

Reducing the impact of cyclone, flood and storm-related disasters in rural areas on non-communicable diseases through public health infrastructure resilience

Benjamin Ryan^{1,2}, **Richard Franklin**¹, **Kerriane Watt**¹, **Erin Smith**³, **Frederick Burkle**^{1,4}, **Peter Leggat**¹

¹James Cook University; ²Cairns and Hinterland Hospital and Health Service, Department of Health; ³Edith Cowan University; ⁴Harvard Humanitarian Initiative, Harvard University

Aim: To explore how the impact of cyclone, flood and storm related disasters, in rural areas of Queensland, on non-communicable diseases can be reduced through public health infrastructure resilience.

Objectives: The objectives were to:

- discover knowledge-levels of non-communicable diseases (NCD)
- identify awareness of public health infrastructure (PHI)
- discover how public health risks and NCDs are influenced by disasters
- identify resilience concepts for mitigating the impact of disasters on NCDs.

Background: Rural areas of Queensland have recently experienced a number of large scale and devastating natural disasters, including far reaching floods and damaging storms. This is a feature of the climate and this threat is expected to continue, if not increase.

The relationship between disasters and NCDs is a risk for people living in rural areas. This is due to a 'disease transition' from communicable diseases to NCDs, creating a range of challenges for governments, health care and service providers. Prominent among the NCDs are cardiovascular diseases, cancers, diabetes, asthma, arthritis and kidney diseases. NCDs are reliant on PHI such as medications, equipment, services, housing, water, food, waste and sanitation. Damage to this infrastructure places vulnerable populations with NCDs at a greater risk of mortality due to disasters.

The research aims to address this risk by exploring how the impact of cyclone, storm and flood related disasters on NCDs can be reduced through PHI resilience.

Methods: Focus groups and interviews were completed with people who have NCDs, disaster responders and health specialists in the Cairns, Toowoomba and Townsville regions. Government officials in Brisbane were also interviewed. The data was analysed following the process for a qualitative study. This included data collection and organisation, description, classification and interpretation.

Results: The research found disasters and the subsequent management of NCDs is a challenge for rural communities. This included 30 descriptions of how disasters can impact on NCDs; 123 descriptions of PHI, which were categorised into 16 themes; and identified 24 resilience concepts. The findings have informed the development of a conceptual framework for mitigating the impact of disasters on people in rural areas with NCDs.

Conclusion: Disasters are a challenge for rural communities. To minimise the impact there is a need to have resilient PHI. This means disaster preparedness needs to focus on strengthening PHI, which will also help address modern disease priorities.