

## Implementation of a Disaster Coordination and Communication Plan in Nepal: Hub and Satellite Concept

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**Introduction:** One lesson learned from the 2015 Nepal earthquake was the need for a more coordinated effort between hospitals to improve disaster response. To improve the coordination, the concept of a hub and satellite system was introduced.

**Aim:** Describe the implementation of a hub and satellite system in the disaster management plan to improve coordination and communication between hospitals and the health system during a disaster.

**Methods:** A standard hospital disaster management plan was developed and validated with governmental and non-governmental agencies. Twenty-five hub hospitals within Nepal were identified. Smaller hospitals surrounding hub hospitals were identified as satellite hospitals. A plan was made to address communication and coordination between hub-satellite hospitals and ministry of health involving resource sharing, capacity analysis, and development of deployment teams in each hub. An output-based workshop was planned. Each hospital's existing plans were evaluated before the workshop with a checklist containing essential components of disaster management. Each hospital was oriented and allowed to fill up a standardized template of a disaster management plan, after which their disaster management plan was reevaluated. The newly developed plan was then tested with a tabletop exercise function. The trainings were conducted from September 2017 to October 2018.

**Results:** Disaster management plans were made in 110 hospitals, including nine hub hospitals and 101 satellite hospitals in three of seven provinces in Nepal. Evaluation of a pre-workshop score for the existing disaster plan was 18/32, and the score of the disaster plan post-workshop was 30/32 on average. The average score for hospitals for the tabletop exercise was 68.2% (53.8% to 84.6%).

**Discussion:** A hub-satellite system-based disaster management plan has been developed and implemented in more than 100 hospitals in Nepal. Workshops for these hub and satellite hospitals improved their communication, coordination, and planning to improve disaster preparedness and future response.

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## Life Expectancy Negatively Correlates with Disaster Risk Index

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**Introduction:** Sendai Framework for Disaster Risk Reduction 2015-2030, for the first time, describes how disaster affects the health of people. Japan is prone to natural hazards, but at the same time, Japan has achieved one of the highest life expectancies (LE) in the world. After experiencing many disasters, Japan

seems to have achieved resilience against disasters. Thus, we tested a hypothesis that high LE correlates with low disaster risk.

**Methods:** We compared LE from the World Health Organization's (WHO) Global Health Observatory and the Index for Risk Management's (INFORM) disaster risk index, or World Risk Index (WRI), of each country using JMP software. INFORM risk index varies from 0-10, while WRI varies from 0-1, where a higher value means higher disaster risk in both systems. INFORM risk index considers hazard and exposure, vulnerability, lack of coping capacity, and lack of reliability. WRI considers exposure, susceptibility, lack of coping capacity, and lack of adaptive capacity, including logarithmized LE as a part of adaptive capacity.

**Results:** The overall INFORM risk index was negatively correlated with LE ( $p < 0.0001$ ). Although natural hazard did not correlate with LE ( $p = 0.7$ ), the human hazard, vulnerability, and lack of coping capacity negatively correlated with LE ( $p < 0.0001$ , respectively). Health-related indicators, which confirm the vulnerability and lack of coping capacity, were negatively correlated with LE. Cluster analysis of LE and INFORM risk of six categories resulted in four clusters of countries, suggesting that health development and disaster risk reduction are independent determinants. WRI also correlated with LE, but there are many outliers compared to the INFORM risk index.

**Discussion:** High LE can be a good complementary indicator of low disaster risk. Strategies to achieve better health that contribute to high LE are also effective and important strategies for disaster risk reduction.

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## Medical Coordination Rescue Members' and Ambulance Nurses' Perspectives on Emergency Mass Casualty and Terrorism Preparedness in the Netherlands - A Qualitative Study

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**Introduction:** Mass casualty incidents, specifically incidents with chemical, biological, radiological, and nuclear agents (CBRN) or terrorist attacks, challenge medical coordination, rescue, and ambulance care. Recently in the Netherlands, a new model for emergency preparedness for large-scale mass casualties and a specific approach dealing with terrorist attacks was introduced (2016).

**Aim:** To provide insight into the first experiences with this approach in order to identify strengths and pitfalls.

**Methods:** The study had a qualitative design and was performed between January 2017 and June 2018. A semi-structured interview included topics that were selected based on available literature. All interviews were typed out verbatim and were analyzed using a structured approach of labeling and clustering of the response.