

continuity of primary care for many, as well as strengthen and accelerate the re-establishment of healthcare in the post-disaster period.

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## The Role of Hospital Volunteers in Disaster Planning and Response

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**Study/Objective:** Discuss hospital volunteers in disaster planning and response in a large, urban tertiary care center.

**Background:** Volunteer Services at The McGill University Health Centre (MUHC) began participating in disaster response and training following the 1989 École Polytechnique massacre in Montreal, Canada. Over time the program has grown and is now comprised of over 80 volunteers across two hospitals.

**Methods:** The MUHC volunteers were deployed in 2 official emergency situations (Concordia University massacre in 1992 & Dawson College shooting in 2006), and provided support during the January 1998 North American ice storm. In addition, they participate in hospital emergency planning meetings, yearly disaster response training including live mass casualty simulations, and fan-out testing drills. The MUHC Volunteer Department has provided 10 to 80 simulated patients for each of the training exercises conducted since 2012.

**Results:** Through participation in disaster planning and response, hospital volunteers were found to be a reliable, well trained, independent, un-costly and flexible source of manpower, familiar with the hospital environment and functioning. Specific roles have been identified and integrated into the external disaster response plan:

- Assist ED Nursing and Security teams, directing patients to designated disaster triage entrance
  - Assist ambulatory patients to treatment areas after ED triage
  - Perform regular ED Duties with an expected increased workload
  - Participate in the Psychosocial Response with other members of the multidisciplinary Psychosocial Response Team
  - Perform regular inventory of disaster response materials
- Frequent turnover and limited funds for training are factors limiting further involvement of hospital volunteers in emergency management.

**Conclusion:** Hospital volunteers are a valuable asset to the hospital during an external disaster. Their involvement in emergency management activities including regular attendance at planning meetings and participation in simulations are key to successful collaboration when external disasters occur.

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## Catastrophic Data Disruptions: A New Frontier for Disaster Preparedness

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**Study/Objective:** To outline the causes, effects, and mitigation strategies of catastrophic health care data disruption.

**Background:** Recent years have seen a surge in disruption of health care delivery due to various causes. Health care data has become a target for a variety of actors, especially in the field of cyberspace. As we become more urbanized, we have increasingly become dependent on information technology to retain and retrieve long and complicated patient medical records to allow us to practice medicine safely and efficiently. Thus, the cyber-physical system has become a key infrastructure item that needs to be protected against threats.

**Methods:** A detailed Internet search was conducted to look for possible causes, effects, and mitigation strategies of catastrophic data disruption. The findings were listed in the results.

**Results: Risks to Patient Data Systems emanate from:**

1. Targeted cyber-attacks:
  - Disgruntled employees;
  - Cybercriminals– especially for Ransomware;
  - Nation states.
2. Business risk to any part of the data chain:
  - Attack on database provider's cloud;
  - Financial bankruptcy of any part of the chain (vendor/sub-vendor);
  - Physical infrastructural damage to servers/storage systems.
3. Power outage and related IT failure. 4. Solar flares. 5. EMP weapons. **Immediate effects on health care delivery are:** 1. Cascading failure of health delivery. 2. No medical records can be retrieved, bringing care to a halt. 3. Medications cannot be served safely. 4. Impaired care of patients on critical care support - ICUs, EDs, hemodialysis, and chemotherapy units. 5. No refilling of prescriptions. **Best Practices in Operations Continuity involve:** 1. Crisis Communications protocol for a confirmed outage. 2. Scenario-based preparedness exercises: Downtime Protocol. 3. Easy-to-deploy paper-based recording material: Downtime toolkit. 4. Service recovery with alternative off-site hardware and software providers. 5. Cloud-based backup redundancy arrangements.

**Conclusion:** Catastrophic Data Disruptions are a new frontier in disaster preparedness. It involves everyone and can be crippling if not prepared for in advance.

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## Ensuring Operational Continuity of Community Healthcare Services During Disasters

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**Study/Objective:** To present contribution of a national guideline on the capacity of community primary care health care systems to establish and sustain operational continuity during disasters.

**Background:** “Meuhedet” is the 3<sup>rd</sup> largest Health Maintenance Organization (HMO) in Israel, insuring 15% of the population (~1,200,000 members). The HMO is committed to

provide continuous medical services to its members in routine and crises. Ongoing operation is dependent on the availability of manpower, infrastructure, medical equipment, information technology, and computerized systems. Advanced planning is required to ensure sustainability of services, even during significant disasters.

**Methods:** An operational continuity plan was established, basing the sustainability efforts on international standards. Through adaptation of a process of Business Impact Analysis on the health care system, core vulnerabilities within the HMO were identified, priorities, and criticality of each service were defined as follows: HIGH: Recovery Time Objective (RTO) immediately or up to 24 hours; MEDIUM: RTO within a week; LOW: RTO within four weeks. The plan encompasses all critical elements and services, including computerized system, manpower, infrastructure, and vital equipment.

**Results:** The operational continuity plan was evaluated and approved by the senior Executive Board of the HMO and has been adopted as a perennial work plan. A designated organizational structure was developed as responsible for the implementation and management of the recovery plan during a crisis. Once a year, training and exercise of the recovery plan is conducted, cross-cutting all critical services including: primary care, nursing, pharmacy, laboratory, radiology, home care for vulnerable populations, mental, and emergency dental health services. The aim is to achieve participation of at least 25% of the pre-defined population in the annual training program.

**Conclusion:** Implementing preparedness for various disasters ensures recovery within the designated objectives, which were defined in the operational continuity plan. A significant budget needs to be allocated in order to facilitate an effective preparedness.

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### What are the Most Effective Methods of Disaster Preparation for Health Professionals and Support Staff? Perspectives from Staff at St Vincent's Private Hospital, Sydney - Phase 1 of a Multi-site Study

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**Study/Objective:** A multi-site study aiming to identify preferred methods and content of disaster preparation for medical, nursing, allied health, and hospital support staff. This research can guide preparation at the site hospitals and beyond.

**Background:** St Vincent's Private Hospital Sydney (SVPHS) conducts a range of disaster preparedness programs which have not been comprehensively evaluated. An integrative literature

review identified little high-quality research evaluating best practice preparedness. The most effective methods of preparedness could not be established. The review also identified that health professionals may not be fully prepared, and may elect to not work during disasters. Research to date mostly focused on doctors and nurses (Gowing, Walker, Elmer & Cummings, in press). Quality research is required, which engages all disciplines of health professionals and support staff, as hospitals require this range of staff to function effectively.

**Methods:** Qualitative multiple case study design. Phase 1 conducted during 2016. Semi-structured interviews with health professionals. Focus groups with hospital support staff. Purposive sampling. Interview and focus group guide – developed using hospital experience and the literature review. Validated with PhD supervisors and disaster managers. Ethics approval obtained from the University and Hospital.

**Results:** The results will be analyzed to understand the what, how, and why. Case comparisons between occupational groups. The results can be discussed at the WADEM Congress 2017. The SVPHS “case” will later be compared to “cases” at two other Australian teaching hospitals.

**Conclusion:** Given resources available for health services and increasing prevalence of disasters worldwide, it is important that data are available to guide health services and professionals in the most effective methods of disaster preparedness. To promote an effective response, all disciplines in the health team should be included to inform such data.

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### Disaster Management and Emergency Preparedness within Turkish Healthcare System

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**Study/Objective:** This paper aims to describe disaster management and emergency preparedness within health care system of Turkey and review related publications.

**Background:** Turkey is facing regular natural and manmade disasters. Earthquakes, landslides and floods are the most frequent natural disasters. Turkey has terrorism problems too, and has lost more than 35,000 people to terrorist events since the 1980s. Since the beginning of the Syrian civil war in 2011, Turkey experienced an increased number of bombings, including the deadliest attack in its history at the capital on October 2015, with more than 100 casualties.

**Methods:** Policy guidelines and previously published government reports were reviewed for policy recommendations, and a summary of literature is presented.

**Results:** The Disaster and Emergency Management Authority has been developed after the 1999 Golcuk earthquake, and currently has 81 provincial branches and coordinates all emergency response and disaster recovery efforts. The Ministry of Health (MOH) has its own disaster and emergency response directorates, and has medical management and training responsibilities (image 1). The National Emergency Response Team (NMRT) is working under MOH and is responsible for on-site medical