In brief

Paediatric respiratory infections after lockdown & school reopening 3 December 2021

Background

- Non-pharmaceutical interventions that have been adopted in order to slow the spread of SARS-CoV-2, such as wearing face masks, limiting travel, social distancing and school closures, have interrupted the transmission of other respiratory viruses, most notably paediatric respiratory syncytial virus (RSV) and influenza.[1-5]
- Recently, with the increased rates of vaccination and countries emerging from lockdowns, schools have reopened with a return to face-to-face education.
- This brief scopes existing evidence on the trends of paediatric respiratory infections following lockdowns and school reopening, noting the impact of seasonality.

Summary

- Countries in both southern and northern hemispheres reported no immediate impact on the incidence of respiratory pathogens following reopening of schools and day care centres.[6-9] However, some countries such as the US[10] and China[11] reported an increase in interseasonal RSV activity.
- There is a concern that due to the reduced circulation of RSV during the winter months of 2020/21, older infants and toddlers might now be at increased risk of severe RSV-associated illness since they may not have had typical levels of exposure to RSV during the past 15 months.[10]
- In several jurisdictions, the routine use of influenza vaccines and antiviral medications in the prevention and treatment of respiratory infections in children are recommended.[12]

Evidence – paediatric respiratory infections

In 2020, lockdown measures in the southern hemisphere led to a winter season with a marked reduction in both RSV and influenza infections. Intermittent lockdowns in the northern hemisphere also appeared to interrupt transmission during winter 2020/21. However, several countries including China[11], South Africa[3] and US[10] have now seen delayed RSV peaks.

In paediatrics:

- A study investigating the transmission of paediatric RSV and influenza in the wake of the COVID-19 pandemic[13] found that countries in both hemispheres have experienced different disease patterns:

Country	Hemisphere	Delayed peak? (by June 2021)	Delay in peak (months)	Hospital admission rates compared with previous seasons
Australia	Southern	Yes	6	Higher
South Africa	Southern	Yes	5	Unknown
New Zealand	Southern	Yes	12	Higher
France	Northern	Yes	4	Lower
United States	Northern	Yes	6	Lower
England	Northern	No	NA	NA
Japan	Northern	Yes	7	Unknown

- Although RSV activity remained relatively low in the US from May 2020 to March 2021, Centers for Disease Control and Infections (CDC) has observed an increase in interseasonal RSV activity in March 2021 in parts of the Southern United States.[10]
- The CDC noted that due to reduced circulation of RSV during the winter months of 2020/21, older infants and toddlers may be at increased risk of severe RSV-associated illness. This is because they may not have had typical levels of exposure to RSV during the past 15 months. In infants younger than six months, RSV infection may result in symptoms of irritability, poor feeding, lethargy, and/or apnoea with or without fever.[10]
- A large number of upper respiratory tract infection outbreaks in Hong Kong schools and childcare centres during October–November 2020 led to territory-wide school closures despite a wide range of infection control measures being in place, including face masks, cancellation of lunch hours and physical distancing.[11]
- The WHO and European Centre for Disease Prevention and Control (ECDC) have reported that influenza activity during the 2020/21 influenza season did not increase above baseline, with no indication of an autumn/winter spike.[6]
- A nationwide register study in Finland[8] found that reopening of schools and day care centres after lock down seemed to have no immediate impact on the incidence of any respiratory disease. Influenza season 2020/21 did not begin in Finland despite looser social restrictions during the second wave of COVID-19.[9]
- A study which investigated RSV activity in Europe during the 2020/21 season hypothesised that due to delayed peaks of RSV transmission, future RSV epidemic(s) could start outside the usual autumn/winter season and could be larger than expected.[14]

To inform this brief, PubMed, Google Scholar, Twitter, and Podcast searches were conducted using a combination of terms related to “respiratory infection”, “paediatrics”, “northern hemisphere”, “COVID-19” on 26 October 2021.

References

1. Britton PN, Hu N, Saravanos G, et al. COVID-19 public health measures and respiratory syncytial virus. Lancet Child Adolesc Health. 2020 Nov;4(11):e42-e3. DOI: 10.1016/s2352-4642(20)30307-2
2. Haddadin Z, Schuster JE, Spieker AJ, et al. Acute Respiratory Illnesses in Children in the SARS-CoV-2 Pandemic: Prospective Multicenter Study. Pediatrics. 2021 Aug;148(2). DOI: 10.1542/peds.2021-051462
3. Tempia S, Walaza S, Bhiman JN, et al. Decline of influenza and respiratory syncytial virus detection in facility-based surveillance during the COVID-19 pandemic, South Africa, January to October 2020. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2021 Jul;26(29). DOI: 10.2807/1560-7917.Es.2021.26.29.2001600
4. Williams TC, Sinha I, Barr IG, et al. Transmission of paediatric respiratory syncytial virus and influenza in the wake of the COVID-19 pandemic. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2021 Jul;26(29). DOI: 10.2807/1560-7917.Es.2021.26.29.2100186
5. Pierce A, Haworth-Brockman M, Marin D, et al. Changes in the incidence of seasonal influenza in response to COVID-19 social distancing measures: an observational study based on Canada's national influenza surveillance system. Can J Public Health. 2021 Aug;112(4):620-8. DOI: 10.17269/s41997-021-00509-4
6. European Centre for Disease Prevention and Control-World Health Organization Regional Office for Europe. Flu News Europe - Joint ECDC-WHO/Europe weekly influenza update. Weekly influenza overview Weeks 21-24/2021 (24 May-20 June 2021). Stockholm-Copenhagen: ECDC–WHO/Europe. [Accessed: 1 Nov 2021]. Available from: ttps://flunewseurope.org/SeasonOverview
7. Public Health England (PHS). National flu and COVID-19 surveillance reports: National influenza and COVID-19 report, monitoring COVID-19 activity, seasonal flu and other seasonal respiratory illnesses. London: PHS. [Accessed: 29 Jun 2021]. Available from: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports.
8. Haapanen M, Renko M, Artama M, et al. The impact of the lockdown and the re-opening of schools and day cares on the epidemiology of SARS-CoV-2 and other respiratory infections in children - A nationwide register study in Finland. EClinicalMedicine. 2021 Apr;34:100807. DOI: 10.1016/j.eclinm.2021.100807
9. Kuitunen I. Influenza season 2020-2021 did not begin in Finland despite the looser social restrictions during the second wave of COVID-19: A nationwide register study. J Med Virol. 2021 Sep;93(9):5626-9. DOI: 10.1002/jmv.27048
10. Centre of Disease Control. Increased Interseasonal Respiratory Syncytial Virus (RSV) Activity in Parts of the Southern United States [Internet]. CDC, USA; June 2021. {cited on 1 Nov 2021]. Available from: https://emergency.cdc.gov/han/2021/han00443.asp.
11. Fong MW, Leung NHL, Cowling BJ, et al. Upper Respiratory Infections in Schools and Childcare Centers Reopening after COVID-19 Dismissals, Hong Kong. Emerging infectious diseases. 2021;27(5):1525-7. DOI: 10.3201/eid2705.210277
12. Recommendations for Prevention and Control of Influenza in Children, 2021-2022. Pediatrics. 2021 Oct;148(4). DOI: 10.1542/peds.2021-053745
13. Williams TC, Sinha I, Barr IG, et al. Transmission of paediatric respiratory syncytial virus and influenza in the wake of the COVID-19 pandemic. Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin. 2021;26(29):2100186. DOI: 10.2807/1560-7917.ES.2021.26.29.2100186
14. van Summeren J, Meijer A, Aspelund G, et al. Low levels of respiratory syncytial virus activity in Europe during the 2020/21 season: what can we expect in the coming summer and autumn/winter? Euro surveillance : bulletin Europeen sur les maladies transmissibles =

European communicable disease bulletin. 2021 Jul;26(29). DOI: 10.2807/1560-7917.Es.2021.26.29.2100639

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