Application of National and Sub-National Indicators to Rank Needs of People with Life-threatening Conditions and Chronic Diseases Before, During, and After a Disaster

**Introduction:** Disasters can damage the essential public health infrastructure and social protection systems required for vulnerable populations. This contributes to indirect mortality and morbidity as high as 70–90%, primarily due to an exacerbation of life-threatening conditions and chronic diseases. Despite this, the traditional focus of public health systems has been on communicable diseases. To address this challenge, disaster and health planners require access to repeatable and measurable methods to rank and prioritize the needs of people with life-threatening and chronic diseases before, during, and after a disaster.

**Aim:** Propose a repeatable and measurable method for ranking and prioritizing the needs of people with life-threatening and chronic diseases before, during, and after a disaster.

**Methods:** The research began by identifying the risk disasters pose to people with life-threatening and chronic diseases. The data gathered was then used to develop indicators and explore the use of DisasterAWARE™ (All-hazard Warnings, Analysis, and Risk Evaluation) to rank and prioritize the needs before, during, and after a disaster.

**Results:** This research found people at greatest risk are those with underlying cardiovascular and respiratory diseases, unstable diabetes, renal diseases, and those undergoing cancer treatment. A sustainable method to help address this problem is to expand the use of DisasterAWARE™ (All-hazard Warnings, Analysis, and Risk Evaluation) to rank and prioritize needs at national and sub-national levels.

**Discussion:** DisasterAWARE™ has been successfully applied to the assessment and prioritization of disaster risk and humanitarian assistance needs in Southeast Asia (ASEAN, Viet Nam), Central America (Guatemala, El Salvador, Honduras, Nicaragua), South America (Peru), and the Caribbean (Jamaica, Dominican Republic). Using the indicators developed through this research, this proven methodology can be seamlessly and easily translated to rank and prioritize the needs of people with life-threatening and chronic diseases before, during, and after a disaster.

**Determining Key Influences on Patient Ability to Successfully Manage Noncommunicable Disease After Natural Disaster**

**Introduction:** Natural disasters often damage the public health infrastructure required to maintain the wellbeing of people with noncommunicable diseases. This increases the risk of an acute exacerbation or complications, potentially leading to a worse long-term prognosis or even death. Disaster-related exacerbations of noncommunicable diseases will continue, if not increase, due to an increasing disease prevalence, sustained rise in the frequency and intensity of disasters, and rapid unsustainable urbanization in disaster-prone areas. However, the traditional focus of public health and disaster systems remains on communicable diseases, despite a low risk. There is now an urgent need to expand the public health response to include noncommunicable diseases.

**Aim:** To explore the key influences on patient ability to successfully manage their noncommunicable disease after a natural disaster.

**Methods:** A survey of people with noncommunicable diseases in Queensland, Australia, collected data on demographics, disease/condition, disaster experience, and primary concern post-disaster. Descriptive statistics and chi-square tests with Bonferroni-adjustment were used to analyze data.

**Results:** There were 118 responses to the survey. Key influences on the ability to self-manage post-disaster were access to medication, medical services, water, treatment and care, power, and

**Discussion:** Despite this, the traditional focus of public health and disaster systems remains on communicable diseases, despite a low risk. There is now an urgent need to expand the public health response to include noncommunicable diseases.
The key influences on successful self-management
discussion: The key influences on successful self-management
post-disaster for people with noncommunicable diseases must
be reflected in disaster plans and strategies. Achieving this will
reduce exacerbations or complications of disease and decrease
demand for emergency health care post-disaster.

Disaster Risk Reduction and Health: The Potential of
Health Registers for Public Health Monitoring
Dr. Michel Dücker1,2, Dr. Filip Arnberg1, Dr. Chrisostos Balatsias1,
Dr. Lennart Reijfelds3, Dr. Line Stene1, Dr. Joris Yzermans1

Introduction: The Sendai Framework seeks to substantially
reduce disaster risk and losses in lives, livelihoods, health,
and other assets including persons, communities, and countries.
The framework focuses on reducing mortality while increasing
population wellbeing, early warning, and promotion of health
systems resilience. The use of scientific evidence to inform pol-
icy and formulate effective initiatives and interventions is crucial
to disaster risk reduction within health. Different instruments
and methodologies are available to guide policy and operations.
The potential value of routinely collected patient data from
health registers is that they can provide pre-event health and
comparison group data without burdening affected populations.
Aim: The current contribution aims to illustrate how health
registers can help monitor the health impact of natural and
human-made disasters.
Methods: Patient data from health registers of general practi-
tioners and other health professionals, sometimes combined
with other registers and data sources, have been utilized to mon-
tor the health impact of disasters and environmental hazards
in the Netherlands, Norway, and Sweden since 2000.
Results: Health registers allowed monitoring of mental health
problems, medically unexplained symptoms, chronic health
problems, and social problems. These were compared to groups
not directly exposed. The health impact and care utilization was
tracked after the fireworks explosion in Enschede affecting
inhabitants of the neighborhood (2000; data range 1999–2005),
children and parents after the Volendam café fire (2001;
data range 2000–2006), Swedish survivors of the Tsunami in
Southeast Asia (2004; data range 2004–2010), and parents of
children affected by the terrorist attack on Utøya (2011; data
Discussion: Health systems with registers have an important
advantage when it comes to the potential for monitoring pop-
ulation health, and perhaps offer early warnings of pandemics.
However, data generation should be closely connected to pol-
icy-making before and during the planning and evaluation of
public health intervention.

The Effect of Natural Disasters on Cancer Care:
A Systematic Review
Dr. Ralph Xiu-gee Man1, Dr. David Lack2,
Dr. Charlotte Wyatt3, Prof. Virginia Murray4

Introduction: As the incidence of cancer and the frequency of
extreme weather events rise, disaster mitigation is becoming
increasingly relevant to oncology care.
Aim: To investigate the effect of natural disasters on cancer
care and the associated health effects on patients with cancer
through the means of a systematic review.
Methods: Between database inception and November 12, 2016,
Embase, ScienceDirect, MEDLINE, Scopus, PsycINFO,
Web of Science, and CINAHL were searched for articles.
Those identifying the effect of natural disasters on oncology
services, or the associated health implications for patients with
cancer, were included. Only articles published in English were
included. Data extraction was done by two authors independ-
ently and then verified by all authors. The effects of disaster
events on oncology services, survival outcomes, and psycho-
logical issues were assessed.
Results: Natural disasters cause substantial interruption to
the provision of oncology care. Of the 4,593 studies identified,
only 85 articles met all the eligibility criteria. Damage to infra-
structure, communication systems, medication, and medical
record losses substantially disrupt oncology care. The effect of
extreme weather events on survival outcomes is limited to only
a small number of studies, often with inadequate follow-up
periods.
Discussion: To the best the authors’ knowledge, this is the first
systematic review to assess the existing evidence base on the
health effects of natural disaster events on cancer care. Disaster
planning must begin to take into consideration patients with
cancer.