Preventive behaviors limited household transmission of H1N1 influenza during initial outbreak

March 16 2010

Simple, common sense behaviors, including having a discussion at home about how to prevent influenza, can help limit the spread of H1N1 in a household, according to a study of the initial outbreak in New York City in 2009. Published in the April 1 issue of The *Journal of Infectious Diseases*, the study is available online.

People with influenza symptoms are often told to stay home from work or school, which is why scientists need to understand how household transmission works and how to control it, not only in responding to H1N1 but also in preparing for future pandemics.

Anne Marie France, PhD, MPH, and her colleagues at the New York City Department of Health and Mental Hygiene and the Centers for Disease Control and Prevention (CDC) surveyed household members of ill students from the New York City high school where the H1N1 outbreak was first documented in April 2009. Because H1N1 was not yet established in the community, secondary cases of influenza-like illness were most likely acquired at home. One-third of the school's students were sick with influenza and told to stay home, and 322 households representing 702 household contacts responded to the survey. Seventy-nine contacts reported influenza-like illness, representing an 11.3 percent secondary attack rate (SAR), with half of the cases occurring within three days and 87 percent within seven days after the initial student reported symptoms.

Having a household discussion about how to prevent transmission was associated with a 40 percent reduction in risk for influenza among others in the household. Providing care for the sick student increased the risk among parents, the researchers found, while watching television and playing video games with the student was a risk factor for siblings.

The finding that a household discussion had a protective effect is especially relevant, given that a vaccine might not be available early in a pandemic. "This is important because it indicates that behavioral changes can be effective in decreasing the risk for secondary illness within a household," Dr. France said. "Understanding the risk and prevention factors that determine household transmission is very important to containing influenza, particularly if the strain of influenza is severe, and it is determined that attempting to contain it is critical to the national management of a pandemic."

The study also found that the risk of acquiring influenza-like illness was most strongly related to age, with the highest SAR (30 percent) among contacts under 5 years of age and the lowest (2.1 percent) in those aged 55 or older. The findings highlight that children can be the principal spreaders of an infection in the early stages of an epidemic, especially in the household, and suggest children should be the focus of preventive measures.

Future studies on household transmission "should attempt to measure the details of interaction between ill and initially non-ill household members," Dr. France noted, such as hand washing and covering coughs, to determine how these behaviors, in addition to minimizing time spent with ill household members, factor into preventing transmission.

In an accompanying editorial, Ruth Lynfield, MD, of the Minnesota Department of Health, agreed and observed that the findings "are useful in reinforcing public health recommendations for infection control

within households of infected individuals." When early action is most important at the beginning of a pandemic, Dr. Lynfield wrote, implementation is best reinforced by "data that support simple interventions in the household that are important for infection prevention."

The study also found a protective effect associated with preventive antiviral treatment, or prophylaxis. But the authors and the accompanying editorial highlight reports of the development of antiviral resistance and the need to reserve these drugs for influenza patients most at risk for developing complications, in line with recommendations from the Centers for Disease Control and Prevention (CDC).

Fast Facts

• A household discussion about influenza prevention and transmission reduced the risk of family members passing on the virus to each other by 40 percent.

• Transmission of the virus was rapid, with half of secondary influenza cases (in which one family member infected another) occurring within three days and almost 90 percent within one week.

• To help prevent the spread of influenza, cover your nose and mouth when you cough or sneeze. Wash your hands often with soap and water.

More information:
http://www.journals.uchicago.edu/doi/abs/10.1086/651145

Provided by Infectious Diseases Society of America