

The ongoing impact of COVID-19 pandemic restrictions on the cardio-respiratory health of New Zealanders

To the Editors:

In 2020, New Zealand successfully eliminated community transmission of COVID-19 through strict pandemic restrictions ('lockdowns') and closing international borders.¹ Elimination of the virus allowed restrictions to be lifted while maintaining compulsory supervised 14-day quarantine requirements for international arrivals. Other than the lack of international travel, the country returned to near normal without widespread mask wearing or gathering restrictions in June 2020. Quarantine-free from Australia was permitted from April 2021. However, on 17 August 2021, further community transmission of COVID-19 was detected and restrictions were re-imposed nationwide. These reduced, but did not eliminate the newer more transmissible strain of the virus.

We previously reported the impact of the 2020 pandemic restrictions and the resulting reduction in circulating respiratory viruses on respiratory and cardiac admissions.¹ We now extend this period of observation for a further year to examine the impact of changing levels of lockdown and border restrictions.

During the first half of 2021, infectious respiratory admissions followed normal seasonal trends with a slightly higher than normal winter peak, mostly driven by bronchiolitis infections in children as reported by others (Figure 1A).² Among older adults, the winter peak of respiratory admissions was similar to previous non-pandemic years (Figure 1B). Following the re-imposition of lockdown restrictions, respiratory admission rates fell sharply to the low levels seen following imposition of pandemic restrictions in 2020. Consistent with our previous observations, there was no discernible impact on the winter peak of heart failure admissions (Figure 1C).

These observations are consistent with the re-emergence of respiratory viruses following re-opening of travel without quarantine from Australia and normal social contacts in early 2021, leading to a typical seasonal pattern of respiratory admissions. As in 2020, there was a sharp drop in infectious admissions following the re-introduction of pandemic restrictions, consistent with a reduction in circulating respiratory viruses.¹

Respiratory syncytial virus (RSV) is a prominent cause of bronchiolitis in infants and can also cause respiratory infections in older adults.³ However, it appears that the re-emergence of RSV in 2021 had a different impact on these age groups: RSV caused a much higher than usual winter peak of paediatric bronchiolitis admissions in 2021.² This may be

explained by the lack of children's exposure to RSV in 2020 and therefore lower immunity when RSV re-emerged in 2020.² However, the normal winter peak of infectious respiratory admissions in 2021 among older adults (Figure 1B) may be because older adults already have some immunity to RSV from previous exposures and the absence of circulating RSV in 2020 did not greatly change their susceptibility.

These observations extend our previous findings and confirm it is possible to eliminate the winter peak in respiratory admissions by measures that prevent virus transmission. By contrast, for the second winter in a row, the winter peak in cardiac failure was observed despite substantial reductions in respiratory illnesses. This supports our previous conclusion that the usual winter peak in heart failure admissions is unlikely to be explained by circulating respiratory viruses.

KEYWORDS

cardiovascular disease, coronavirus disease, COVID-19, pandemic restrictions, respiratory infection

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CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTION

Sarah M. Fairweather: Conceptualization (equal); formal analysis (lead); writing – original draft (lead); writing – review and editing (equal). **Catherina L. Chang:** Conceptualization (equal); writing – original draft (supporting); writing – review and editing (equal). **Robert J. Hancox:** Conceptualization (equal); writing – original draft (supporting); writing – review and editing (equal).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the New Zealand Ministry of Health on request.

HUMAN ETHICS APPROVAL DECLARATION

Human ethics approval was not required for this study after consultation with the Health and Disability Ethics Committees of New Zealand, as the data used do not contain any personal identifying information.

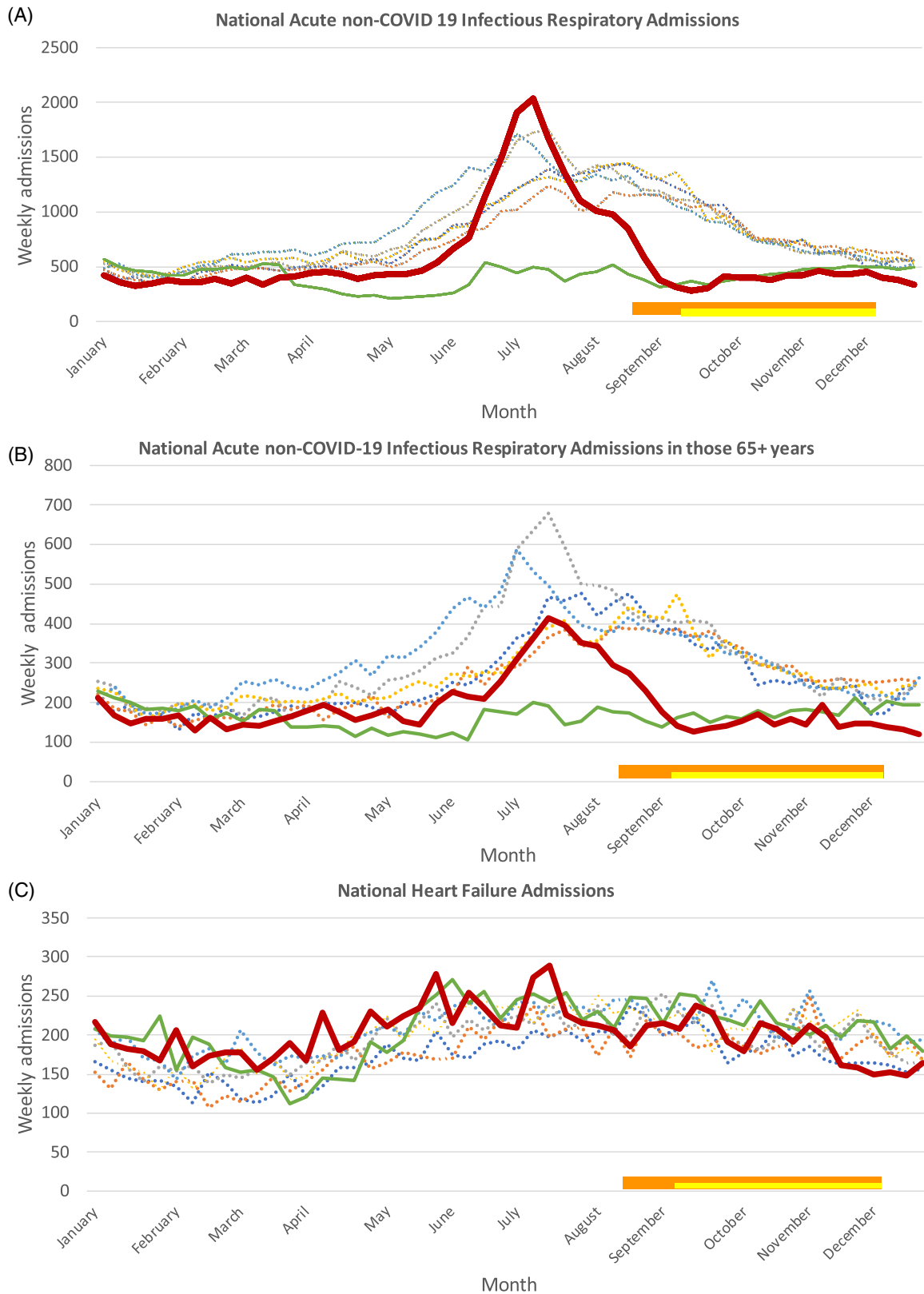




FIGURE 1 Weekly admissions in New Zealand in the years 2015–2021 for: (A) Respiratory infections including all pneumonias, all influenzas, acute bronchitis, acute bronchiolitis and acute upper respiratory infections of multiple and unspecified sites, and unspecified acute lower respiratory infection. (B) Respiratory infections in over 65 year-olds including pneumonia, influenza, acute bronchitis, acute bronchiolitis and acute upper respiratory infections of multiple and unspecified sites and unspecified acute lower respiratory infection. (C) Heart failure. Heart failure. Red solid line, 2021; green solid line, 2020; light blue dotted line, 2019; yellow dotted line, 2018; grey dotted line, 2017; orange dotted line, 2016; dark blue dotted line, 2015. Bars represents national lockdown measures: orange indicates national level 3 or 4; half yellow and orange section indicates Auckland and the rest of the country being at level 3 and level 2, respectively

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