



Epidemiology dynamic of the common respiratory virus in winter-spring, 2018–2023 in Guangdong province, China

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Respiratory pathogens are a significant public health issue that can cause severe illnesses and fatalities (1). In recent years, novel respiratory tract infectious pathogens have emerged, with the global pandemic caused by coronavirus disease 2019 (COVID-19) having a tremendous economic and societal impact (2). Therefore, monitoring and analyzing the prevalence of typical respiratory pathogens is crucial for formulating appropriate prevention and treatment strategies. This study focuses on the respiratory pathogen detection data from the winter-spring seasons (high-occurrence season) of 2018 to 2023 in Guangdong province, China. We analyzed the changes in the positive detection rates of respiratory pathogens from January to March over the years, aiming to provide a reference for public health decision-making.

From 2018 to 2023, KingMed Diagnostics collected

a total of 37,933 respiratory samples from 331 hospitals, maternal and child health care centers, and community health service centers in Guangdong province, China. The sample types included nasal and pharyngeal swabs, bronchoalveolar lavage fluid, oral secretions, sputum, and pleural or peritoneal fluid. These samples were tested for various respiratory pathogens, including adenovirus (ADV), influenza A virus (IFA), influenza B virus (IFB), human metapneumovirus (HMPV), parainfluenza virus 1/2/3 (PIV1/2/3), rhinovirus (RHV), respiratory syncytial virus (RSV). Participants include newborns, infants, children, youth, adults, and the elderly. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). This study was approved by the Ethics Committee of KingMed Diagnostics (No: GZKM-2019-24) and individual consent for this retrospective analysis was waived.

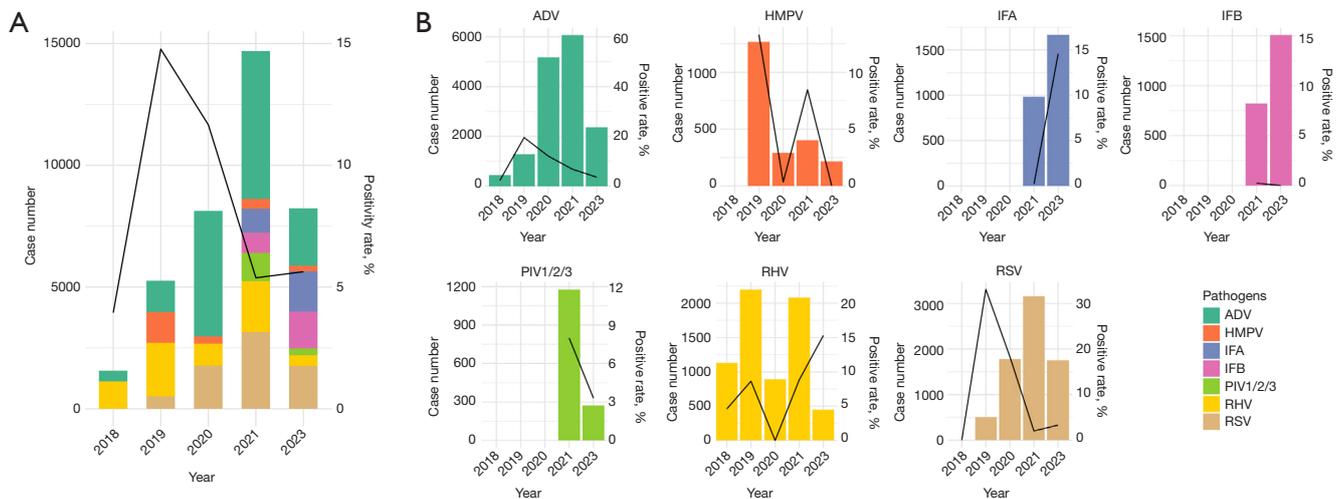


Figure 1 Detection rate of multiple respiratory pathogens (ADV, IFA, IFB, HMPV, PIV1/2/3, RHV, RSV) in winter-spring seasons (January–March) from 2018 to 2023. (A) The overall detection of respiratory pathogens. (B) The detection of a single viral respiratory pathogen. The height of the bar represents the number of respiratory samples, and the dark line represents the positive rate. ADV, adenovirus; IFA, influenza A virus; IFB, influenza B virus; HMPV, human metapneumovirus; PIV1/2/3, parainfluenza virus 1/2/3; RHV, rhinovirus; RSV, respiratory syncytial virus.

During the study period, the detection rate of respiratory pathogens under surveillance in 2018–2019 was relatively high and showed a downward trend (*Figure 1A*). However, following the outbreak of COVID-19, the positive detection rate of most respiratory pathogens notably declined. This could be attributed to the strict public health and social measures (PHSM) (3) implemented, including social distancing, mask-wearing, and personal hygiene practices. Additionally, this may be due to the medical resources heavily allocated to diagnosing and treating COVID-19 cases. As a result, the testing for other respiratory pathogens may have been limited, leading to a decrease in their positive detection rates.

In the winter-spring of 2020, the positive detection rates of IFA, IFB, HMPV, and RHV were close to zero. Compared to the positive detection rates of the respiratory pathogens mentioned above, although the detection rates of ADV and RSV decreased, they remained at relatively low levels of prevalence. After 2021, with adjustments in COVID-19 policies and the immune gap caused by long-term control measures, there were varying degrees of increase in positive detection rates for all pathogens except IFB. Among them, IFA, HMPV, PIV1/2/3, and RHV showed notable peaks in positive detection rates and require particular attention. Notably, towards the end of 2022, the majority of COVID-19 control policies were

relaxed in China. *Figure 1B* shows a significant surge in the positive detection rate of IFA in the spring of 2023, which is consistent with reports of an outbreak of IFA earlier this year in China (4). Additionally, there is a noticeable increase in RSV and RHV, and it is necessary to monitor the trend of their positive detection rates after March to catch the high epidemic risk.

Our research illustrates the detection frequencies of common respiratory viruses in Guangdong province, revealing the epidemic risk of them in the post-COVID-19 era. We also emphasize the importance of ongoing monitoring of respiratory pathogens and highlight the significance of implementing necessary preventive and control measures.

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Footnote

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