

infrastructure that is able to remain operative during all phases of a disaster and its response, thus addressing an important vulnerability of the existing infrastructure-oriented approach to telecommunications. We see applications that include supporting communities in maintaining communication in order that medical and public health effects of emergencies can be responded to more effectively and potentially providing ready access to communications for distributed teams of emergency health and humanitarian workers in disasters. Our goal in creating this technology and removing all barriers to adoption is to facilitate its ubiquitous inclusion in new mobile telephones, so that we can leverage the mass production of consumer electronics to create a resilient telecommunications capacity that can be deployed anywhere without supporting infrastructure. This would enable the creation of, for example, networks consisting solely of used telephones.

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### (A337) State Failure as a Factor in International Global Medical Operations: Network Modeling

A. Trufanov,<sup>1</sup> A. Rossodivita,<sup>2</sup> M. Aminova,<sup>3</sup>  
A. Tikhomirov,<sup>4</sup> A. Caruso,<sup>5</sup> R. Umerov<sup>6</sup>

1. Information and Security, Irkutsk, Russian Federation
2. Cardiovascular and Thoracic Diseases, Milan, Italy
3. Brussels, Belgium
4. New York, United States of America
5. Regional Chamber of Control, Milan, Italy
6. Center for Information Technologies, Simferopol, Ukraine

**Introduction:** In order to counteract disasters and emergencies, it is necessary to build cooperation and collaboration among all entities and actors. Field teams of rescuers require support from the State experiencing a disaster. The responses to the earthquake in Haiti demonstrated a lack of cooperation and collaboration and the rescuers encountered concomitant difficulties. Thus, the problems in the field are not only related to natural and technological aspects, but also social and political contexts. It is time to explore the role of the impact of State power on national and international disasters and emergencies. One modern and fruitful instrument for analysis of these complicated social and group processes is Complex Network modeling. Complex Network tools have been applied successfully to understanding and counteracting such threats as they relate to the spread of infectious diseases and/or to terrorist activities. Another significant utilization of the Complex Network approach is to develop good governance, management, and organizational processes in national and corporate landscapes. **Methods:** Based on a Complex Network Scope, a novel, three-layer network model of public connections for diverse State regimes for further simulation is proposed. Quantitative assessments and practical processes should be implemented for countering global disasters using international and interdisciplinary teams. Contrary to the known hierarchical layer approach for knowledge acquisition, this new model describes an overall national Society Network by dividing the approach into the three layers: (1) Formal (State), as hierarchical governments structures; (2) Informal (presented by different long-term sustainable link groups); and (3) Informal (aquainters with short term links (“weak ties”).

**Results:** According to each of these layers, one of three types of network topologies exist: (1) hierarchical; (2) scale-free; and (3) random, respectively.

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### (A338) Time for Order In Chaos! A New Model to Capture the Role of Foreign Field Hospitals after Disasters

K. Lind,<sup>1</sup> L. Westman,<sup>2</sup> M. Gerdin,<sup>3</sup> A. Wladis,<sup>3</sup>  
J. Von Schreeb<sup>4</sup>

1. Public Health Sciences, Division of Global Health, Stockholm, Sweden
2. Public Health Sciences, Division of Global Health, Stockholm, Sweden
3. Public Health Sciences, Stockholm, Sweden
4. Department of Public Health Sciences, Division of Global Health, Stockholm, Sweden

There is a paucity of reliable data on the healthcare needs over time after sudden onset disasters (SOD). There also are no widely acknowledged definitions and data on deployment, use, staffing, and management of foreign field hospitals (FFH) after such disasters. Further, the efficiency, relevance, timing and cost-effectiveness of FFHs in the aftermath of SODs have been questioned. This was again highlighted after the 2010 Haiti earthquake, when the situation, to a large extent, was chaotic, uncoordinated, and care was not adapted to needs. These shortcomings create severe difficulties with respect to studying the real impact of medical aid after a SOD and optimizing the international medical relief efforts to be applied afterward. This article aims to present a health system approach to the deployment of FFHs after a SOD, here applied to an earthquake. By reviewing the literature and drawing on field experiences from SODs, a conceptual framework was developed that capture the essential dimensions in such a model, including: (1) classification standardization of levels of care in FFH (1–4); (2) time-phases after the event (1–5); and (3) the need for health care based on the assumed burden of disease and, hence, need for medical care in relation to the socio-economic context. The model currently is being tested on a number of international experts in the field. By using this framework, the authors hope to create: (1) a common platform for research within this area; and (2) a tool for international actors that will facilitate a development toward an international coordination body in the future. As such, the framework hopefully will offer an opening to a structural approach to the above mentioned difficulties, support international actors in their SOD preparations and deployments, and put them in a better position to optimize the resources available to the targeted population.

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### (A340) The Role of Field Hospitals in Severe Environments — Guidelines to Prepare and Build a Field Hospital during a Disaster

A. Rossodivita

Cardiovascular and Thoracic Diseases, Milan, Italy

**Introduction:** Facing the threats of disasters due to natural hazards and terrorist attacks, communities and nations are strategically preparing to respond rapidly to such incidents with the appropriate medical services. Both natural and complex disasters may produce a massive number of casualties that outstrip

the ability of the local healthcare system to provide the required care. Damage to the healthcare infrastructure will further compromise the delivery of health services. Field hospitals (FHs) may provide care for the injured and act as a substitute for destroyed hospitals in the aftermath of sudden-onset disasters. A FH is a large mobile medical unit that temporarily provides care to casualties on-site before they can be transported safely to more permanent hospital facilities. The concept was inherited from the battlefield (such as the mobile army surgical hospital (MASH)). A FH is defined as a mobile, self-contained, self-sufficient healthcare facility capable of rapid deployment and expansion or contraction to meet immediate emergency requirements for a specified period of time. The FH may be dispatched temporarily with personnel or donated without personnel.

**Methods:** Field hospitals have been focused on providing emergency trauma care for the initial 48 hours following the sudden-onset disasters, but they tend to continue operations much longer after the on-set. The aim of this study was to assess the timing, activities, and capacities of the FHs deployed after a disaster, especially in severe environments, and provide guidelines on the implementation and deployment of a FH during a disaster. In particular, the activity of Italian Field Hospitals utilized during disasters, humanitarian emergencies, and mass-gatherings events will be described.

**Conclusions:** Field hospitals have been used successfully during disasters, and now have a crucial role in supporting affected populations and damaged healthcare infrastructures. Field hospitals also play a role in the international community response.

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#### (A341) Disaster! What about Me?

*H.N. Al-Qusimy*

Accident & Emergency, Muscat, Oman

**Background:** There is one important aspect of hospital preparedness for disaster that has so far received minimum attention. It has been taken for granted that medical staff know best how to take care of themselves and are well prepared personally when there is a call for disaster. However, the reality is far from what is expected, and many staff tend to keep their personal needs as a second priority when it comes to patient care, especially during disasters and mass casualties. They may not show it, however, while attending to their duties and managing casualties of disasters.

**Discussion:** Medical staff continue to have personal concern regarding their family, properties, personal safety and in some instances their own health as well. The medical staff are not the only one to blame, as other parties, including their employers are involved. This presentation will discuss causes and consequences of ill prepared medical staff personnel to disaster or Mass casualty, including a brief illustration of a mini survey that was conducted immediately following a hospital disaster drill. The presentation will also elaborate on developing staff personal response plans and kits that will contribute in reducing the burden of concern for their own family and them and indirectly may help increase their performance and productivity during disaster or mass casualty situations.

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#### (A342) Distribution Network Design in Relief Chain Management: Learnings from the 2008 Kosi Floods, Bihar, India

*A. Prakash*

Jamsetji Tata Centre for Disaster Management, Mumbai, India

Logistics has always been an important factor in humanitarian aid operations, to the extent that logistics efforts account for 80% of disaster relief. They often have to be carried out in an environment with destabilized infrastructures ranging from a lack of electricity supplies to limited transport infrastructure. Furthermore, since most natural disasters are unpredictable, the demand for goods in these disasters is also unpredictable. Thus it is evident that humanitarian logistics is challenging as it has to be more flexible, and has to function under severe constraints. In India, humanitarian logistics remains a neglected field in disaster management, the cost of which is paid by loss of human lives and property. In recent Kosi Flood the total population of 33,45,545 people living in 993 villages of 412 panchayats of 35 blocks of 5 districts were affected. A total of 3,40,742 houses were damaged and 7,12,140 animals were affected. A total of 239 humans and 1232 animal's lives were lost (Department of Planning and Development, Government of Bihar). The Paper analyses, Madhepura district government's mechanisms of managing logistics while responding to Kosi floods 2008. It evaluates the efficiency of these mechanisms with respect to its outreach to flood affected people. It review and analyses the strengths and weaknesses of the adopted distribution network design for relief management with reference to strategic locations of the relief camps, during the first month of the kosi floods in 2008. It suggests ways to improve disaster logistics at district level in Bihar. The study looks into the possibilities of adopting newer approaches in the field of logistics that could be implemented with greater efficiency under similar conditions. The logistics in the devastating floods at the district level in a developing country has key learning lessons for similar resource poor environments.

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#### (A343) Rebuilding Post Conflict Food Security in Liberia

*T.W. Graham*

N/A, Davis, United States of America

Liberia's 14 year civil war destroyed domestic agricultural production, veterinary and agricultural education, extension services and domestic food security. These losses severely limited domestic food production, and basic hygiene and sanitation: potable water, abattoirs, cold chain and food storage were greatly diminished. The average Liberian life expectancy fell from 45.8 in 1990 to 41.8 years presently. The population birth and death rate are two of the highest globally with a resulting population growth rate, of 2.7% per annum; this growth rate requires an immediate and concerted focus on domestic food production to alleviate nutritional inadequacy and hunger, trade imbalances and loss of foreign exchange credits. Food supply nationally is presumed adequate because of importation, though domestic production is inadequate. Unequal distribution precludes food security for all Liberians. Value chain augmentation, enhancing