

# Drug-resistant influenza A virus potentially serious to high-risk patients

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A mutation of the influenza A(H1N1) virus that is resistant to the drug oseltamivir may pose a serious health threat to hospitalized patients who have a weakened immune system, according to a study to be published in the March 11 issue of *JAMA*, and being released early online because of its public health importance.

A global emergence and rapid spread of oseltamivir-resistant influenza A(H1N1) viruses carrying a neuraminidase (NA; an enzyme) gene H274Y mutation has been observed since January 2008. Viruses carrying this mutation have been presumed to be of lower risk and less likely to be transmitted. "However, current widespread circulation of oseltamivir-resistant influenza A(H1N1) viruses associated with typical influenza illnesses and viral pneumonia suggest that these viruses retain significant transmissibility and pathogenicity [ability to cause disease]," the authors write.

Jairo Gooskens, M.D., of Leiden University Medical Center, Leiden, the Netherlands, and colleagues analyzed the transmission of the oseltamivir-resistant influenza A(H1N1) virus with NA gene H274Y mutation to two hematopoietic (the formation of blood or blood cells) stem cell transplant recipients and an elderly patient in a Dutch university hospital in February 2008. The investigation included a review of the medical records and various influenza and genetic tests.

The analysis confirmed that four patients in the hospital had the virus mutation, and that the virus was most likely transmitted while these

patients were in the hospital. Influenza virus pneumonia (3 patients) and attributable death (2 patients) during active infection was observed in patients with lymphocytopenia (having an abnormally low level of white blood cells, important to the immune system) at onset.

Five health care workers developed influenza-like illness during admission of the presumed index patient. However, samples for influenza testing were not obtained from any of these health care workers, so their role in possibly contributing to this transmission could not be confirmed.

"Early identification and prolonged isolation precautions appear prudent in the care for infected immunocompromised patients to prevent [hospital] influenza virus outbreaks. This study confirmed that circulating H274Y-mutated A(H1N1) viruses can retain significant pathogenicity and lethality, as shown in these elderly or immunocompromised patients with lymphocytopenia, underlining the urgency for the introduction of new effective antiviral agents and therapeutic strategies," the authors write.

They add that because the study consisted of a small number of patients, the findings require careful interpretation and do not allow conclusions on the frequency of this complication in hospital settings.

More information: JAMA. 2009;301[10]:1042-1046

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