

1 in 7 cases of bird flu could be prevented by closing schools in event of pandemic

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Closing schools in the event of a flu pandemic could slow the spread of the virus and prevent up to one in seven cases, according to a new study published today in the journal *Nature*. School closure is the non-pharmaceutical policy option that health organisations and governments most often consider to control the spread of a future flu pandemic, but there had previously been little evidence about its potential effectiveness.

Researchers from the MRC Centre for Outbreak Analysis and Modelling at Imperial College London, working with colleagues in France, used computer modelling to explore how school closure would affect the spread of a theoretical pandemic H5N1 avian flu virus which had mutated to pass between humans. They extrapolated from data collected by French GPs, showing how school holidays alter the patterns of influenza transmission in France.

The new study shows that shutting down schools for a prolonged period in the event of a pandemic could prevent up to one in seven cases.

School closures would also slow and flatten the pandemic, reducing the numbers becoming ill in the worst week of the outbreak by up to 40%. The researchers suggest that this could be important in reducing pressures on healthcare services during this time so that hospitals and GP surgeries would be better able to cope.

However, the researchers caution that closing schools for a prolonged

period would be a very costly measure, particularly because of its impact on working parents. Taking away the childcare that schools provide could also affect the spread of the virus, in ways that are difficult to model using existing information.

For example, parents might share childcare with each other or place their children with child minders, so that children would still mix and spread the virus between them, much as they would in a school setting. In addition, the number of healthcare professionals available to care for those with the virus might fall if some needed to stay home to look after their children.

Dr Simon Cauchemez, one of the authors of the study from the MRC Centre for Outbreak Analysis and Modelling at Imperial College London, said: "Our research shows that school closures could be a useful measure in terms of slowing the spread of a flu pandemic. However, its effectiveness would very much depend on what other measures, like vaccination or antiviral drugs, were put in place as well."

Professor Neil Ferguson, another author of the study from the MRC Centre for Outbreak Analysis and Modelling at Imperial College London, added: "Closing schools for a long time is not an option you can take lightly, because it has a big economic and social impact, and the extent to which there would be a knock-on effect on transmission is hard to predict.

"Even though the children would not be in school, they would still mix with other children and adults in the community and spread the virus through this contact. We also think it's likely that parents would need to devise new childcare arrangements so that they could continue working, meaning that they would be setting up the equivalent of small schools where the virus could easily be transmitted," added Professor Ferguson.

The researchers reached their conclusions after analysing surveillance data collected since 1984 by 1,200 GPs in France, to see how the rate of influenza transmission is reduced during the country's school holidays. This data showed that holidays lead to a 20-29% reduction in the rate at which influenza is transmitted to children, but that they have no detectable effect on the contact patterns of adults. The French data also revealed that children were responsible for around 46% of all infections.

The researchers then extrapolated from this to explore how prolonged school closure might affect transmission in the event of a pandemic of mutated H5N1 in a country like France.

At present, the H5N1 strain of influenza is transmitted to people by birds and person-to-person transmission is very rare. However, the virus is so lethal that if it were to mutate and become more transmissible, as in the researchers' new model, the consequences of a global pandemic could be disastrous.

Source: Imperial College London

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