Flu transmission work is urgent: Nature Comment

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The author of an upcoming *Nature* paper about H5N1 argues in a *Nature Comment* article today that research into deadly pathogenic viruses must continue if pandemics are to be prevented. Yoshihiro Kawaoka suggests, after reviewing many factors, that pursuing studies of highly pathogenic viruses must be done with urgency.

Two teams are ready to independently publish results showing that mutant H5N1 viruses can be transmitted between ferrets. Kawaoka and his colleagues generated viruses that combined the H5 haemagglutinin (HA) gene and genes from a pandemic 2009 H1N1 influenza virus, demonstrating that this mutant virus could spread from infected to uninfected ferrets via respiratory droplets in the air.

The discovery that H5N1 could potentially be transmitted between mammals has led to fears both of misuse and of accidental release, but Kawaoka counters that H5N1 viruses circulating in nature may already pose a threat because influenza viruses constantly mutate and can cause pandemics. Indeed, a subset of the specific HA mutations identified by both teams has already been detected in H5N1 viruses circulating in certain countries.

It is therefore imperative, Kawaoka argues, that these viruses are monitored closely so that eradication efforts and countermeasures can be focused on them if they should acquire transmissibility.

In response to scare stories about the H5N1 virus, he flags that the work

also revealed that not all transmissible H5 HA-possessing viruses are lethal. In fact, his team showed that, in ferrets, the mutant H5 HA virus was no more deadly than the pandemic 2009 virus. Importantly, Kawaoka's mutant virus did not kill any of the infected animals, and current vaccines and antiviral compounds were effective against it.

Kawaoka also argues that US National Science Advisory Board for Biosecurity recommendations to redact these papers will not eliminate the possibility of experiments being replicated by those who want to do harm. In reality, he says, there is already enough information publicly available to allow someone to make a transmissible H5HA-possessing virus.

He also suggests that mechanisms proposed by the US government, in which researchers will submit individual applications to access results, will create a "huge administrative burden" which may cause delays in combating emerging pandemic threats.

He concludes that the redaction of these manuscripts, intended to contain risk, may in fact make it harder for legitimate scientists to get information, while failing to prevent it getting into the hands of those who wish to do harm. He instead suggests that the international community should focus on how to minimize risk while supporting scientific discovery.

More information: H5N1: Flu transmission work is urgent, *Nature* (2012) doi:10.1038/nature10884

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