Medical Xpress

NIH clinical study establishes human model of influenza pathogenesis

September 13 2013

A National Institutes of Health (NIH) clinical study of healthy adult volunteers who consented to be infected with the 2009 H1N1 influenza virus under carefully controlled conditions has provided researchers with concrete information about the minimum dose of virus needed to produce mild-to-moderate illness. The study also gives a clearer picture of how much time elapses between a known time of infection, the start of viral shedding (a signal of contagiousness), the development of an immune response, and the onset and duration of influenza symptoms. The data obtained from this study provide a basis for more rapid, cost-effective clinical trials to evaluate new influenza drugs or to determine the efficacy of candidate vaccines for both seasonal and pandemic influenza.

In the study, 46 volunteers were divided into five groups and exposed to influenza virus in escalating doses. The virus, synthesized in the lab under Good Manufacturing Practice conditions, was genetically identical to the virus that caused 2009 H1N1 pandemic influenza. The volunteers all gave informed consent and subsequently were admitted to an isolation unit at the NIH Clinical Center in Bethesda, Md., for a minimum of eight days following virus exposure. The volunteers' health was closely monitored throughout their stay in the clinic and for two months afterward. The researchers sought to determine the minimum dose of virus needed to produce both shedding of live virus in nasal secretions and mild or moderate flu symptoms in 60 percent or more of dosed volunteers. When the scientists administered an influenza virus dose of 107 TCID50 (a measure of the amount of virus required to produce cell

death in 50 percent of cultured cells inoculated with virus) to 13 volunteers, 9 (or 69 percent) shed virus and developed symptoms. Lower dosages did not generate responses that met this threshold, thereby establishing the minimum dose of influenza virus needed to produce mild-to-moderate illness.

Researchers from NIH's National Institute of Allergy and Infectious Diseases (NIAID) presented the preliminary study results at the Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) meeting in Denver.

More information: www.abstractsonline.com/Plan/V … c-4c8aed530cfc&mKey= %7b7DD36E88-52C3-4FF1-A5DF-1D00766558B8%7d

Provided by NIH/National Institute of Allergy and Infectious Diseases