When those seconds count

Sierra Nevada Corporation is bringing its military tested eHealth and remote monitoring solution to civilian air medical operations to help save time and lives.

BY CHRIS THATCHER

It’s a scene familiar to TV hospital dramas: paramedics desperately trying to convey vital signs and accurate patient information to an emergency room trauma team as they frantically navigate a gurney through a noisy, chaotic and crowded hallway. What if most of that critical information—including types of injuries, patient status, and which specialists and medical personnel are required—were in the hands of the care team before the patient arrived at the hospital? In an environment where minutes can be the difference between life and death, this vital information could have an immeasurable impact on the patient’s outcome.

“If you can save minutes, you can save lives,” said Duston Thompson, a program manager at Sierra Nevada Corporation (SNC) with over 10 years of experience in e-health and remote monitoring projects.

Based in Sparks, Nevada, SNC is a pioneer in solutions that capture and communicate patient condition and treatment information over secure, wireless connections during air or ground transport. For the better part of a decade, it has worked with the United States military to successfully demonstrate the potential lifesaving effectiveness of transport telemedicine in harsh military operational environments.

Now, SNC is working to bring e-health and remote monitoring solutions to civilian markets. SNC’s eHealth and Remote Monitoring solution has revolutionized military aeromedical treatment, helping medical professionals on tense helicopter flights manage multiple trauma care patients.

“Rather than using duct tape and a Sharpie to record patient conditions, non-invasive monitors capture critical vital signs digitally, leveraging automated data collection that can be forwarded to receiving hospitals and stored for later reference. From its earliest applications, Thompson said the e-health approach provided solutions that allowed care providers to focus on the patient while delivering actionable information to receiving hospitals and clinicians. The goal has been to alleviate the difficulties of a verbal handoff with hospital clinicians and give medical personnel access to additional supportive tools without increasing information overload, such as with controlled drug dosage calculators and trackers—information that under extreme conditions can easily be forgotten.

“We’re providing integrated solutions to our first responders and medics to help them care for multiple patients as they try to get them to the right point of care,” said Thompson. “We don’t want to distract them from caring for the patient. But when you can get that data ahead of the air ambulance, you might improve that patient’s outcome.” This data can also be critical for future treatment, care and rehabilitation.

Since 2017, SNC has trialed three eHealth and Remote Monitoring prototypes, evolving the product from Technology Readiness Level 4 (validation in a laboratory environment) to Level 6 (completion and qualification through test and demonstration).

“This product is designed to be easily integrated on any platform from both a software and hardware standpoint,” said Thompson. “We are reducing the demands on the medical’s attention. Given how stressful it can be to administer treatments under medical evac conditions, imagine relieving the medic from the responsibility of trying to determine a patient’s weight and how much of a drug to apply. It can be done automatically. This allows the medic to focus on the patient.”

He added, “We already integrate multiple sensors, and we can modify the system to allow additional sensors. The more you can monitor, the more you can treat.”

With a product verified for military use, SNC is now exploring how best to certify it for an ambulance and other civilian first responders. While the company has experience developing new technology with the U.S. Department of Defense, it has less experience with commercial medical applications.

“We are looking for partners who are subject-matter experts in this area,” said Charlie Russo, vice-president of business development. “We are open to working with integrating partners who are interested in helping us with the certification on various platforms.”

For a company that can help take the carry-on solution to market, the mutual long-term benefits could be significant. The initial product might provide patient data capture and transfer to hospitals. However, Russo said there are future opportunities for applications such as decision-assist tools, and even autonomous monitoring and therapeutics administration as telemedicine and artificial intelligence algorithms evolve. In complex battles or natural disasters, delivering patients from the site of injury to a care facility might take days. Through remote monitoring and telemedicine, specialists could still see vital and assess patients during a prolonged casualty evacuation.

“We can virtually bring the doctor to the patient,” said Thompson. This enables higher levels of care in remote, austere conditions without requiring clinicians to be put in unsafe environments.

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