
Warfighter Integration to Enhance Operational Utility of Emerging Technologies

Real-Time Physiological Status Monitoring of CBRN Personnel

Matthew Paquin, JFHQ, MA Army National Guard

From Working Group to Fielded Solution in Three Years: Case Study for Aligning Technology to Support a Critical Gap and Real World Missions for Civil Support Teams in the National Guard

Civil Support Teams (CSTs) in the National Guard Bureau have working groups to identify requirements for equipment to support their mission. In 2014, the Medical Working Group identified a critical gap that needed to be addressed. Potential heat injuries pose a significant risk to soldiers and others encapsulated in chemical, biological, radiological, and nuclear (CBRN) personal protective equipment (PPE). Currently, Survey Team members operating in a potentially contaminated "hot zone" use a subjective "buddy system" to provide for their health and safety. This subjective assessment has downrange personnel using radio communications to describe to medical personnel and command staff the subjective status of their battle buddy. Medical and command staff personnel are typically located remotely in the safe non-contaminated area or "cold zone." Decisions based on these subjective radio reports are made by health care providers from this remote location. As a guideline, thermal-work limits have typically been set based on group means and normal ranges in response to these particular conditions. After identifying this gap, the National Guard Bureau requested the help of the Joint Program Guardian to identify technology to address their needs. Out of a range of possible technologies, one was selected to provide individualized monitoring and predictive algorithms from real time physiological status monitoring. Working with the US Army Research Institute of Environmental Medicine, the Equivital™ Black Ghost System (Equivital Ltd, Cambridge, UK) was ultimately selected for fielding. The development of user requirements, training materials, a medical technical directive, and validated new equipment training provided to subjects & users are key components for the successful adoption and use of this technology. The process will continue with a postmarket surveillance research effort to ensure iterative adjustments and improvements are incorporated from the ultimate innovator, the end user.

Anmol Sood, CEO Equivital Matthew Paquin, MAJ, MA ARNG William Therrian, USARIEM