


Research Brief

Striking absence of “usual suspects” during the winter of the coronavirus disease 2019 (COVID-19) pandemic 2020–2021

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Each year in October, the United States enters the “flu season.” During this time, influenza virus infections occur in all age groups, with 9–45 million cases each year. In addition, other respiratory infections due to pathogens such as respiratory syncytial (RSV) and rhinovirus are very common during flu season.^{1,2} Respiratory viral activity typically peaks in December and January, but the flu season can last until May.¹ Many individuals receive the influenza vaccine from their primary care provider in the beginning of the fall season, and this is particularly effective in reducing the number of influenza infections.³ In 2020, however, the severe acute respiratory coronavirus virus 2 (SARS-CoV-2) virus emerged and dramatically changed the landscape of medicine. To stop the spread of SARS-CoV-2, community mitigating factors, such as social distancing, frequent hand washing, mask mandates, and school closures, were implemented widely.⁴

When the COVID-19 pandemic started in March 2020, many reported that seasonal flu cases disappeared earlier than expected.⁵ Additionally, an overall reduction in the incidence of respiratory viral infections during the flu season was noted on both national and international levels. Notably, in the Southern Hemisphere, the flu season falls in the summer season (earlier in the year than the Northern Hemisphere), and in the summer of 2020, Australia, Chile, and South Africa reported only 51 cases of the flu.⁶ In the 2020–2021 winter season, like others, we also noted a significant reduction in respiratory infections compared to prior years. The purpose of this study was to evaluate the incidence of all other non-SARS-CoV-2 viral infections typically seen during the flu season. Additionally, we evaluated the incidence of group A *Streptococcus* culture positivity of throat specimens in children and adults during the same period.

We conducted a retrospective study that included polymerase chain reaction (PCR) test results of nasopharyngeal swabs for influenza A and B, respiratory syncytial virus (RSV), and SARS-CoV-2 as well as throat swab results for group A *Streptococcus* at the Detroit Medical Center (DMC) and Children’s Hospital of Michigan (CHM) from September 2019–February 2020 and September 2020–February 2021. Incidences of infections were calculated for each period and compared. Available data on other respiratory viruses

including parainfluenza virus 1 and 2, other coronaviruses, and human metapneumovirus during the 2020–2021 season were also reviewed.

During the study period in 2020–2021, no adult cases of influenza A, B, and RSV were documented, but these viruses comprised 12%, 13%, and 9% of all cases in the 2019–2020 season, respectively. Similarly, in children in 2020–2021, no influenza A or B infections and 1 RSV infection were documented, compared to 12%, 20%, and 24% of all cases, respectively, in 2019–2020 (Table 1). Remarkably, there were also no positive tests due to parainfluenza (1 and 2), coronaviruses, and human metapneumovirus in the 2020–2021 season, a significant decline compared to the 2019–2020 season. Additionally, the number of throat swabs submitted for group A *Streptococcus* in both adults and children decreased considerably between the 2 periods.

Overall, the incidence of influenza A and B and RSV in the 2020–2021 season affected by the COVID-19 pandemic decreased significantly compared to the 2019–2020 season in both the pediatric and adult populations. Additionally, the incidences of other respiratory viral infections (eg, parainfluenza 1 and 2), other coronaviruses, and human metapneumovirus were drastically lower.

Additionally, data from 42 medical centers in the Midwest region of the United States that utilize the Biofire system respiratory viral panel were obtained and analyzed.^{7,8} In the same study period of September 2020–February 2021, there were far fewer positive tests of influenza A and B, RSV, parainfluenza, coronaviruses, and human metapneumovirus compared to the prior flu season. Among all flu tests in the 2020–2021 season, 0% of influenza A tests, 0.13% of influenza B tests, and 0.05% of RSV tests returned positive compared to 0.09%, 2.98%, and 9.38%, respectively, in the prior season. Human metapneumovirus had decreased to 0.05% positivity compared to 3.41% of all positive tests in the prior season. These data reflect a dramatic decrease in non-SARS-CoV-2 respiratory infections in the entire region.

Speculating as to why the decrease in incidence of respiratory viral infections occurred, it is likely that community mitigating measures implemented at the beginning of the pandemic contributed to the decrease in the spread of viral pathogens in the general population. The reduction in group A *Streptococcus* tests ordered (and overall reduction in secondary group A *Streptococcus* infections) may have been a result of the decrease in the number of respiratory viral infections because clinical suspicion for secondary infections

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Table 1. Proportion of Positive PCR Tests for SARS-CoV 2, Influenza A, Influenza B, RSV, and Group A *Streptococcus* Detroit Medical Center, September–February

Pathogen	Adults, No. of Positives/No. Total Tests (% Positivity)		Children, No. of Positives/No. Total Tests (% Positivity)	
	2019–2020	2020–2021	2019–2020	2020–2021
	SARS-CoV-2	0/0 (0)	1,198/18,708 (6)	0/0 (0)
Influenza A	780/6,795 (12)	0/6,830 (0)	1300/10,475 (12)	0/1441 (0)
Influenza B	892/6,795 (13)	0/6,830 (0)	2117/10,475 (20)	0/1441 (0)
RSV	240/2,673 (9)	0/6,822 (0)	1,653/6,985 (24)	1/1404
Group A <i>Streptococcus</i>	212/933 (23)	49/212 (23)	1,050/3,894 (27)	163/777 (21)

Note. PCR, polymerase chain reaction; RSV, respiratory syncytial virus.

would have been low. Additionally, viral interference, with SARS-CoV-2 being the dominant respiratory pathogen, might have contributed to the decrease in rates of other respiratory viral illnesses. This idea is not unfounded. During the H1N1 pandemic in 2009, while the number of H1N1 influenza cases increased, the incidence of seasonal influenza and RSV decreased significantly compared to prior years. This trend lasted until the H1N1 strain transitioned from a pandemic to a seasonal virus the following year.⁹

In conclusion, SARS-CoV-2 was the dominant pathogen, while other community respiratory viral and group A *Streptococcus* throat infections markedly declined in frequency in both adults and children during the 2020–2021 season compared to 2019–2020. The reason for the decline may be attributed to the mitigating measures widely employed in the community. Although it is difficult to predict the incidence of respiratory viral infections after the resolution of the COVID-19 pandemic, it is likely that the number of non-SARS-CoV-2 respiratory infections will rise back to normal in the coming years as SARS-CoV-2 becomes a seasonal virus.

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