

Non Communicable Disease Following Disasters The Forgotten Story

Peter Aitken Penny Burns Ben Ryan

Thanks To

- Dr Penny Burns
 - Primary Healthcare in Disasters
 - ANU (about to submit PhD)
- Dr Ben Ryan
 - Non Communicable Disease in Disasters
 - JCU (completed PhD)

What Today Is Not About





Identifiable event Localised impact Identifiable injury Direct causation Visible Measurable Newsworthy

Clinical workload and priorities



Townsville ED Post TC Yasi



Burden of disease in disaster



vonSchreeb © 2008 Prehospital and Disaster Medicine

What Today Is About





Less identifiable event Not localised Illness rather than injury Indirect causation Less visible Hard to measure prospectively Newsworthy?

Sendai Framework for Disaster Risk Reduction 2015-2030

30 (k) People with life threatening and chronic disease, due to their particular needs, should be included in the design of policies and plans to manage their risks before, during and after disasters, including having access to life-saving services.



Millions



Burden of NCDs



Source: WHO (2003)

NCDs in Queensland

NCD	Queensland prevalence (Qld Health 2016)
Cancer	4%
Cardiovascular conditions	16%
Diabetes	5%
Mental health	14% (reported in past six months)
Renal diseases	1%
Respiratory conditions	14%

Chronic disease is the leading cause of ill-health and death in Australia, and accounts for almost 85% of the total burden of disease in Australasia in 2010.

30% of people with NCDs indicated they require support to manage their condition in a disaster

Ryan B, Franklin R, Burkle F, Aitken P, Smith E, Watt K & Leggat P. The concerns and challenges facing people with noncommunicable diseases post natural disaster: an Australian perspective. *Chronic Illness*

Understanding This

Never buy a border collie when your drunk.



Hurricanes and NCDs

All Cause Mortality

47% increase in mortality and morbidity one year after after Hurricane Katrina (Burkle 2010)

Diabetes

- Diabetes related deaths accounted for 5% of excess deaths Florida, 2004 (four hurricanes) (Brown 2008)
- Increased risk for people reliant on insulin (Ng, 2011)

Asthma

- Admissions were three times higher in the two weeks after Hurricane Iniki, 1992 (Hendrickson 1997)

Cardiac

- In 30 days following Hurricane Sandy, incidence increased by 22% and mortality by 31% (Swerdel 2014)
- After four hurricanes in Florida during 2004, accounted for 34% of excess deaths (Brown 2008)
- Three-fold increase for six years after Hurricane Katrina (Guatum 2009)

Cancer

- Cancer related deaths 19% increase in 12 months post Hurricane Iniki (1992) (Hendrickson 1997)
 - Cancer treatment services decreased by 33% one year after Hurricane Katrina (2005) (Brown 2008)

Why Is It So ?



Impact of cyclone, storm and flood related disasters on NCDs

- Systematic review literature
- Disasters interrupt treatment and care for people with NCDs including access to medications
- Damaged transport routes, reduced health services, loss of power and evacuations
- Increasing the risk of exacerbation of illness or even death
- People at greatest risk are those:
 - with underlying cardiovascular and respiratory diseases
 - undergoing cancer treatment
 - with unstable diabetes
 - with renal diseases, especially if receiving dialysis.

PLOS DISASTERS

Identifying and Describing the Impact of Cyclone, Storm and Flood Related Disasters on Treatment Management, Care and Exacerbations of Non-communicable Diseases and the Implications for Public Health

September 28, 2005 - Research article

Citation

Ryan B, Franklin RC, Burkle FM, Altken P, Smith E, Walt K, Leggat P, Identifying and Describing the Impact of Cyclone, Storm and Pibod Related Disasters on Treatment Management, Care and Exacerbarians of Non-communicable Diseases and the Implications for Public Health PLOC. Currents Disasters. 2015 Sep 23 . Edition 1. doi: 10.1571/currents.dis.2004/32864/152464/7988446ca4740288.

Revisions

This article is either a revised version or has previous revisions Edition 1 - September 28, 2015

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Ryan B, Franklin R, Burkle F, Aitken P, Smith E, Watt K & Leggat P (2015a). Identifying and describing the impact of cyclone, storm and flood related disasters on treatment management, care and exacerbations of noncommunicable diseases and the implications for public health. *PLOS Currents Disasters*. 2015(7)

Chronic Condition	Issues impacting Condition in disaster or emergency	Potential Outcomes
Diabetes	 Serious impact on blood glucose levels (BGL's) due to: Incorrect, damaged or no availability of insulin. Physical and mental stress. Physical activity. Emotional responses – stress, fear, anxiety. Hormonal responses – adrenaline, cortisol. Inaccessibility to appropriate food & water supplies. 	 Hypoglycaemia (hypos). Hyperglycaemia (DKA). Unconsciousness. Coma. Death.
Cancer	 Serious risk of contracting communicable disease due to compromised immunity: Poor sanitation. Unsafe drinking water. Evacuation to a population dense setting. Spoiled food. 	Infection.
Cardiovascular disease	 Serious risk of severe worsening or complications of condition due to: Limited access to medication. Disruption to health care services. Physical workload associated with clean-up and reconstruction. 	 Increased blood pressure. Unstable angina. Palpitations (arrhythmia). Heart attack.
Chronic respiratory disease	 Serious risk of sudden worsening of condition due to: Disruption to equipment (e.g. oxygen & nebulisers) and medications. Overcrowding in shelters or temporary accommodation which increases exposure to airborne diseases and allergens. Poor sanitation which can increase exposure to airborne mould spores. Air pollution can also be a major concern, as can exposed asbestos if considerable damage to buildings. 	 Exacerbations of condition. Becoming oxygen dependent. Pulmonary embolism (a blockage of the lungs main artery). Pneumothorax (the presence of air or gas in the cavity between the lungs and the chest wall, resulting in a collapse of the lung). Increased risk of death within 90 days after a natural disaster.
Kidney (renal) disease	 Serious risk of condition worsening due to: Damage to equipment required to manage condition. Lost medications. Reduction in health care services. Compromised water quality. Poor sanitation. 	 Reliance on dialysis interrupted/ discontinued. Essential for transplant recipients (kidney or other organs) to continue anti-rejection medication.

<u>Source</u>: Ryan B, Franklin R, Burkle F & Aitken P– Expert Advisors, ADEA (2015). THE NEEDS OF PEOPLE WITH DIABETES AND OTHER CHRONIC CONDITIONS IN NATURAL DISASTERS: A Guide for Emergency Services, Local Councils and the Not-for-Profit Sector. Diabetes Australia and the Australian Diabetes Educators Association, Canberra, Australia.

What Can We Do About This?



Public Health Infrastructure

- Defined, described and categorised PHI for cyclone, flood, storm, tornado and tsunami related disasters
- PHI defined as "the workforce, equipment, supplies, and services required to maintain the health and well-being of individuals and the community."
- The highest priority PHI identified was workforce followed by:
 - Water, sanitation, equipment, communication, physical structure, power, governance, prevention, supplies, service, transport and surveillance.
- If workforce fails, it has the greatest impact on health service performance

RIGINAL RESEARCH

Defining, Describing, and Categorizing Public Health Infrastructure Priorities for Tropical Cyclone, Flood, Storm, Tornado, and Tsunami-Related Disasters

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ABSTRACT

Bijedelistis: The study aim was to underlate a qualitative mean th literature evice to analyse available databases to define, describe, and categorize public health infrastructure (PHD priorities for tropical cyclone, flood, storm, kornado, and torumerivated disasters.

Nathods: Five electronic publication diabases were search edited efine, describe, or categorize PH and discuss tropical cyclone, flood, storm, formado, and taunari-setaled disasters and their impact on PH. The data were analyzed through aggregation of individual articles to create an overall data description. The data were grouped into PH themes, which were fiven prioritized on the basis of degree of interdependency.

Results: Solyassen relevant articles were identified. PH was categorized into 13 therees with a lotal of 158 descriptors. The highest priority PHI identified was workforce. This was followed by water, sanitation, explorment, communication, physical skudure, power, governance, prevention, supplies, service, trianpot, and survaillance.

Conclusions: This review identified workforce as the most important of the 1.3 homatic areas related to PHI and disasters. If its functionally fails, workforce has the graduat impact on the performance of headin services. If addressed post-disester, the remaining forms of PHI will ten be progressively addressed. These findings are asket toward providing an exidence taxe to inform PHI priorities in the disaster setting. (Disaster Med Pable Headth Progressively approx. 2016) page 1 of 1.0 Key Workin disasters, public headth Progressively preparedness, disaster planning.

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As a must of population growth, density, and rapid urbanization of withmable populations, the rait disastempose to PHI continues or i.e.^{2,4} Por sample, the southwearem United States is a finile breeding ground for contactors.²⁵ State 1950 three have been an average of 53 tots adoes and 5 desthe annually.^{26,29} In Chilabora, the urban speed has resulted in an increased number of people living in high-tilk tormado areas 12 This tilk will only increase as the population of Oblahoma is expected to increase from 3.9 million in 2013 to over 5 million by 2050. 12

There has been acase research into the priorities for PHE of people large in disaster-valuerable areas. Understanding PHE priorities would benefit dedicionators, disaster and baship placers, baship systems, and the community by systematically infoming proparation, response, and neceway.

To help address this problem, a quiltative reasorthlinemane review was conducted to better define, describe, and categoriae PHE according to the priorities for distance management systems. The objectives tachield defining PHE in the context of tropical systems (general pHE) in the context of tropical systems (general pHE) in the context of distance and categorities for head disaster approximation of the physical system physical distance to the system system physical distance to the system physical distance to t

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Paper 3 – Ryan B, Franklin R, Burkle F, Aitken P, Smith E, Watt K & Leggat P (2016a). Defining, describing and categorizing public health infrastructure for cyclone, flood and storm related disasters. *Disaster Medicine and Public Health Preparedness*. 2016; 1:1-13.

Conceptual framework and theoretical approach



Source: Ryan et al (2015a)

Vulnerability Indicators (Framework)

Indicators	Can include (not exhaustive list)
Proximity to an event, lack of warning of an event	People living, working in and travelling through the affected area
Made a decision not to help themselves	People have received warning but chose to not take safety advice
Lack of understanding risk to an event	People living, working in and travelling through the affected area
Insecure housing or homelessness	Insecure housing e.g. caravans and boarding houses, rough sleepers and homelessness
Lack of financial resources	Pension and benefit recipients, low income workers (including casual and part time
Personal safety; reduced health and/or wellbeing	Some older people, children and young people, those experiencing domestic and family violence. People impacted by loss or injury related to a disaster
Disruption to, or lack of available services, supports/ carers medication, aids and equipment	Some older persons, frail, aged, people with health conditions including mental illness, people with disability
Lack of access to, or disruption to transport, supplies and communication	People without private transport or reliant on public transport, people reliant on medical equipment and medication People with languages other than English or low literacy levels
Visitors or new arrivals, low risk understanding or knowledge	Migrants, refugees, overseas/temporary workers, students and tourists
Social, physical, geographic isolation	Some older people, people with health conditions, e.g. mental illness, disability, people experiencing homelessness People living and working in remote locations

Protective Factors





Questions

