Non-pharmaceutical interventions used for COVID-19 had a major impact on reducing influenza in China in 2020

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Highlight

Stringent non-pharmaceutical measures to contain the COVID-19 outbreak in China also significantly reduced the spread of influenza in the winter season 2020

Keywords: SARS-CoV-2; Wuhan; public health emergency; pandemic; novel coronavirus ; hand washing; isolation and quarantine

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread rapidly in China after its emergence in Wuhan in December 2019. In the absence of effective drugs and vaccines, the Chinese government implemented stringent non-pharmaceutical interventions (NPIs)[1], which included active case detection and isolation of infected persons, maintaining social distance, closure of schools and universities and most businesses, working from home where possible, quarantining and monitoring close contacts, and releasing multi-media epidemic and protection information. These measures effectively contained China's COVID-19 epidemic by March 2020.[2]

Will such NPIs also reduce the incidence of influenza in winter and spring? We obtained data from the CDC Weekly China Influenza Surveillance Report and found that in the first 6 weeks of 2020, the incidence of laboratory-confirmed influenza cases at sentinel hospitals nationwide dropped from the highest (47.7%) to the lowest (1.2%) level in recent years (Figure 1A). Figure 1B shows laboratory-confirmed cases of influenza in sentinel hospitals nationwide and new laboratory-confirmed cases of COVID-19 in China from 6 October 2019 to 13 March 2020. Beginning in mid-January 2020, influenza activity in China declined significantly, earlier than that

of COVID-19. We speculate that China's strict epidemic-prevention measures against COVID-19 resulted in a significant decline in laboratory-confirmed influenza cases.

Seasonal influenza is an annual threat, and the cost of a major outbreak far exceeds that of prevention.[3] Experience with global pandemics such as the 1918 influenza and 2009 H1N1 pandemics has shown that NPIs are effective in preventing respiratory infectious diseases.[4] The mode of transmission d of SARS-CoV-2 is similar to that of influenza. Stringent NPI measures not only prevented huaman to human transmission of COVID-19 but also played a positive role in preventing influenza.

According to the World Health Organization, the basic measures for protecting against COVID-19 are similar to those for influenza: frequent hand-washing; social distancing; avoid touching the eyes, nose, and mouth; and wearing a face mask when appropriate.[5] China's multi-media prevention and control programme and the widespread public panic in response to the COVID-19 epidemic resulted in very high compliance. In conclusion, the government's prevention and control measures in January to March 2020 not only contained the COVID-19 outbreak but also reduced the spread of influenza.

Declarations

The manuscript has been seen and approved by all authors.

The authors declare no competing interests.

Authors' Contributions

SJ conceived the study, carried out the analysis, and drafted the first manuscript. All authors discussed the results, critically read and revised the manuscript, and gave final approval for publication.

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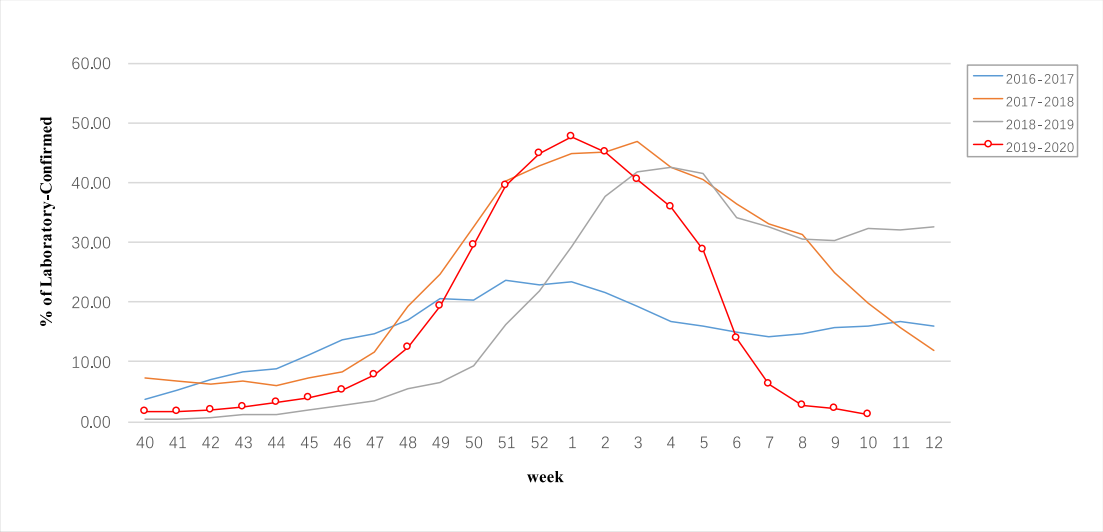

Figure 1A. Incidence of laboratory-confirmed cases of influenza at sentinel hospitals nationwide in China from 2016 to 2020.

The peak influenza period in China was from the 50th week of 2019. In the first week of 2020, the level was the highest (47.7%) in that period in recent years. At 4 weeks, influenza activity showed a significant decline inflection point. By 6 weeks, influenza activity had dropped to its lowest level (14%) for this period in recent years. Influenza activity continued to be extremely low; at 10 weeks, the percentage of laboratory-confirmed cases of influenza was 1.2%, compared with 32.2% for the same period in 2018–2019.

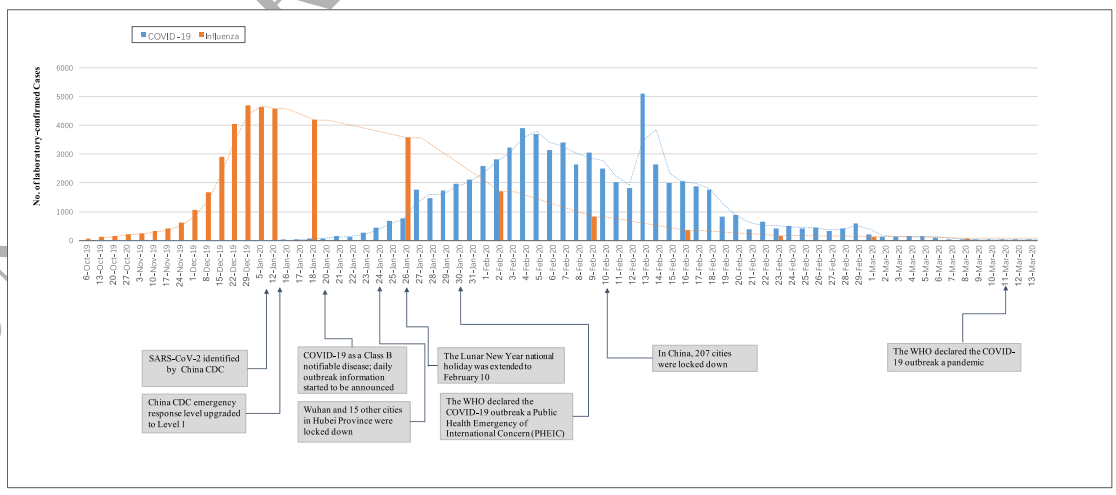

Figure 1B. Laboratory-confirmed cases of influenza in sentinel hospitals weekly and new laboratory-confirmed cases of COVID-19 daily in China.