

Lockdowns, border closures and related measures could help stop future pandemics

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St. Jude scientist Richard Webby, Ph.D., of Infectious Diseases, contributed to research that found certain nonpharmaceutical interventions of COVID-19 should be considered to prevent future viral respiratory outbreaks. Credit: St. Jude Children's Research Hospital

Measures like those New Zealand officials implemented to stop COVID-19, including stay-at-home orders and business shutdowns, could be used to lessen or even eliminate severe influenza pandemics, according to research that appears today in the journal *Nature Communications*. Investigators at St. Jude Children's Research Hospital and in New Zealand led the observational study.

The researchers found evidence that the nonpharmaceutical interventions New Zealand officials carried out to eliminate COVID-19 probably contributed to an unexpected and unprecedented reduction in flu and serious respiratory infections. The steps included a border closure, a nationwide lockdown, a public education campaign and more.

"The lesson from New Zealand is that stringent

nonpharmaceutical measures, if introduced early enough, may make it possible to fend off future severe pandemics," said senior author Richard Webby, Ph.D., of the St. Jude Department of Infectious Diseases. "These are things we can do with our behavior that do not require vaccines and antiviral drugs."

Based on the results, the researchers urged national and international public health organizations to re-evaluate their recommendations about using nonpharmaceutical measures to block [flu transmission](#) in a severe pandemic. Officials had concluded some of these approaches were impractical and ineffective. That [guidance](#) was based on historical observation and disease modelling studies.

A national strategy

The novel [coronavirus](#) that causes COVID-19 reached New Zealand Feb. 28, 2020. A few weeks earlier, officials had implemented the first in a series of increasingly restrictive measures to eliminate the [virus](#). The strategy included [public health](#) such as testing, contact tracing, quarantining and physical distancing. A month-long nationwide lockdown began March 25, a few weeks before the usual start of the nation's [flu season](#).

With public cooperation and support, the strategy eliminated community transmission of the virus that causes COVID-19 by early May. Travel to New Zealand remains strictly controlled to help prevent the spread of COVID-19, but otherwise life in the country has mostly returned to normal, Webby said.

A natural experiment

The timing of the pandemic, the interventions and the flu season set up a natural experiment on the effect of human behavior on community transmission of respiratory viruses.

When the flu season ended, data from the nation's multiple flu surveillance networks showed New Zealand experienced dramatic reductions in flu and other viruses. The list included the respiratory syncytial virus (RSV), a life-threatening infection in infants, as well as parainfluenza viruses and cold viruses. Evidence showed that circulating flu virus declined 99.9% nationwide compared to previous years. No laboratory flu outbreaks were detected by the country's flu surveillance system.

Other possible contributors

While researchers could not determine which interventions were more successful at preventing viral transmission, Webby said all the measures likely played a role.

Other factors may have also contributed to the nation's mild flu season. More New Zealand residents were vaccinated for flu. Cold temperatures benefit the flu virus, and this year New Zealand had the warmest winter on record.

More information: undefined undefined et al. Impact of the COVID-19 nonpharmaceutical interventions on influenza and other respiratory viral infections in New Zealand, *Nature Communications* (2021). DOI: [10.1038/s41467-021-21157-9](https://doi.org/10.1038/s41467-021-21157-9)

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