Medical Xpress

Naval technology could be a lifesaver

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Battlefield corpsmen and medical professionals across the country gained a valuable tool last week, as the Food and Drug Administration approved the first hand-held device to detect life-threatening bleeding in the brain.

Research on the unit, called the Infrascanner, was initiated and funded by the Office of Naval Research (ONR).

The portable, battery-powered medical device reveals intracranial hematomas soon after an injury, and could be a lifesaver for Sailors and Marines injured at sea or on battlefields far from the diagnostic machines available in hospitals.

Experts say early detection of brain trauma is essential.

"When a brain injury occurs, every moment without an accurate assessment can determine a person's risk" of severe injury or death due to a brain bleed, said Theresa Rankin, a traumatic brain injury survivor who works with Brain Injury Services.

The Infrascanner could be a particular boon to the Department of the Navy (DON), as heavy computed tomography (CT) machines are not normally carried aboard ships in the frigate or destroyer class, or in the field with the Marine Corps.

"Naval warfighters, on ship or land, may be a great distance away from any definitive medical care," said Dr. Michael Given, ONR's program

manager for expeditionary medicine, combat casualty care. "So something like this could be very useful, almost essential."

The device is designed for quick and easy use.

"You can do the whole scan in a minute or so," said Given. "We tried to make it simple. Just a red-green lighted spot kind of display. So red, you're in trouble; green, everything's great. There are three sizes of red dots so you can tell if the bleeding is progressing. Simple and effective."

Warfighters diagnosed with hematoma would be immediately sent to advanced medical facilities.

The Infrascanner detects near-infrared light that penetrates into the skull. Pooled blood from hematomas absorbs that light differently from oxygenated blood circulating in blood vessels, and the device detects that difference.

Given said the greatest danger from hematomas is that they are sometimes not discovered until too late.

"If it goes undiagnosed and things look normal, and maybe a day later, you die of cerebral hemorrhage," he said. "And it could be because people have a headache and then take aspirin—that interferes with the coagulation cascade, so they start bleeding even more.

"If you don't know it's going on, that's the danger," he added. "So that's where this device fits in."

The revolutionary tool could see quick deployment. According to Dr. Baruch Ben Dor, president of Philadelphia's InfraScan which makes the Infrascanner, a plan is already in place through ONR to move the system to field evaluation with the Marine Corps Systems Command.

The Marines are testing and "ruggedizing" a version of the device that meets military standards for resistance to water, sand, corrosion by salt spray and more.

Traumatic brain injury (TBI) touches many veterans and military families. Blasts are a leading cause of TBI in war zones, according to the Centers for Disease Control (CDC), affecting memory and reasoning, sensory perception, communication ability and emotional well-being, as well as increased risk of unpredictable epileptic seizures and early onset of brain disorders typically associated with age.

Of the 1.4 million Americans diagnosed with TBI yearly, the CDC estimates 50,000 will die.

Rankin, who also founded brainlinemilitary.org, commended ONR's research.

"Clearly, this naval medical technology will have a global impact," she said, "because the field of neurotrauma continues to struggle with the lack of portable transformative diagnostic technology.

"The Office of Naval Research is ready to set a new standard of excellence."

Provided by Office of Naval Research