Respiratory syncytial virus seasonality in China: implications for intervention

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Respiratory syncytial virus (RSV) is the leading cause of hospitalisation for acute lower respiratory infections in children younger than 5 years worldwide.[1] Infants in their first 6 months of life and children in low-income and middle-income countries are disproportionately affected.[1] The approval of two RSV vaccines (the Arexvy vaccine in older individuals, and the Abrysvo vaccine in older individuals and pregnant women) and one long-acting monoclonal antibody (nirsevimab) by the US Food and Drug Administration and the European Medicines Agency has provided valuable tools for averting RSV-associated disease burden.[2] In December, 2023, the National Medical Products Administration of China also approved its first RSV preventive product (nirsevimab), marking this event a key milestone in the prevention of RSV infections in China. Passive immunoprophylaxis, including maternal vaccination and monoclonal antibody injections, is fast and direct in effect, but it only lasts for a limited period of 5–6 months.[3,4] The efficiency of RSV vaccination and passive immunoprophylaxis on disease control therefore largely depends on strategies for implementation, with regard to how and when they are used.

In addressing the prevention and control of RSV in China and globally, it is crucial to elucidate the regional seasonality of RSV and to develop specific regional vaccination strategies within countries. Globally, the epidemic profile of RSV shows distinct seasonal patterns, with the majority of RSV illness typically occurring in winter and early spring in temperate regions, in the rainy season in some tropical regions, and year-round in other tropical regions.[6] China currently does not have nationwide data on RSV epidemiological features, with most of the available information stemming from studies within specific regions over brief periods or from ongoing research in some areas over a sustained duration.

In *The Lancet Global Health*, Ling Guo and colleagues have reported a systematic analysis that describes the seasonal epidemic patterns of RSV in China.[5] The authors also provide an in-depth assessment of the potential applicability of seasonal RSV immunisation programmes for different regions in China. They identified specific patterns of RSV seasonality in a refined way, defining two distinct patterns of seasonality (clear and stable; or unclear and unstable) among 21 provinces. The authors also delineated four RSV transmission zones, defined as groups of provinces with similar RSV seasonality. Such findings provide the fundamental data for the development of refined immunisation strategies. This proposed concept of seasonal transmission zones of infectious diseases will have an important impact on the prevention and control of RSV.

There are several barriers to effective implementation of RSV prevention strategies in China. Firstly, Guo and colleagues found that 11 of 34 provincial administrative regions have no RSV epidemic data, emphasising the importance of establishing RSV surveillance at both the national and subnational levels in China. A dedicated RSV surveillance system would help to fill the data gaps in these regions, evaluate the effectiveness of interventions, and monitor the evolution of the virus in the future. WHO has been developing a global RSV monitoring system, to be used as a tool to lessen the disease burden attributed to RSV.[7] Therefore, it is essential for China to establish a national RSV monitoring system and to conduct continuous research, which will contribute to tracing the dynamics of RSV, either in clear and stable or unclear and unstable patterns, and potentially identify the influencing factors that lead to unstable epidemics. Secondly, current research on the epidemiological characteristics of RSV in China primarily relies on hospital cases, and the recording of RSV cases in hospital surveillance systems is mainly based on influenza-like illness characteristics. This discrepancy in the studied population might affect the identification of RSV epidemic features, thus necessitating the establishment of a comprehensive case definition for RSV surveillance or research on disease burden. Thirdly, previous studies have indicated that the transmission of RSV antigenic subgroups is associated with RSV epidemics.[8] Expansion of virological monitoring to differentiate virus types and identify genetic groups has been recommended by WHO,[9] which could facilitate optimisation of the timing of seasonal immunisation against RSV in accordance with the fluctuating patterns of RSV epidemics, by intensifying

research on RSV genotypes during surveillance. Lastly, it is imperative to consider the state of health-care infrastructure in different regions of China when developing RSV preventive delivery strategies. Policies should be assessed and improved on in view of local socioeconomic considerations and the population-level benefit of reducing RSV-associated disease burden.

We declare no competing interests.

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