The Revolutionary Application of Proven Infrared Technology

The InfraScanner accurately detects intracranial hematomas because of the unique light-absorbing properties of hemoglobin and the non-invasive, non-ionizing nature of Near Infrared (NIR) technology. The basic method for intracranial hematoma detection with NIR spectroscopy is based on the differential light absorption associated with the injured versus the non-injured parts of the brain.

Under normal circumstances, the brain's absorption should be similar when comparing left and right sides. However, extravascular blood absorbs NIR light more readily than intravascular blood because there is a greater concentration of hemoglobin in acute hematomas than in normal brain tissue. As a result, the absorbance of NIR light is greater (and reflected light is reduced) on the side of the brain containing a hematoma, as compared to the uninjured side.

The InfraScanner compares the left and right sides of the brain in four different areas. Placed successively in the left and right frontal, temporal, parietal, and occipital areas of the head and the absorbance of light at selected wavelengths is recorded. The difference in optical density in the corresponding areas instantly reveals the location of trauma to the brain. The detection depth is superficial (within 3.5 cm of the skin surface), where blood typically migrates in most cases of bleeding.

- Fire/EMS
- Rural Trauma Medicine
- Fall Management
- Emergency Department
- ICU
- Sports Medicine

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Traumatic Brain Injury

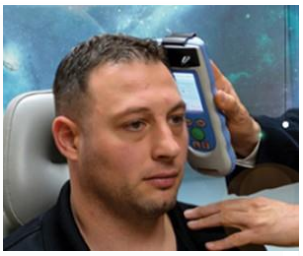
Traumatic brain injury (TBI) is a serious public health problem in the United States. Each year, traumatic brain injuries contribute to a substantial number of deaths and cases of permanent disability.

Every minute counts for a patient with a brain bleed; the mortality rate is 90% after 4 hours without treatment. The current “gold standard” for detection is a CT scan, however, they involve significant amounts of dangerous radiation exposure and transport.

63% of mild head injury patients sent to an Emergency Department will receive a CT scan to rule out intracranial bleeding and 98 – 99% of these scans will be negative or not necessary. One head CT scan is equal to 300 – 400 chest x-rays to the head, 18.7 million head CT scans are given annually.

Ionizing radiation in CT scans have enough energy to damage the DNA in cells, which in turn may lead to cancer. Children and adolescents are particularly vulnerable because the younger you are when you are exposed to radiation, the higher your lifetime risk of cancer.

Catastrophic Events



Though fans and family members cheer wildly in the stands, fear is just below the surface. Many remain unaware of the very real dangers of concussions and traumatic brain injury (TBIs). More than what goes on inside the helmet is what goes on with the brain inside the skull. A bruise to the brain or a brain bleed leads to increased pressure on the brain. You don’t “walk off” the effects of a hit to the head. The person who received the blow may not know that they are in danger; they may think they are fine. Just looking at them isn’t going to tell you what you need to know. Someone could have a brain bleed or bruise and think they were fine, go to bed and never wake up. That is the reality of a TBI, especially a closed head injury.

It’s estimated that concussions in high school football have been increasing at an annual rate of 8 percent since 1997. Traumatic brain injuries send 20 children every hour to the emergency department.

The 2013 high school football season ended with twenty-five players who sustained serious head injuries on the field, of which eight teenage players died from a brain bleed. In 2014, nine players sustained serious head injuries on the field, five died from a brain bleed.

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