Climate change and zoonotic diseases in New Zealand: what we know, what we need

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Introduction

Up to 60% of existing and 75% of emerging pathogens are zoonoses, originating in animals. All of these are and will be affected by climate change, either because the pathogen is able to survive in the environment under a range of suitable conditions, or because the range of suitable habitats for the animal hosts is affected. Policy-makers have the ability to make evidence-based decisions to mitigate the impact of climate change on population health. Designing surveillance for early warning of emerging pathogens or increase in incidence of endemic ones, land use policies to preserve wildlife habitat and sources of drinking water, or awareness campaigns on the health risks around extreme weather events are examples of such policies that are expected to have an impact. Policy makers rely on evidence and data to make this decision. Here we review the existing evidence related to climate and infectious zoonotic diseases in New Zealand and discuss weaknesses and needs for preparedness.

Methods

Several studies have been conducted to explore the impact of climate change on animal health in the past 10 years, with an acceleration in the last three years. New Zealand studies have used syndromic surveillance data, laboratory diagnostic data, research data, practice records and models to predict animal disease distribution with climate change. In addition, human notification data have been used to explore relationships between human health and climate and model the effects of climate change.

Results

Water-borne diseases such as salmonellosis and leptospirosis appear to be the most studied when it comes to climate change impact on zoonoses in New Zealand. Very little One Health work, combining human and animal health data, has been conducted in New Zealand to date. New Zealand lacks an animal health notification system that would allow more accurate and precise recording of infectious disease cases. We will summarise the evidence for several indicator diseases affecting animals, people, or both, with different modes of transmission, and discuss the quality of the evidence as well as needs.

Conclusions

There is an increased interest in the role of climate in disease distribution and transmission in New Zealand. While work on the human health side has been progressing rapidly, the animal health sector is limited by the lack of appropriate data to build prediction models that are specific to New Zealand. Collaboration between sectors is also recommended to increase efficiency and model accuracy.

References

Tompkins *et al.* *Modelling the impacts of climate change on infectious diseases in New Zealand – Health Analysis and Information for Action (HAIFA).* Environmental Science and Research Ltd, 2012
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