Te Niwha

Research Project Impact Case Study

The role of improved surveillance and modelling to support prevention and control of infectious diseases in Aotearoa

Key researchers

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Introduction

The overarching aim of this project was to identify opportunities for using infectious disease modelling and enhanced surveillance to improve the prevention and control of infectious diseases in NZ. We also consider the perspective of how disease modelling can answer the infectious disease concerns of Māori communities.

Research activities

Our research activities involved carrying out a comprehensive review of the mathematical modelling literature across all major respiratory infectious diseases in NZ, which to our knowledge is the first comprehensive national assessment of its kind. In collaboration with researchers from Wai Rangahau we also engaged with Māori communities (whānau ora providers, their whānau and public health experts across the motu) to understand their infectious disease priorities and the informational needs of kaimahi.

Results

Our research showed that in NZ modelling efforts are focused primarily on pandemic threats, such as COVID-19 and influenza, with limited attention given to other respiratory diseases. There is little modelling for bacterial respiratory infections, even though some are vaccine preventable, notably pertussis; and limited modelling for respiratory viral pathogens such as respiratory syncytial virus (RSV) and measles despite their significant public health impact. The COVID-19 pandemic also saw the adoption of new modelling techniques for understanding respiratory infectious diseases in NZ which can now be applied to explore the epidemiology of other pathogens. Our community engagement highlighted how infectious diseases are often low priority to whānau with everyday stresses such as housing and kai being the priority. However, there is a shared memory of the impact infectious diseases have had on Māori communities, particularly the 1918 influenza pandemic. Whānau ora providers identified childhood diseases, specifically those we could vaccinate against, as their priority and emphasised that diseases such as pertussis are an ongoing issue for them, not just when there is an epidemic.

Impact

This project identifies the many opportunities and potential programs of future research where mathematical modelling can provide added value both in terms of discovery and informing prevention and control policy. Our established community engagement can then help guide prioritising this work to ensure we are addressing the pathogens of most concern to Māori communities that are most impacted.