Stockpile human bird flu vaccine now, say experts
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Countries should stockpile vaccines against H5N1 flu even before any H5N1 pandemic begins, experts warn. A new modelling study shows that without such vaccines, and antiviral drugs, efforts such as school closures and travel restrictions will have almost no effect on the number of deaths a pandemic would cause in the US.

Yet that is what the country currently relies on. In March, US Health Secretary Michael Leavitt told a Congressional panel that "in the first six months of a pandemic we are dependent on basic public health and social distancing". The term "social distancing" refers to measures that reduce human contact, such as school and business closures.

It would take drug companies six months from the start of a pandemic to produce an effective vaccine, he said. This is because they must wait until the pandemic actually starts before designing a vaccine that matches the virus.

But before then vaccines can be made to match currently circulating H5N1 viruses. Vaccinated people might not be completely immune to a subsequent H5N1 pandemic, but they might get less seriously ill, and pass on less virus.

Getting nowhere
The US plans to spend $1.2 billion on pre-pandemic vaccine (see "US launches plan to battle flu pandemic"), and last week the UK announced it would buy two million doses. But no country plans to stockpile enough for half of their population.

"It would be a very good idea to stockpile vaccine now," says Ira Longini of the University of Washington at Seattle, US. "Our studies show that without a lot of antiviral drugs or vaccine – or both – you don’t get anywhere," he told New Scientist. Antiviral drug production is now at capacity, but H5 vaccine production is minimal.

Longini and colleagues simulated the early days of a flu pandemic in the US using a new kind of supercomputer model designed to predict the rate of spread very early in an epidemic. "The effectiveness of a low-efficacy vaccine was somewhat surprising" in protecting the population, Timothy Germann, the paper’s lead author, told New Scientist.

Degrees of contagion
They modelled the effects of giving half the US population one shot of a vaccine that cut susceptibility to flu by only one-third, and transmission of the virus by half. They also modelled school closure and other social distancing, and treating every sick person and their close contacts with antiviral drugs.

For a poorly contagious virus, school closure, antiviral drugs, or vaccination on their own limited cases to only a few per thousand. But for a moderately contagious virus, similar to the 1918 pandemic, far more antiviral drug than the 20 million treatments the US plans to stockpile were needed, unless vaccine or social distancing was applied as well.

For a moderately contagious virus, social distancing alone was the same as no intervention at all – nearly half of the population fell ill. But social distancing plus drugs or vaccine limited cases to only a few per thousand. With all three there were fewer still.

Antiviral drugs plus school closure, but no vaccine, worked, though not as well as with the vaccine for more highly contagious viruses. And Longini notes it would be unwise to rely on drugs, in case the virus becomes drug resistant.

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