DHS Science and Technology Directorate

Wireless Patient Monitoring

Transitioned

Why it's Needed

Paramedics and other emergency medical services (EMS) providers often operate in confined spaces and/or mobile environments. They are required to manage multiple tasks, including the monitoring of a patient's vital signs.

Currently, emergency medical responders must attach numerous wires and instruments to a patient to monitor vital signs. While the information received from these instruments is displayed on one screen, the entanglement of wires and the process of connecting and disconnecting the patient can be overwhelming and take up precious time and space in confined ambulatory transports (i.e., the back of an ambulance or an aircraft). EMS personnel need a hands-free, wireless technology that monitors all required patient vital signs from one location, and the ViSi Mobile® device meets this need by providing continuous, non-invasive blood pressure (cNIBP) monitoring.

How it Works

In late 2012, the U.S. Department of Homeland Security Science and Technology Directorate (DHS S&T) partnered with Sotera Wireless, Inc. to develop a ViSi Mobile® device that can monitor vital signs without connecting wired sensors from the patient to other equipment. The device monitors blood pressure, 12-lead electrocardiograms, temperature and respiration. The system works with existing devices, including traditional sensor patches attached to a patient that transmit data wirelessly back to a central monitor. The system is capable of operating in confined and "on the go" spaces (e.g., when a distressed patient is moved from the scene of an incident into an ambulance) and uses a single monitor that is lightweight and easier to transport than existing models on the market.

The Value

This technology provides paramedics, clinicians and other medical personnel with a hands-free, wireless device to monitor a patient's vital signs, creating a safer environment for both EMS personnel and patients. No longer will first responders have to worry about entangled wires and a heavy monitor to transport with the patient. If patients require movement downstairs or through tight doorways, this wireless monitoring device poses less snag hazards and saves valuable time and space when connecting a patient to the ViSi sensors. Reducing snag hazards with just one device and a lightweight monitor will allow paramedics to respond to emergency incidents and perform daily operations more seamlessly and effectively.

The technology also allows end-to-end, real-time connectivity between the emergency medical technician in the field and the emergency room. Data can be forwarded through a remote system from the ambulance to the hospital to give doctors, nurses and other staff better situational awareness prior to the patient's arrival.

Rapid Prototype Development to Transition

In keeping with its mission of providing first responders with solutions to fill critical technology gaps, DHS S&T's R-Tech program worked with Sotera Wireless to address the technology requirements identified by EMS subject matter experts with backgrounds in patient transport and vital sign monitoring. The continuous surveillance monitoring capabilities developed were tested during an operational field assessment (OFA) with EMS participants in San Diego, California in December 2013. Technological and operational feedback from this OFA has supported transitioning this device to the emergency medical response community.

Since transitioning the product to the commercial market, Sotera Wireless has targeted the device for use in a hospital-based setting. The Food and Drug Administration has approved the ViSi Mobile® device for continuous, non-invasive blood pressure (cNIBP) monitoring. For more information on this technology, please visit Sotera's website at http://www.soterawireless.com/.

ViSi Mobile® Wireless Patient Monitoring Device

Homeland Security
Science and Technology

To learn more about Wireless Patient Monitoring, contact SandTFRG@dhs.gov.

2016-06-15