

BRIEF REPORT

The end of COVID-19 restrictions for children in autumn 2021 was followed by an unusually early, high-peak respiratory syncytial virus epidemic

Strict COVID-19 restrictions were established in Finland in March 2020. This reduced the circulation of respiratory viral pathogens among children,¹ except the rhinovirus, which showed little change.² During the 2020–2021 winter season, general and travel restrictions meant that there was no child respiratory syncytial virus (RSV) season.³ However, there were major concerns that this plateau would increase the number of children who were susceptible to typical respiratory pathogens and lead to an unusually severe RSV season, when restrictions were removed.⁴ We previously reported that the 2021 RSV season started earlier than in the previous years, already in November 2021, but our follow-up ended already in December 2021.² This study continued the follow-up and compared the epidemiology of RSV among Finnish children during the 2021–2022 season and pre-pandemic seasons.

The data for this retrospective surveillance study was from the open-access Finnish National Infectious Diseases Register (NIDR), and ethical approval was not required. It comprised all laboratory-confirmed RSV findings from July 2000 to April 2022 for children aged 0–4, 5–9 and 10–14 years. Finland's RSV season beginning and ending have not been defined precisely, so we started measuring when the monthly positive RSV findings exceeded 100 and stopped when they fell below 100. The season length and age profile were based on absolute numbers, as the population remained relatively stable during the study period. We compared the season length for the 20 RSV seasons up to 2019–2020. The age profile for the 2021–2022 season was compared graphically to the 5 seasons with the highest incidence.

We included 48,303 RSV cases from July 2000 to April 2022: 45,799 aged 0–4 years, 1876 aged 5–9 years, and 628 aged 10–14 years. The RSV seasons ranged from 2–6 months. The mean duration of the 10 previous high-epidemic years was 5 (range 4–6) months, and the 10 low-epidemic years was 4 (2–5) months. COVID-19 restrictions for children ended in September 2021. The

2021–2022 RSV season was 5 months, and it peaked in December, rather than January and February for the previous epidemic peaks. The 2021–2022 peak was higher for all age groups than the previous 5 high-epidemic seasons (Figure 1). The highest peak in December 2021 was 2043 in children aged 0–4 years, compared to the previous record peak of 1377 in February 2020. Older age groups also peaked in December 2021, with 284 aged 5–9 years and 89 aged 10–14 years, 3 times higher than the previous record peaks of 89 and 28, respectively, in January 2018.

A strong RSV epidemic peak occurred soon after the child restrictions ended in September 2021. Children had faced minimal restrictions since August 2020, as schools and day-care centres remained open, and they did not have to wear masks. Adults were required to wear them from September 2020 to March 2022. From August 2020 to September 2021, children were tested for the virus if they had respiratory issues and those with negative results could return after their symptoms began to subside. In September 2021, most regions stopped testing children under 12 years of age, and even children with mild symptoms were allowed to attend schools and day-care centres. This may have enabled the transmission of RSV, as it also led to clear increases in COVID-19 in autumn 2021.²

Travelling may have contributed to the RSV epidemic.⁵ Travelling was not recommended during the 2020–2021 season. Restrictions were relaxed in June 2021 and travel increased. RSV has a typical global epidemic circulation, and travel restrictions affected this pattern, as Australia, the United States and many European countries had an RSV epidemic in summer of 2021. Increased travel during the summer and early autumn of 2021 enabled RSV to circulate to Finland, but the peak was later than some other countries.

The main strength of our study was the national data source that covered all Finnish children. The main limitations were the lack of

Abbreviations: RSV, respiratory syncytial virus; NIDR, Finnish National Infectious Diseases Register.

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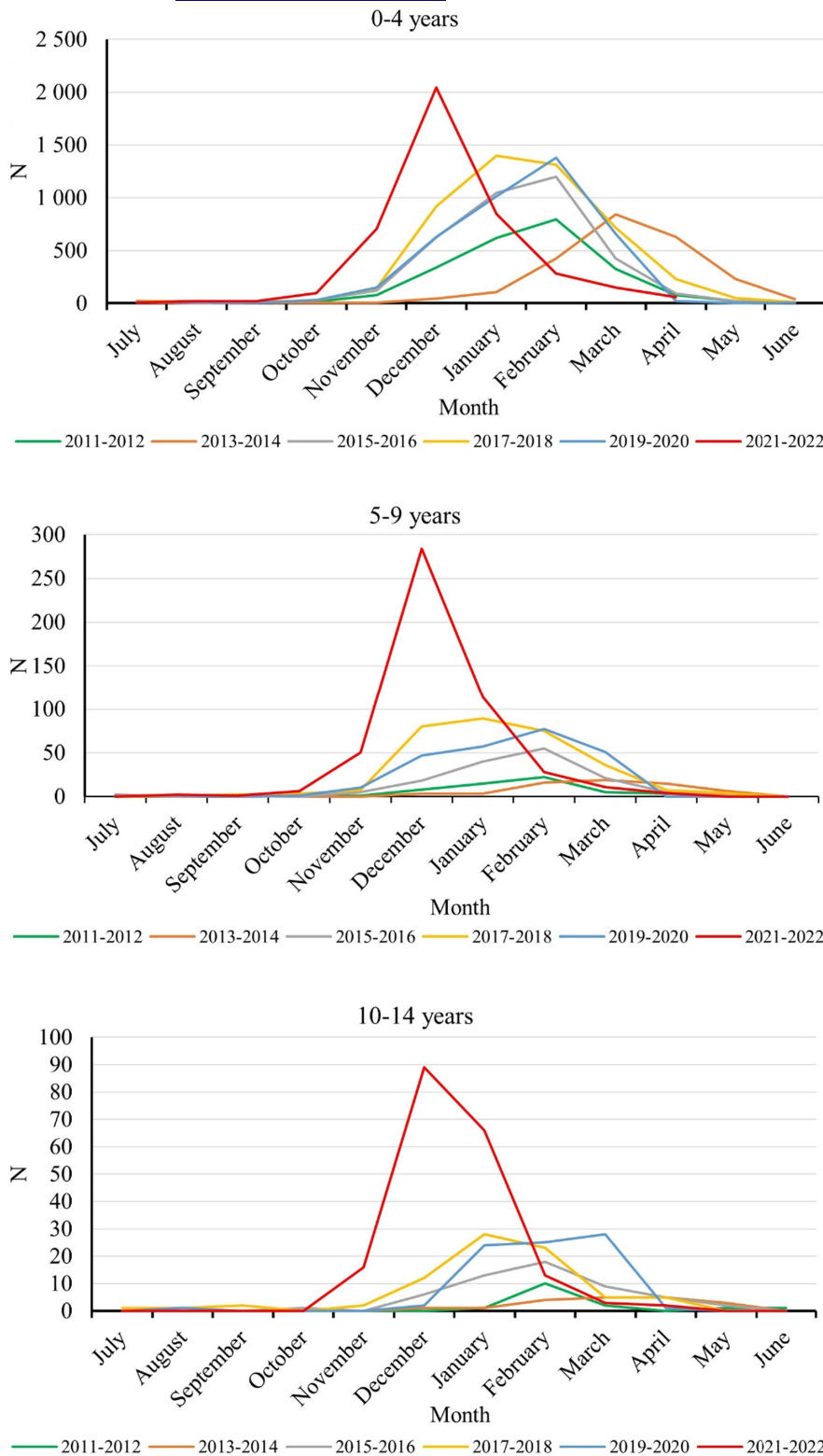


FIGURE 1 Monthly RSV detections by age in Finland for the 2021–2022 RSV season and the five previous high-incidence seasons

clinical data and having to use the same broad age classifications as the Register. In addition, the Register did not record the numbers who were tested, and there may be more active testing in 2021–2022. We also had to base the seasons on positive findings, instead of the test-positivity percentage.

In conclusion, ending social restrictions in September 2021 led to an early record epidemic peak of RSV in children of all ages, even though the RSV season was shorter than previous high-incidence seasons. This highlights the importance of continued active surveillance of respiratory pathogens. Our results increase the



understanding of the relationship between RSV epidemics and social restrictions, and how they can be used to reduce transmission.

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CONFLICT OF INTEREST

None declared.

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