

Respiratory distress and the flu: What should a physician know?

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A five-year-old girl, with known thalassemia, presented in September 2009 with a history of 36 h of fever, runny nose, sore throat, lack of appetite and cough. She had vomited a few times and had watery bowel movements. Because of increasing cough, shortness of breath and lethargy, she was brought to the emergency department by her parents, who were also not feeling well. On arrival, her temperature was 39.5°C and her respiratory rate was 60 breaths/min. She looked pale and her oxygen saturation was 90% in room air. On auscultation, crackles were heard and her chest radiograph confirmed pneumonia in the right middle and right lower lobes.

In view of her acute respiratory presentation, she was immediately isolated with contact and droplet precautions. Blood culture was drawn and a nasopharyngeal aspirate was sent for respiratory viruses. She was started empirically on an intravenous antibiotic and oseltamivir (45 mg orally twice daily), while awaiting laboratory confirmation of the diagnosis. She rapidly deteriorated with desaturation on a fraction of inspired oxygen of 100%, and was transferred to a paediatric intensive care unit (PICU) where she was intubated and required mechanical ventilation. Later that day, a reverse transcription polymerase chain reaction for pandemic influenza A (H1N1) was reported as positive.

Her PICU stay was prolonged and she received a full course of oseltamivir. The antibiotics were also continued because of the risk of bacterial coinfection in this very ill child. She slowly improved and was successfully weaned off the respirator. The child was discharged home 10 days after her initial presentation. No family members developed symptoms and because of the early institution of appropriate infection control measures, other high-risk children in the PICU were protected from nosocomial infection.

LEARNING POINTS

- In early April 2009, a pandemic H1N1 influenza A virus was reported to cause respiratory distress in humans and rapidly spread to reach pandemic proportion.
- As of the end of August 2009, 327 paediatric hospitalizations for influenza had been reported since April 26, 2009; 99.4% of these hospitalizations were due

to pandemic (H1N1) 2009. To date, for the entire 2008 to 2009 influenza season, 738 paediatric hospitalizations and five deaths have been reported. Three of the deaths were due to pandemic (H1N1) 2009 (1).

- Antiviral therapy is recommended for children and youth only when their influenza illness is severe enough to warrant hospitalization or when their underlying conditions predispose them to serious illness. Susceptibility to antiviral medications, such as oseltamivir, zanamivir, amantadine and rimantadine, varies from strain to strain of influenza and can change. At present, the pandemic strain of H1N1 is susceptible to oseltamivir and zanamivir, but the seasonal H1N1 is resistant to oseltamivir. Current resistance patterns should be consulted when choosing an antiviral agent for a sick child.
- There is limited information on adverse events associated with the use of an antiviral agent in children (2,3). Health Canada has issued interim approval for the emergency use of oseltamivir in children younger than one year of age, given their increased risk for morbidity and mortality from influenza (4).
- Patients with severe influenza requiring hospitalization may have bacterial pneumonia as a coinfection. Thus, it is important to treat such patients with both empirical antibacterial therapy and antiviral medications (5).
- Physicians are reminded not to use acetylsalicylic acid or medications containing salicylates in patients with influenza symptoms because of the risk of Reye's syndrome. Acetaminophen and ibuprofen are preferred.
- A rare complication of influenza infections is Guillain-Barré syndrome, and not surprisingly, cases have been reported with the pandemic H1N1 influenza A strain.
- Surveillance is an essential tool to provide real-time national data to public health policy makers on the infectious disease itself and on the adverse drug reactions (ADRs) potentially associated with specific treatments.

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- The Canadian Immunization Monitoring Program, ACTive (IMPACT) is a paediatric hospital-based national active surveillance network looking for cases of vaccine-preventable infectious diseases such as influenza, in 12 paediatric centres across Canada. The network continues to make surveillance of H1N1 influenza A a high priority as the pandemic unfolds, to provide a complete and accurate description of the most severely affected children and youth in Canada (6).
- The Canadian Paediatric Surveillance Program (CPSP) is a network of more than 2500 actively practicing paediatricians who report monthly on diseases with high burden and on serious ADRs. The CPSP continues to monitor ADRs related to antiviral drugs (7).
- With increasing use of antiviral drugs, physicians should watch for ADRs and report them promptly to the CPSP and Health Canada.

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The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and the Public Health Agency of Canada, which undertakes the surveillance of rare diseases and conditions in children and youth. For more information, visit our Web site at <www.cps.ca/cpsp>.