Increased situation awareness in major incidents – Radio frequency identification (RFID) technique: a promising tool

JORMA JOKELA (*Laurea University of Applied Sciences, Hyvinkää, Finland, jorma.jokela@laurea.fi)*
MONICA RADESTAD *(Department of clinical science and education, Södersjukhuset,Karolinska Institutet, Sweden)*
DAN GRYTH *(Department of clinical science and education, Södersjukhuset, Karolinska Institutet, Sweden)*
HELENE NILSON *(KMC, The Centre for Teaching and Research in Disaster Medicine and Traumatology, Linköping University, Linköping, Sweden)*
ANDERS RUTER *(KMC, The Centre for Teaching and Research in Disaster Medicine and Traumatology, Linköping University, Linköping, Sweden)*
LEIF SVENSSON (*Department of clinical science and education, Södersjukhuset, Karolinska Institutet, Sweden)*
VILLE HARKKE *(Institute for Advanced Management Systems Research Åbo Akademi University, Turku, Finland)*
MARKKU LUOTO *(Logica, Helsinki, Finland)*
MAARET CASTREN *(Department of clinical science and education, Södersjukhuset, Karolinska Institutet, Sweden)*

Introduction Management systems in disasters are constantly challenged to improve situational awareness in multi-casualty situations. In this study we evaluated a system that utilizes commercially available, low-cost components, including Radio Frequency Identification (RFID) and mobile phone technology.
Methods The feasibility and the direct benefits of the system were evaluated in two separate simulated mass-casualty situations; one in Finland involving a passenger ship accident resulting in multiple drowning/hypothermia patients and another at a major airport in Sweden with a plane crash scenario. Both simulations involved multiple agencies and functioned as a test setting for comparing the disaster management's situational awareness using the RFID-based system. Registration of triage was done by using both an RFID-based system, where the data automatically was sent to the medical command, and also a traditional method using paper triage tags. The situation awareness was measured directly by comparing the availability of up-to date information at different points in the care chain with both systems.
Results Information about the numbers and status or classification of the casualties was available over an hour earlier using the RFID system compared to the traditional method.
Conclusions The tested system was quick, stable, easy to use and proved to work seamlessly even in harsh field conditions. It surpassed the traditional system in all respects. It also improved the general view of mass casualty situations and enhanced medical emergency readiness in a multi-organizational medical setting.

Keywords: Disaster Management, RFID, Triage, Mobile Technology, Situational Awareness, Simulation, Mass Casualty situation, Smart Tag, National Triage Tag, Emergency medical services, EMS