

Abstract for “A Pervasive, Real-time Electronic Triage System with Noninvasive, Biomedical Sensors”

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Abstract—In mass casualty incidents, an enormous amount of data, including patients’ vital signs, patients’ location, location and availability of transport vehicles, and the capacity of care facilities must be gathered and monitored efficiently. Today, these pieces of critical information is manually collected on clip boards and communicated over radios. During large scale disasters, providers quickly become overwhelmed with the large number of patients, limited resources, and insufficient information. To facilitate patient care, resource allocation, and real-time communication, the Advanced Health and Disaster Aid Network (AID-N) electronic triage system facilitates the seamless collection and dissemination of data from the incident site to key members of the distributed emergency response community. Here we present the iterative design of electronic triage tags on lightweight, embedded systems with limited memory and computational power and demonstrate how they improve communications during a real-world mass casualty drill. These electronic triage tags use noninvasive, biomedical sensors to continuously monitor the vital signs of a patient and deliver pertinent information to first responders. The real-time collection of data through a mesh network in a mass casualty drill was shown to approximately triple the number of times patients that were triaged compared with the traditional paper triage system.

Index Terms—Biomedical monitoring, emergency services, human factors, multisensor systems.

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