

# Infrascanner Model 2000



## INFRASCANNER

### Handheld Brain Hematoma Screening

#### “Time Lost is Brain Lost”

In patients with head trauma the early screening for intracranial bleeding is critical. The timing of any required neurosurgical intervention is a major factor affecting patient outcomes.

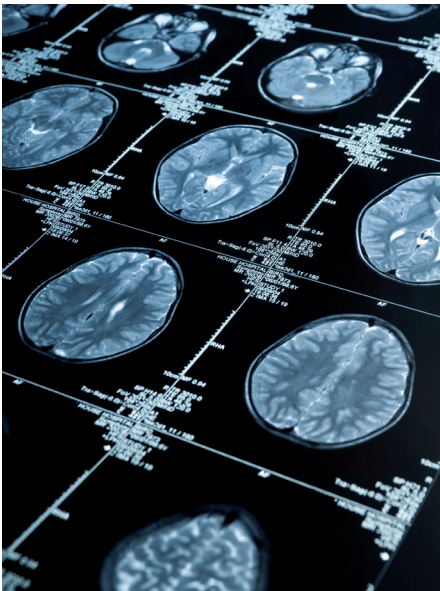
The Infrascanner is a portable screening device that uses Near-Infrared (NIR) technology to screen patients for intracranial bleeding, identifying those who would most benefit from immediate referral to a CT scan and neurosurgical intervention. In the triage of head trauma patients, the Infrascanner can identify patients most likely to have intracranial bleeding.

- A 431 patient, multi-center clinical trial, demonstrated that the Infrascanner was better than a physical examination alone in identifying patients at high risk of intracranial bleeding.
- The Infrascanner is light-weight and handheld, and provides a simple, positive or negative graphic report and can be used as a simple extension of the routine neurological examination.
- The Infrascanner is not a replacement for a CT scan. It is a simple, easy-to-use screening tool which can be used to identify high-risk patients, who can then be prioritized for transportation to a trauma center where a CT scan and neurosurgical treatment is available.

### Infrascanner Detection Abilities:

- Patient measurement is completed within 2-3 minutes.
- Can detect hematomas greater than 3.5 cc in volume.
- Detects hematomas up to 2.5 cm deep from the surface of the brain (or 3.5 cm from the skin surface).
- **Accuracy:** In patients with Epidural, Subdural and Intracerebral hematomas: **Sensitivity** = 88% / **Specificity** = 90.7%\*

\* C. Robertson, E. Zager, R. Narayan, N. Handly, A. Sharma, D. Hanley, H. Garza, E. Maloney-Wilensky, J. Plaum, and C. Koenig, “Clinical Evaluation of a Portable Near-Infrared Device for Detection of Traumatic Intracranial Hematomas,” *Journal of Neurotrauma*, vol. 27, pp. 1597-1604, 2010.



## Infrascanner Technology – How it works

Extra-vascular blood absorbs NIR light more than intra-vascular blood since there is a greater concentration of hemoglobin (usually 10 fold) in an acute hematoma than in the brain tissue where blood is contained within vessels. The Infrascanner measures the difference in NIR light absorption at corresponding locations on the left and right sides of the head. The detection depth is superficial (within 3.5 cm of the skin surface), where blood migrates in most cases of bleeding.

## Infrascanner Clinical Applications

### Pre-Hospitalization Screening

Head trauma patients can be diagnosed at the site of injury by first responders. The Infrascanner can be used in villages, small towns, islands, mines, sport clubs, skiing sites, hospitals without CT Scan or Neurosurgeons and evacuation vehicles.

### Hospital Emergency Room (ER) Screening

Traumatic Brain Injury (TBI) patients with multiple complications (like those arising from accidents) can be screened in the ER to help determine the urgency of TBI treatment with respect to other complications. In the event of multiple casualties, it is urgent to set correct priority list of patients for CT scan. Infrascanner screening of patients under alcohol or drug effect, little children etc is unique since neurological evaluation in these cases is impossible.

### Hospital Monitoring

Patients with apparently moderate or severe head injury can be monitored as often as necessary, at bedside to provide early detection of changes in intracranial hematomas between CT scans and decrease a frequency of CT scans for monitoring after neuro surgical procedures. Since around 20% of trauma related hematomas are delayed for more than 12 hours after the accident, Infrascanner can be used as a bedside monitoring tool for the patients left in hospital for observation period.

## Infrascanner Military Application

The Infrascanner has a very specific application in detecting TBI on the battlefield and in routine military settings where timely triage is critical. The United States Navy and Marines have invested significantly in Infrascanner development and have successfully field tested it in Iraq. Early hematoma detection can contribute to saving lives and in planning an adequate evacuation priority of the injured.

