

A Literature Review on the Use of Information and Communication Technology within and between Emergency Medical Teams during a Disaster

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Abstract : In a disaster event, sharing patient information between the pre-hospitals Emergency Medical Services (EMS) and Emergency Department (ED) hospitals is a complex process during which important information may be altered or lost due to poor communication. The aim of this study was to critically discuss the current evidence base in relation to communication between pre-EMS hospital and ED hospital professionals by the use of Information and Communication Systems (ICT). This study followed the systematic approach; six electronic databases were searched: CINAHL, Medline, Embase, PubMed, Web of Science, and IEEE Xplore Digital Library were comprehensively searched in January 2018 and a second search was completed in April 2020 to capture more recent publications. The study selection process was undertaken independently by the study authors. Both qualitative and quantitative studies were chosen that focused on factors which are positively or negatively associated with coordinated communication between pre-hospital EMS and ED teams in a disaster event. These studies were assessed for quality and the data were analysed according to the key screening themes which emerged from the literature search. Twenty-two studies were included. Eleven studies employed quantitative methods, seven studies used qualitative methods, and four studies used mixed methods. Four themes emerged on communication between EMTs (pre-hospital EMS and ED staff) in a disaster event using the ICT. (1) Disaster preparedness plans and coordination. This theme reported that disaster plans are in place in hospitals, and in some cases, there are interagency agreements with pre-hospital and relevant stakeholders. However, the findings showed that the disaster plans highlighted in these studies lacked information regarding coordinated communications within and between the pre-hospital and hospital. (2) Communication systems used in the disaster. This theme highlighted that although various communication systems are used between and within hospitals and pre-hospitals, technical issues have influenced communication between teams during disasters. (3) Integrated information management systems. This theme suggested the need for an integrated health information system which can help pre-hospital and hospital staff to record patient data and ensure the data is shared. (4) Disaster training and drills. While some studies analysed disaster drills and training, the majority of these studies were focused on hospital departments other than EMTs. These studies suggest the need for simulation disaster training and drills, including EMTs. This review demonstrates that considerable gaps remain in the understanding of the communication between the EMS and ED hospitals staff in relation to response in disasters. The review shows that although different types of ICTs are used, various issues remain which affect coordinated communication among the relevant professionals.

Keywords : communication, emergency communication services, emergency medical teams, emergency physicians, emergency nursing, paramedics, information and communication technology, communication systems

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