Vaccinating children may be effective at helping control spread of influenza, experts say

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Targeting children may be an effective use of limited supplies of flu vaccine, according to research funded by the Wellcome Trust and the EU. The study suggests that, used to support other control measures, this could help control the spread of pandemics such as the current swine flu.

As the World Health Organization declares a pandemic global H1N1 swine flu, countries are looking at measures to control the spread of the disease. These measures include the use of antiviral treatments, such as oseltamivir, social distancing (for example, closing schools and stopping public transport) and quarantining infected individuals.

Pharmaceutical companies have also stepped up production of vaccines effective against this particular strain of the virus. However, if the spread of the disease increases significantly in the autumn, as some scientists predict, it is unlikely that supplies of the new vaccine will be sufficient to vaccinate entire populations.

In research published in the journal *Epidemiology and Infection*, Dr Thomas House and Professor Matt Keeling from the University of Warwick have used computer modelling to predict the spread of pandemic influenza and to look at ways of controlling it effectively, particularly where supplies of vaccine are not sufficient for universal coverage.

The researchers showed that, as might be expected, the disease is likely to spread fastest in densely-populated conurbations, suggesting that these should be priority areas for tackling the spread. However, they showed that vaccinating entire households at random was an inefficient use of resources; instead, vaccinating key individuals offered sufficient protection to others in their household.

Although a simplification of the complex reality of pandemic flu transmission, the researchers believe their model provides a robust argument for vaccinating children.

"Our models suggest that the larger the household - which in most cases means the more children living at home - the more likely the infection is to spread," says Professor Keeling. "This doesn't mean that everyone in the household needs to be vaccinated, but suggests that vaccination programmes for children might help control a potential pandemic."

The researchers argue that targeting children for vaccination would not only help protect those at greatest risk of exposure to the virus, but would also offer protection to unvaccinated adults. This so-called "herd immunity" effect would mean that significantly less vaccine would be necessary to help control the spread of the virus than if it were offered to everyone.

"Given that children are generally at particular risk from the disease, we believe that vaccination programmes for the young can be justified," says Dr House. "Although not sufficient to prevent a pandemic in themselves, such steps may support other control measures such as social distancing, antiviral drugs or quarantine."

The current study focuses on household transmissions. In the event of a disease outbreak, other modes of transmission are also likely, such as at work or on public transport. However, data for these modes is harder to come by. Professor Keeling and Dr House, together with colleagues at the University of Liverpool, are currently running www.contactsurvey.org, a survey on contact

patterns which they hope will help to quantify the relative importance of each context.

"We think it is unlikely that including these other contexts in our model will change the conclusion regarding vaccinating children," says Dr House. "In every city studied, households are seen to play a key role in the transmission of close-contact diseases like influenza."

Source: Wellcome Trust (news : web)