

### Information-Sharing Networks for Global Emergency Medical Services

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**Introduction:** Counteracting disasters and emergencies requires cooperation and collaboration among all entities and actors. Advanced Internet technologies enable users to share information easily using a variety of formats. Diverse National and International Networks of Disaster and Emergency Medicine (DEM) have been launched by workgroups of users to support their efforts. But Global International and Interdisciplinary Networks usually are not sufficiently robust and new difficulties or threats jeopardize the fragile networks. This study focuses on the factors that impede evolution of the DEM Information Sharing Networks, effective strategies to implement networks, and policies that may facilitate such networks sustainable.

**Methods:** Multidisciplinary and international cooperation assumes significant and ever-changing contexts. Within this study, a qualitative review has been conducted leading to a critical finding. The current global DEM Networks' vulnerability currently is based mainly on two traditional limitations; lack of recognition regarding the dynamic nature of networks; and failure to aggregate like-minded groups. In addition to the qualitative review, an agent-based simulation model has been applied to perform a simple quantitative analysis of the DEM system evolution.

**Results:** These results indicate the critical need to identify and implement greater homogeneity across actors and institutions in order to establish DEMs.

**Conclusions:** At the ASI BioHaza-Milan 2008, supported by the NATO SPS Programme and well-characterized by civil-military collaboration, an Association for international cross-disciplinary Networked Information Sharing in DEM was proposed. The goal is to increase the breadth and frequency of conferences, boot camps, and cross-task activity on one global project.

**Keywords:** agent-based simulation; homogeneity; information sharing networks; international cooperation; multidisciplinary cooperation; qualitative review

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### Teleconsultation and Telemedicine in Disaster Medicine and Austere Environments—“Satellite Telemedicine”: A New Italian Project of the Alpini Field Hospital

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In the last decade, telemedicine has represented a new, innovative tool for the delivery of health care to remote or geographically distant locations through the use of communication tools and technologies. Telemedicine creates functional clinical exchanges between physicians and healthcare providers working in an austere environment, or in resource-scarce settings, and professionals with specialty expertise that can provide advice.

The authors describe a new concept of telemedicine as a tool in disaster medicine. They show how, with the support of technology and satellite connection, it is possible for a disaster medical team operating in an austere environment to contact specialists in real-time. Although working in a field hospital, personnel would be able to obtain a rapid medical consultation, send images, and talk directly with other specialists who often are not available in austere and remote settings.

The authors describe this experimental Italian model of “Satellite Telemedicine” as applied in the Alpini Field Hospital, a mobile hospital structure that operates during disasters or provides humanitarian medical assistance supporting civil protection in national and international contexts. Inside this structure, a “Mobile Unit of Satellite Telemedicine” was created.

The authors show how “Satellite Telemedicine” could be utilized as a future template in case of a disaster due to natural hazards or terrorist attack, where medical care will be in short supply, and could contribute to the building capacity for future disasters.

**Keywords:** communication; disaster preparedness; hospital preparedness; information technology; international cooperation; satellite medicine; telemedicine

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### 1-1-2 and Emergency Telecommunications in Europe: Past, Present, and Future

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The single European emergency call number 1-1-2 was established in 1991 through a decision of the Council of Ministers of the European Union. It is now available free of charge in the 27 Member States of the EU and is the subject of a substantial overhaul in the context of the review of the Telecommunications regulatory framework actually under discussion at the different EU Institutions (European Parliament, Council of Ministers, European Commission).

The European Emergency Number Association (EENA) has been active in promoting the knowledge and effective use of 1-1-2 in Europe. Through a series of conferences as well as active lobbying of EU Institutions, 1-1-2

now is considered a priority of the EU and 11 February has been established as the EU 1-1-2 Day. The EENA also has influenced the upcoming legislation and now is organizing several projects aiming at establishing “1-1-2 excellence centers”, networking emergency services professionals, establishing standards for all parts of the 1-1-2 service chain, and creating a 1-1-2 Foundation for the support of information actions. In parallel, EENA has been actively supporting the idea of a Pan-European early warning and alert system (EWS) for all types of imminent or on-going disasters, and focusing on the behaviors people should adopt to avoid harm, rather than the type of the disaster.

Requesting competent authorities to ensure a better 1-1-2 service chain should be a main objective. The establishment of an EWS also should be a priority for the EU, especially with the >150,000 tourists crossing its internal borders every year.  
**Keywords:** 1-1-2; communication; emergency; emergency call number; Europe; telecommunication

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## Poster Presentations—Communication and Information

### (O68) MedDSM Proposes Two New Tools to Cope with Disasters

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Managing a large number of victims requires rapidity, reliability, and the instant dissemination of information. MedDSM proposed two new tools to help cope with these constraints: (1) the Categorization and Identification of Victims Involved in Catastrophes (CIVIC) bracelet; and (2) the Catastrophe, Aid with the Organization of Relief (C@OR) computer system. Categorization according to seriousness and the identification of victims is achieved by the use of a pre-numbered, waterproof paper bracelet color-coded according to the degree of urgency. This information is contained in a barcode as well as on a series of detachable stickers that can be used for the different documents in the treatment chain. The entry of this information into the computer using a barcode reader is managed by user-friendly software that allows for the rapid processing of the data, and immediate obtaining of statistical information and epidemiological studies. Dissemination in real time to other terminals is possible thanks to a wireless local area or wired network. These new tools can be deployed just as well in prehospital situations as in emergency departments. This system of managing flows of victims has been tested in numerous exercises. It has been presented to the French Ministry of Health, which has decided to equip Strasbourg as a pilot zone. The reliability of virtually immediate dissemination of the information enables this

system to make an instant assessment of the different triage sites, and therefore, anticipate the decision-making chain.

**Keywords:** categorization; communication; disaster; information; triage

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### (O69) Video-Assisted Telemedicine System Improves Triage and Situational Awareness in Disaster Response

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**Introduction:** Effective, real-time, situational awareness and communication is critical to disaster management and coordination in the field and at the Emergency Operations Center (EOC).

This report describes a rapidly deployable, wireless, real-time video distribution system that was used in a civil-military joint disaster field exercise at a major US-international airport. The utility of real-time video for EOC responders participating in the exercises was evaluated.

**Methods:** An incident command, mass-casualty reception and triage area was created and a military transport plane (C-130) arrived at the international airport taxiway with 30 “live” patients and 130 “paper” patients. The system provided instant delivery of multi-channel live video by nine video cameras to a remote EOC to provide instant situational awareness and telemedicine consultation. Six experts at the EOC with incident command experience completed the evaluations on a 1–5 (worst-to-best) Likert Scale.

**Results:** A total of 19.5 hours (nine cameras, 130 minutes each) of video were transmitted to the EOC in real-time. Based on the experts’ evaluation: (1) live video imagery from the exercise site greatly improved EOC situational awareness (4.7); (2) developments in the field could be tracked and triage status immediately determined (4.3); and (3) increased situational awareness helped reduce radio traffic, increase coordination effectiveness, and resulted in less chaotic environment in the EOC (4.8).

**Conclusions:** Video-assisted telemedicine system enhances triage and situational awareness for emergency medical care, and could be a force in future civilian disaster and military applications.

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**Keywords:** disaster response; situational awareness; telemedicine; triage

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