Comparison of the effectiveness of wireless electronic tracking devices versus traditional paper systems to track victims in a large scale disaster.

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**Abstract**

We conducted an unblinded experimental comparative trial during a disaster drill involving DMATs using the WIISARD system and traditional paper tracking of casualties. We shadowed the paper workflow to collect data on 40 victims tracked by both systems. WIISARD captured patients as well as the paper system and was superior at tracking patient destinations and transporting units. WIISARD proved to be an effective victim tracking system.

**Introduction**

The Disaster Medical Assistance Teams (DMATs) are federally funded response teams under the Department of Health and Human Services, formerly under Federal Emergency Management Agency (FEMA). DMATs are deployed to mass casualty type incidents to set up field hospitals and stabilize patients for prolonged care and for transport to definitive care. DMATs were deployed to the 2005 hurricanes Katrina. The San Diego California DMAT CA-4 was set up in the New Orleans Louis Armstrong International Airport to receive incoming patients from the field by emergency medical services and volunteers and for those patients that came by foot to seek shelter and medical care. During the first 24 at the airport, the San Diego DMAT CA-4 saw 750+ patients. All patient tracking was done on paper systems to gather initial patient data, record medical information and treatment, and track the patients as they move from one site to the other.

Subsequent to the response to Hurricane Katrina, the DMAT CA-4 team participated in a large scale disaster drill with the California Air National Guard and other California DMAT teams during which the The Wireless Internet Information System for Medical Response in Disasters (WIISARD) participated to assess the tracking of patients using this system. The WIISARD project uses sophisticated 802.11 wireless technology to coordinate and enhance patient tracking and care of mass casualties. WIISARD provides emergency personnel with medical data and tracking of victims by instantaneous information transfer among devices.

**Purpose**

To compare the effectiveness of wireless electronic tracking devices versus traditional paper systems to track victims in a large scale disaster drill.

**Methods**

We conducted an unblinded experimental comparative trial during a disaster drill involving multiple Disaster Medical Assistance Teams (DMATs) comparing the WIISARD system to traditional paper tracking of casualties. We shadowed the paper workflow of patient triage, destination, and transport using the WIISARD electronic triage tag (iTag), provider device, and the mid-tier supervisor device to triage and track victims at this drill. We collected data on the numbers of victims tracked by both including the initial patient capture, START triage status and transporting unit/destination determination of patients by WIISARD to that of the traditional paper method. Statistical analysis was performed (STATA) utilizing chi-square analysis.

**Results**

Forty victims were tracked. There were no differences in initial patient capture (87.5% [CI 73.2-95.8%] with WIISARD compared to 92.5% [CI 79.6-98.4%] with the paper system; p=.712). There was also no difference in capture of triage status (97.1% [CI 85.1-99.9%] for WIISARD vs 90.0% [CI 76.3-97.2%] for paper, p=0.364). WIISARD was significantly better in reporting transport units for patients (82.4% [CI 66.4-93.4%]) compared with the traditional paper tracking system (32.5% [CI 18.6-49.1%, p=0.001).

**Conclusion**

WIISARD captured disaster patients as well as the traditional paper system, with superior ability to track patient destinations and transporting units.

**References**