H1N1 critical illness can occur rapidly; predominantly affects young patients

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Critical illness among Canadian patients with 2009 influenza A(H1N1) occurred rapidly after hospital admission, often in young adults, and was associated with severely low levels of oxygen in the blood, multi-system organ failure, a need for prolonged mechanical ventilation, and frequent use of rescue therapies, according to a study to appear in the November 4 issue of *JAMA*. This study is being published early online to coincide with its presentation at a meeting of the European Society of Intensive Care Medicine.

Infection with the 2009 influenza A(H1N1) virus has been reported in virtually every country in the world. The World Health Organization declared the first phase six (phase indicating widespread human infection) global influenza pandemic of the century on June 11, 2009. The largest number of confirmed cases occurred in North America between March and July 2009, according to background information in the article.

Anand Kumar, M.D., of the Health Sciences Centre and St. Boniface Hospital, Winnipeg, Manitoba, Canada, and colleagues with the Canadian Critical Care Trials Group H1N1 Collaborative conducted an observational study of critically ill patients with 2009 influenza A(H1N1) in 38 adult and pediatric intensive care units (ICUs) in Canada between April 16 and August 12, 2009. The study focused on the death rate at 28 and 90 days, as well as the frequency and duration of mechanical ventilation and the duration of ICU stay.

The researchers found that a total of 168 patients had confirmed or probable 2009 influenza A(H1N1) infection and became critically ill during this time period, and 24 (14.3 percent) died within the first 28 days from the onset of critical illness. Five more patients died within 90 days. The average age of the patients with confirmed or probable 2009 influenza A(H1N1) was 32.3 years, 113 were female (67.3 percent), and 50 were children (29.8 percent).

"Our data suggest that severe disease and mortality in the current outbreak is concentrated in relatively healthy adolescents and adults between the ages of 10 and 60 years, a pattern reminiscent of the W-shaped curve [rise and fall in the population mortality rate for the disease, corresponding to age at death] previously seen only during the 1918 H1N1 Spanish pandemic," the authors write.

Patients with 2009 influenza A(H1N1) infection-related critical illness experienced symptoms for a median (midpoint) of four days before entering the hospital, but worsened rapidly and required care in the ICU within one or two days. Shock and multi-system organ failure were common, and 136 patients (81 percent) received mechanical ventilation, with the median duration being 12 days. The average ICU stay was 12 days. Lung rescue therapies included neuromuscular blockade, inhaled nitric oxide and high-frequency oscillatory ventilation.

"In conclusion, we have demonstrated that 2009 influenza A(H1N1) infection-related critical illness predominantly affects young patients with few major comorbidities and is associated with severe hypoxemic respiratory failure, often requiring prolonged mechanical ventilation and rescue therapies," the authors write. "With such therapy, we found that most patients can be supported through their critical illness."

More information: *JAMA*. 2009; 302(17). doi:10.1001/jama.2009.1496

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