

Decline in mortality due to respiratory diseases in Japan during the coronavirus disease 2019 pandemic

To the Editors:

We read with interest the paper by Dr Fairweather and colleagues that was recently published in *Respirology*.¹ Their research question was whether non-coronavirus disease 2019 (COVID-19) respiratory diseases were reduced in New Zealand when strict contact restrictions were in place during the acute phase of the 2020 pandemic. Their outcomes (hospital admissions across New Zealand) were reduced for several non-COVID-19 diseases. However, as they correctly describe, it was unclear whether the reduction in hospital admissions was due to a true reduction of circulating respiratory viruses or confounded by changes in patient behaviour. We therefore assessed the trend change of deaths from these diseases using data in Japan because this is an important global health issue.²⁻⁴ The number of deaths

is a reasonable outcome because mortality outcomes reflect the number of incident patients and are less affected by patient behaviour in visiting hospitals and clinics, although the number of deaths is much less than the numbers of admissions.

Data of all residents in Japan from January 2009 to March 2021 were provided by the Japanese Ministry of Health, Labor and Welfare. To explain the monthly mortality rate per 100,000 population, multiple regression analysis was conducted using the year, month and COVID-19 pandemic (fiscal year 2020 in Japan: April 2020–March 2021) as explanatory variables. The mortality estimated from the year and month was assumed to be the normal level of mortality in the absence of the pandemic. Due to considerable annual and seasonal fluctuations, annual mortality and a logarithmic model were

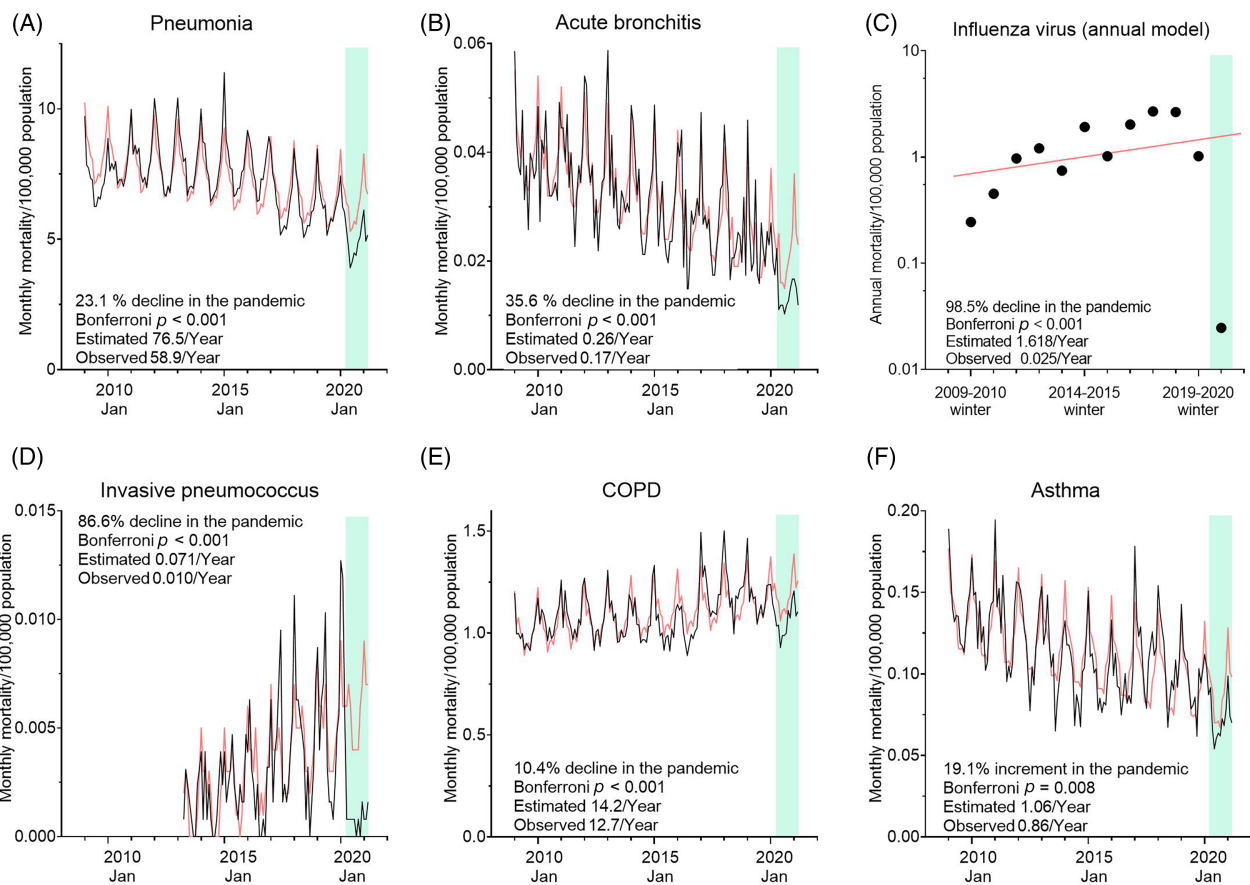


FIGURE 1 Impact of the COVID-19 pandemic on mortality. Black line, observed mortality; red line, estimated mortality; blue rectangle, COVID-19 pandemic period. The invasive pneumococcus category was newly included in 2013

used for influenza virus. We tested the impact of the pandemic on mortality using the statistical significance of the COVID-19 pandemic variable. *p* values were Bonferroni corrected and the significance threshold was set at $p < 0.05$.

Fairweather et al. reported that hospital admissions due to respiratory infections and pneumonia declined by approximately half. According to our data, there was a reduced number of deaths from pneumonia (23.1%; Figure 1A), acute bronchitis (35.6%; Figure 1B), seasonal influenza (98.5%; Figure 1C) and invasive pneumococcal infections (86.6%; Figure 1D). Notably, the reduction of 17,000 pneumonia deaths was almost two times greater than deaths from COVID-19 in the same timeframe. In New Zealand, hospitalizations for chronic obstructive pulmonary disease (COPD) and asthma decreased. Our data also revealed that COPD deaths (10.4%; Figure 1E) and asthma deaths (19.1%; Figure 1F) were reduced. Fairweather et al. proposed that the reduction in circulating respiratory viruses may have led to the reduction in COPD admissions.

The numbers of deaths from respiratory malignant neoplasms and acute coronary disease did not change in Japan in this timeframe, which was consistent with unchanged hospitalization of these diseases in New Zealand. We and Fairweather et al. evaluated similar respiratory outcomes in New Zealand and Japan under different national infection control policies, and found decreases in respiratory infection, COPD and asthma with no overall change in respiratory cancers and acute coronary syndrome.

We would like to thank Dr Fairweather and colleagues for their valuable research.

CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTION


Nobuyuki Horita: Conceptualization (lead); data curation (lead); formal analysis (lead); methodology (lead); project administration (lead); resources (lead); software (lead); visualization (lead); writing – original draft (lead). **Hideaki Kato:** Conceptualization (supporting); writing – review and editing (supporting). **Keisuke Watanabe:** Conceptualization (supporting); writing – review and editing (supporting). **Yu Hara:** Project administration (supporting); writing – review and editing (supporting). **Nobuaki Kobayashi:** Supervision (supporting); writing – review and editing (supporting). **Takeshi Kaneko:** Project administration (supporting); writing – review and editing (supporting).

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How to cite this article: Horita N, Kato H, Watanabe K, Hara Y, Kobayashi N, Kaneko T. Decline in mortality due to respiratory diseases in Japan during the coronavirus disease 2019 pandemic. *Respirology*. 2022;27:175–6. <https://doi.org/10.1111/resp.14186>