

Understanding China's Surge in Respiratory Illnesses: Should Concerns Arise?

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China is currently grappling with a notable increase in respiratory illnesses, particularly pneumonia, among children. The World Health Organization (WHO) recently reported that the surge in hospitalizations is primarily attributed to common winter infections, rather than the emergence of new pathogens. This surge was anticipated as China enters its first winter without COVID-19 restrictions since the onset of the pandemic in 2020. Unlike other countries, where influenza and respiratory syncytial virus (RSV) drove post-COVID-19 winter surges, increase is linked to the lifting of COVID-19 restrictions along with the circulation of mycoplasma pneumoniae, a prevalent bacterial infection commonly impacting younger children^{1,2} which has been circulating since May. Influenza, respiratory syncytial virus (RSV), and adenovirus have also been in circulation since October 2023.

Concerns were raised after reports from the media and the Program for Monitoring Emerging Diseases highlighted clusters of "undiagnosed pneumonia." The WHO has requested information from China's health authorities, including laboratory results and data on recent trends in respiratory illness spread.

In a statement on November 23, the WHO indicated that the rise in hospitalizations since October is attributed to known pathogens like adenoviruses, influenza virus, and RSV. However, a distinctive increase in hospitalizations of children, particularly in northern cities such as Beijing, is primarily linked to Mycoplasma pneumoniae, a bacterium causing lung infections. Mycoplasma pneumoniae typically leads to 'walking pneumonia,' a milder form of the disease not requiring hospitalization.³ However, this year, children are being significantly affected.

Epidemiologist Benjamin Cowling from the University of Hong Kong attributes this wave of illness to a typical winter surge in acute respiratory infections. He suggests that the earlier occurrence this year may be linked to increased population susceptibility resulting from three years of COVID-19 measures.

The rebound in common respiratory diseases during the first winter post-loosening of pandemic measures, known as 'immunity debt,' has been observed in other countries as well. In China, the prolonged and stringent lockdown contributed to a substantial winter surge as the 'lockdown exit' waves were anticipated to be significant.

Notably, China's situation differs from other countries experiencing post-COVID-19 surges. While other nations dealt with flu and RSV infections, China is facing a prevalence of Mycoplasma pneumoniae infections. Mycoplasma pneumoniae pneumonia, commonly known

as "walking pneumonia," is a respiratory infection caused by the bacterium *Mycoplasma pneumoniae*.³ While it can affect individuals of all ages, there has been a recent surge in cases among children in China. This increase in incidence has raised concerns about the impact on public health and necessitates a closer examination of the epidemiology, aetiology, clinical manifestations, and available treatment modalities. Understanding the factors contributing to the rise in cases is crucial for effective management and prevention strategies.^{4,5}

Epidemiology:

Mycoplasma pneumoniae infections are widespread globally, with periodic outbreaks occurring in different regions.⁶ In recent years, China has witnessed a notable increase in cases among children.⁷ The epidemiological patterns of *Mycoplasma pneumoniae* pneumonia often exhibit cyclic trends, with peaks occurring every few years. Crowded living conditions, close contact in schools, and environmental factors may contribute to the increased transmission among children.⁸ Surveillance and analysis of these epidemiological trends are essential for developing targeted intervention strategies.⁹ The concept of "immunity debt" plays a crucial role in understanding China's current surge. This phenomenon, characterized by weakened population resistance to other pathogens due to measures like social distancing, masks, and lockdowns, is believed to contribute to the susceptibility to viruses not encountered for a few years.¹⁰ Dr. Monica Gandhi, a professor and director at the University of California San Francisco's Bay Area Centre for AIDS Research, explains that this susceptibility led to severe influenza seasons in both Australia and the Northern Hemisphere.

While concerns about the pneumonia outbreak spreading persist, experts believe that, in the short term, the likelihood of these respiratory illnesses developing into a novel virus causing a global pandemic is low. Factors such as China's extended lockdown, the resulting immunity debt, and the country's size contribute to the current outbreak. The reported cases have primarily been in northern China, and experts anticipate similar surges in different parts of the country as people travel.

Dr. Gandhi emphasizes the importance of considering the context, noting that the almost three years of lockdown and avoidance of other pathogens in China contribute to the severity of the immunity debt and the subsequent wave of pneumonias.

Regarding the potential spread of respiratory illnesses through air travel, Schaffner acknowledges the possibility of exchanging infections between populations but stresses that there is no indication of accelerated risk at the moment. While respiratory infections can be carried by travellers, the ongoing increase in influenza cases in various regions suggests that external importations may not be a significant factor.

Aetiology:

Mycoplasma pneumoniae is a unique bacterium lacking a cell wall, making it resistant to many antibiotics targeting cell wall synthesis.¹¹ This characteristic, along with its ability to adhere to respiratory epithelium, facilitates prolonged colonization and persistent infections.¹² Transmission occurs through respiratory droplets, and the incubation period is typically 2 to 3 weeks. The bacterium is known for its capability to evade the host immune response, contributing to the prolonged course of the disease.

Signs and Symptoms:

Mycoplasma pneumoniae pneumonia often presents with insidious onset of symptoms. Common clinical manifestations include fever, cough, sore throat, and malaise. Respiratory symptoms may range from mild to severe and can include bronchitis or tracheitis. Children may also experience extrapulmonary manifestations, such as mucocutaneous rash or neurological symptoms. Diagnosis may be challenging due to the overlap of symptoms with other respiratory infections, necessitating thorough clinical and laboratory evaluation.

Treatment Modalities:

The management of *Mycoplasma pneumoniae* pneumonia involves antibiotic therapy, with macrolides or tetracycline being the primary choices. However, increasing antibiotic resistance poses challenges in selecting appropriate treatment. However, overreliance on these drugs has led to the bacterium developing resistance.¹³ Studies indicate high resistance rates (70-90%) in Beijing, which could contribute to the elevated hospitalization levels this year, hindering treatment and slowing recovery. Supportive care, including rest, hydration, and antipyretics, is essential for symptom relief. Severe cases may require hospitalization, especially if complications such as respiratory distress or extrapulmonary involvement arise.¹⁴ Regular monitoring and adjustment of treatment based on clinical response and antibiotic susceptibility testing are crucial for optimal outcomes.

Vaccination Strategies:

As of the knowledge cut off in January 2022, no specific vaccine for *Mycoplasma pneumoniae* is widely available. However, ongoing research is exploring vaccine development to prevent and control infections. The development of an effective vaccine would be a significant step in mitigating the impact of *Mycoplasma pneumoniae* pneumonia, particularly in regions experiencing increased incidence. Public health efforts should prioritize vaccine development, and strategies to enhance surveillance and early detection of outbreaks are essential to reduce the burden of the disease.

In conclusion, the recent rise in *Mycoplasma pneumoniae* pneumonia cases among children in China underscores the importance of understanding the epidemiology, aetiology, clinical manifestations, and treatment options. Further research and public health initiatives are crucial for developing effective vaccination strategies to mitigate the impact of this respiratory infection on children's health.

Despite the challenges posed by winter surges, China's healthcare systems are better equipped to manage them now than before the pandemic. Improved national disease-monitoring systems, diagnostic tests, and measures to impede transmission and prevent deaths are in place.

Respiratory physician Christine Jenkins from UNSW Sydney emphasizes the importance of closely tracking known pathogens to minimize the risk of a serious disease outbreak, emphasizing that even with known pathogens, complacency is not advisable in the current situation. Another pathogen which has been implicated in the recent spurt is the H9N2 infected cases. This virus is a subtype of the Influenza A virus. It primarily affects birds with a high prevalence in poultry such as chickens and turkeys and can easily jump to humans. It is highly transmissible and while it is known to cause mild illness, sometimes it manifests as a severe infection that can result in complications.

Why is H9N2 under the scanner?

A new study from researchers in China and Nottingham has discovered that a subtype of avian flu virus, endemic in poultry farms in China, is undergoing mutational changes, which could increase the risk of the disease being passed on to humans. Researchers also say that the findings raise concerns of a potential epidemic or pandemic in the making and that concerted research is necessary to closely monitor such viruses in poultry and humans.¹⁵ This has raised some concern given that the coronavirus mutation resulted in a pandemic. However, at the moment there has been no confirmation of a new strain and there is no need to panic.

Some strains do nothing. But when mutations happen, the virus can attack the lungs as well as the heart, liver and kidney and trigger a dysregulated immune response.¹⁶

Why do children recover faster?

So far, the respiratory viral infections in China¹⁷ have been mostly mild and not that fatal. The cases are being controlled. And since they are affecting children more, chances are they will fight it better.¹⁸ That's because new research by the US-based National Institutes of Health (NIH) shows that children who had contracted SARS-CoV-2 had a strong, sustained antibody response to the virus and high levels of inflammatory proteins in the nose but not in the blood.

What are signs and symptoms?

The infection is self-limiting and similar to any other flu virus, usually accompanied by pink eyes. The other symptoms include high fever, cough, sore throat, body and muscle aches, nausea, diarrhoea and a runny nose. Severe respiratory symptoms and conditions include shortness of breath, pneumonia and acute respiratory distress.¹⁹ In extreme cases, there might be seizures and septic shock

When should you get tested?

Like all flu viruses, you should get tested after the first 48 hours of the onset of symptoms. A nasal and throat swab test helps in diagnosis.

The treatment protocol

Treatment is largely symptomatic with antivirals. Those with more severe symptoms may need nebulisation and steroids. Keep yourself well-hydrated, so drink plenty of fluids, take rest and wash your hands often, taking care not to pass on any germs. Do not self-medicate.

Who are most at risk?

Those who have been near a poultry farm and have had contact with infected live or dead infected birds.²⁰ Infected birds usually shed the virus in their saliva, faeces and mucus. The most vulnerable groups of people are pregnant women, those with co-morbidities and the elderly. What about prevention?

As the virus is present in droplets or dust, please wear a mask. Do not touch your face or nose cavity with your hands, which could be infected if you have touched somebody infected already. Go for properly processed poultry or meats but avoid eating anything that has raw poultry or blood. Avoid crowded places, especially farms and open markets, while travelling

to other countries. For starters, we should resume airport screening for people coming in from affected countries.

In summary, China's winter surge in respiratory illnesses, particularly *Mycoplasma pneumoniae* infections in children as well as H9N2 virus infection presents a unique challenge, and vigilance is crucial despite improvements in healthcare systems.

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