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Title:

Respiratory syncytial virus epidemic during the COVID-19 pandemic

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- i. RSV epidemic during the COVID-19 pandemic.
- ii. Letter to the Editor
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- vi. Conflicts of interest:
Ingrid Scheffer has served on scientific advisory boards for UCB, Eisai, GlaxoSmithKline, BioMarin, Nutricia, Rogcon, Chiesi, Encoded Therapeutics, Xenon Pharmaceuticals, Zynerva, Knopp Biosciences and Takeda Pharmaceuticals, and is on the board of Bellberry Ltd; has received speaker honoraria from Liva Nova, GlaxoSmithKline, UCB, BioMarin, Biocodex, Chiesi and Eisai; has received funding for travel from UCB, Biocodex, GlaxoSmithKline, Biomarin and Eisai; has served as an investigator for Zogenix, Zynerva, Ultragenyx, GW Pharma, UCB, Eisai, Xenon Pharmaceuticals, Anavex Life Sciences, Ovid Therapeutics, Epygenyx, Encoded Therapeutics and Marinus; has consulted for Zynerva Pharmaceuticals, Atheneum Partners, Ovid Therapeutics, Care Beyond Diagnosis, Epilepsy Consortium, Eisai and UCB and is Director of the Australian Council of Learned Academies Ltd. She may accrue future revenue on pending patent WO2009/086591; has a patent for SCN1A testing held by Bionomics Inc and licensed to various diagnostic companies, and has a patent for a molecular diagnostic/therapeutic target for benign familial infantile epilepsy (BFIE) [PRRT2] WO/2013/059884. Catriona Fleming has no competing interests and no relevant disclosures. Hannah Cooney has no competing interests and no relevant disclosures.

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Keywords

COVID-19, Respiratory syncytial virus, epidemiology, paediatric

Ethical publication statement

The Austin Health Human Research Ethics Committee approved the study. We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

The COVID-19 pandemic has resulted in major shifts in the epidemiology of childhood infections. Respiratory syncytial virus (RSV) is a common cause of respiratory infections and bronchiolitis in children but its epidemiology has been transformed by pandemic-related lockdowns¹.

RSV typically causes seasonal epidemics during winter. During the 2020 Australian winter, RSV infections decreased considerably, however, unseasonal RSV outbreaks occurred in spring 2020 in New South Wales² and Western Australia³. Following a more protracted lockdown in Victoria, an unseasonal rise in RSV occurred in early 2021, coinciding with school return following summer holidays⁴. Several studies reviewed total numbers of positive RSV polymerase chain reactions (PCRs) in outpatients and inpatients, but did not analyse hospital admissions and clinical burden.

We examined the clinical burden of the unseasonal peak in RSV infection by comparing the cases requiring hospitalisation before and during the COVID-19 pandemic and the relationship with lockdown periods.

Positive RSV PCRs in children, aged 0-18 years, were identified between 1 January 2019 until 31 July 2021 at Austin Health, a large public hospital in Melbourne. Retrospective chart review for all children requiring admission was performed focusing on the need for respiratory or feeding support, or transfer to a tertiary centre.

Over the 2.5 year period, there was a striking difference in the number and pattern of RSV admissions each year (Figure 1). During 2019, the typical seasonal pattern, predominantly during winter, was seen with 58 children admitted. Summer 2020 reflected a similar pattern to early 2019 prior to the COVID-19 pandemic onset. The lockdown period in Melbourne was far more prolonged than other Australian states, from 25 March until December 2020, reflected in no RSV admissions.

In January-March 2021, 53 children were admitted with an average length of stay of 2.7 days; 34 required respiratory or feeding support. There was a high rate of co-infection with 25 patients having RSV and another virus (22 with entero/rhinovirus and three with adenovirus).

These unusual patterns of RSV infection mirror the impact of pandemic-related public health measures, highlighting the need for vigilance regarding post-lockdown surges in infectious diseases.

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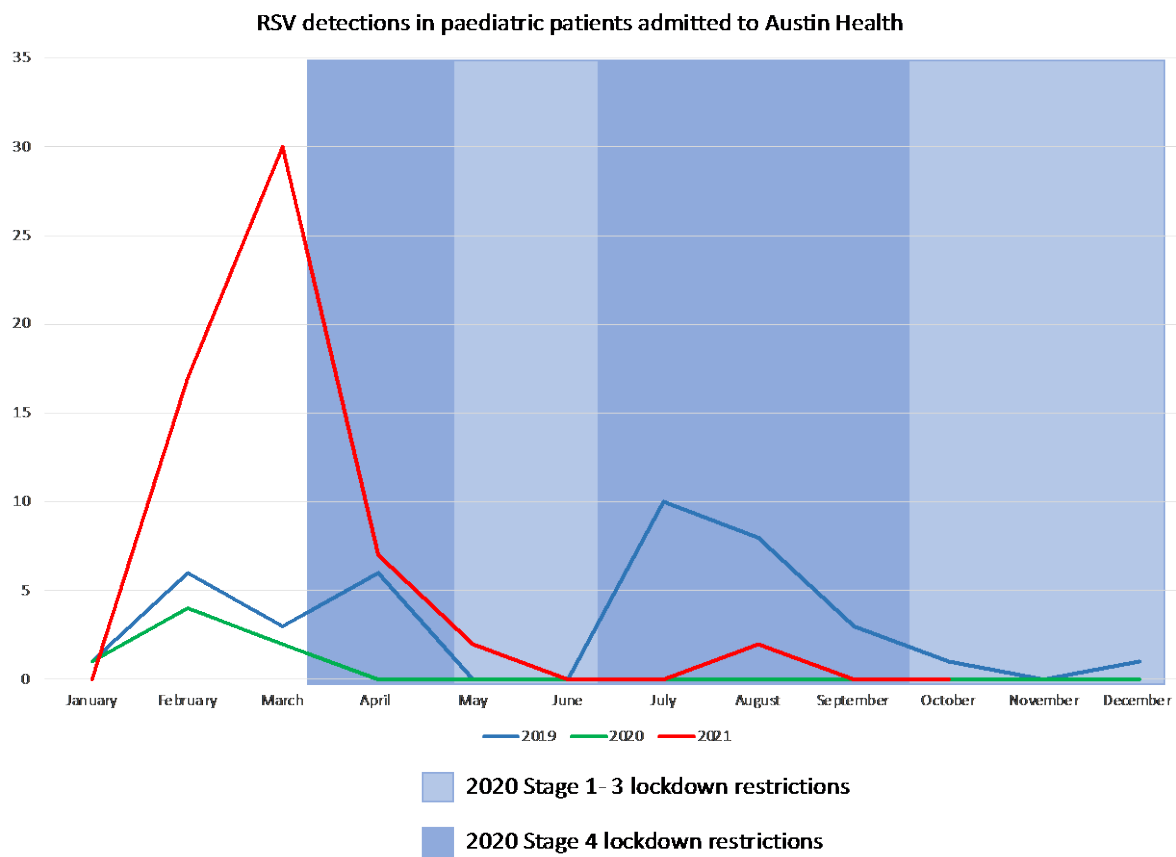


Figure 1: Number of patients admitted with positive RSV PCRs per month in 2019 (blue), 2020 (green) and 2021 (red). Data shows an unseasonal peak in February-March 2021 following the easing of COVID restrictions after lockdown.

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ii. Letter to the Editor

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