Emergency Medical Response with Mobile Medical Telemedicine Technology Delivers Health Equity and Improved Patient Outcomes

313MD medical tablets

Whether a person lives in a metropolitan area with quick access to specialists or in a rural area over an hour from a large healthcare office or hospital, they deserve the best healthcare possible. As technology brings exciting advancements to healthcare and medicine, it is important that these advancements can reach all who need them. By using the latest in IT, especially mobile technology that can meet a patient wherever they are, the gap between quality and specific care and patient location is closing.

EMS teams are often the first line of care for patients having emergency health issues. When timing and accuracy are of utmost importance, they have to be exactly sure of what is needed for each patient. Some medical events require expertise that is best provided by a specialist for that condition. For example, there are several kinds of strokes that require different care. Other types of time-sensitive critical conditions like heart attack, burns, smoke inhalation, and poisoning also require exact information. Depending on the distance to a medical facility or emergency department (ED) that can provide more care, patients rely on the treatments given in the ambulance or at the scene. In rural areas, it is especially challenging because of the longer distances between patients and EDs. Delaying patients' access to critical treatment can affect outcomes and recovery times.

The Emory University Department of Emergency Medicine' Prehospital and Ambulatory Virtual Emergency Services (PAVES) Program was initially created in 2021 through a grant with the U.S. Health Resources and Services Administration (HRSA). PAVES works in partnership with the Washington County Regional Medical Center (WCRMC) and other Georgia counties. The PAVES program, spearheaded by Michael J. Carr, MD FACEP FAEMS, was designed to expand and improve the quality of emergency care for residents in all areas of Georgia, especially those in rural areas, to eliminate the access disparity and to bring it on par with emergency care in urban cities.

PAVES brings EMS-focused telemedicine services to EMTs and paramedic staff treating patients across Georgia. Ambulance staff can remotely diagnose, triage, treat, and route patients to the closest local care facility that is best able to treat the patient.

Telemedicine Brings the Specialists to the Patient

WCRMC is a rural hospital located within the nearly 900 miles of rural roads in Washington County, Georgia. Located between Augusta and Macon, this small innovative medical center has an eight-bed ED and a 25-bed in-patient space. In the evenings, the hospital's ED is often staffed by a single physician and two nurses.

By providing telemedicine services supported by the PAVES network, WCRMC doctors and specialists can better support EMS staff and patients by directing care decisions while the patient is en route to their facility. The next closest ED is roughly 25 miles away and has similar staffing constraints. Patients often travel 45 miles or more to reach a hospital that can match or exceed WCRMC's capabilities. This situation is not unique to Georgia, as many rural areas in the U.S. face similar emergency care challenges.

A mobile system was deployed that connects medical professionals in the WCRMC ED and as needed, specialized medical experts in the region, with the EMS staff that are the first to assess the patients. By using video and audio, the EMS staff are able to leverage the support of the remote medical consulting teams to most accurately and safely diagnose and begin treatment on patients. By using video, they have been able to dramatically improve the quality of emergency care and depth of information available, without adding to the EMS staff's workload.

The Technology: Mobile Decentralized Paramedicine

The WCRMC hospital ED connects to EMS staff through rugged medical tablets mounted in the back of the ambulances. The 313MD medical tablets from DT Research are ideal for EMS and public safety; antimicrobial, fanless, military-grade rugged with responsive, robust sunlight-readable touchscreens for detailed imaging. The tablets have front and back cameras to capture video and images, there is also an Axis M5075-G PTZ pan-tilt-optical zoom camera added in the ambulances to provide a hands-free visual feed to clearly show patient status to remote medical personnel. The medical tablets use Microsoft® Windows® IoT Enterprise operating systems, which streamlines integration with the ED systems and swyMed telemedicine software, with strong encryption and high-quality audio/video capabilities, for mobile point-of-care wherever the patient is located.

The swyMed software connects through the Microsoft Azure Cloud to medical tablets are at other area hospitals, providing the mobile audio and visual connection from within the doctor's office to the ambulance. This system provides the EMS team, physicians and other healthcare practitioners in the ED as well as medical subject matter experts in separate locations the ability to view, interact with, diagnose, and help treat patients as though they were in the same room.

Improved Patients Outcomes in Any Location

The PAVES program and mobile telemedicine system has not only improved patient care no matter their location, but also brings other benefits. Staffing shortages can be an issue for many healthcare facilities. According to Michael Padgett, the WCRMC's Director of EMS, they use the mobile telemedicine system to fill gaps in practitioners available. Now they are able to connect the physician in the ED or any location to help the EMS staff interpret an EKG or authorize them to initiate certain medications.

The mobile telemedicine system also bridges patient transport issues when transporting between WCRMC and other facilities, which can be 60 miles away. The ED or receiving ED clinician can guide staff via the mobile audio/ video communication system to provide safer transport, and improved patient care and outcomes.

Pre-registration is also now realized, saving precious time and improving care results. Registration is completed before the patient arrives at the hospital, X-rays and CT scans can be pre-ordered, and patients' charts are ready when the radiologist reads the report. Speeding up the entire process gets the patient quickly through to the treatment needs and saves time for the hospital staff.

This technology system accelerates crucial medical intervention for stroke victims, explains Tetra Jenkins, a registered nurse and Stroke and Trauma Program Coordinator at WCRMC. Timing is critical to provide essential treatment within a three-to-four-hour window in order to save a stroke victim's life or preserve their quality of life. "With this technology, we can kickstart the treatment process in the ambulance. The ED physician can remotely initiate a comprehensive stroke scale to assess the severity of the stroke and, for instance, help guide EMS staff in managing the patient's blood pressure before arriving at the hospital. Starting this process while enroute helps stabilize the patient sooner so when they reach the ED, our medical team can immediately begin other critical life-saving treatments."

Another key benefit of this mobile telemedicine system is that it can be used in the field on scenes where there are mass injuries. Rather than overwhelming an ER with all levels of health issues, patients can be treated

and stabilized on scene to a level that reduces the urgency of transport. EMS personnel can quickly set up a field exam room with a connection to doctors at a nearby city or major medical center. This seamless approach gives teams a greater ability to 'treat and release' some patients without the need to go to an ED. Positioning medical tablets at the scene, at other hospitals and connecting with larger health center networks, the level of care provided to patients is optimized during critical moments when resources are stretched throughout the area.

Quality Healthcare for All

With the vision to expand and improve the quality of emergency care for all residents, PAVES has illustrated a path for other healthcare providers. By bringing in technology to create a decentralized mobile telemedicine system, they have leveled many of the disparities in medical care experienced in rural environments and during patient surge events. This distributed telemedicine technology enables first responders and EMTs to consult with a variety of subject matter experts, toxicologists, and specialists from anywhere to provide the specific expertise needed for rapid, effective responses.

The WCRMC example demonstrates how effective telemedicine—using purpose-built rugged medical tablets and telehealth software can significantly reduce time-to-care, expand the number and type of practitioners available to treat patients, and improve patient care overall.

DT Research

2000 Concourse Drive
San Jose, CA 95131 USA
Tel : 408.934.6220
Fax: 408.934.6222
www.dtresearch.com

About DT Research

DT Research™, an early Mobile Tablet pioneer and leading designer and manufacturer of purpose-built computing systems for vertical markets, delivers the world's most comprehensive line of Rugged and GNSS Tablets, Mobile POS Tablets, Convertible Laptops and Medical Computing Solutions. DT Research products are uniquely designed with customizable built-in options assembled in California, providing customers with rapid time-to-market solutions that are TAA compliant. The DT Research family of products is based on embedded computing platforms that power secure, reliable and cost-effective computing. DT Research systems offer computing mobility within industrial and harsh environments through durable solutions with wireless connectivity, high-quality touch displays, and Windows®, Android, and Linux operating systems. More than 200 organizations across the globe rely on DT Research solutions in industries such as government, healthcare, hospitality, logistics, military, construction and warehousing. DT Research is headquartered in Silicon Valley, California. For more information, visit www.dtresearch.com and follow @dtresearch, #MilitaryTablets, #RuggedTablets and #MedicalTablets.