

# Swine Flu vaccination: voluntary system works

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(PhysOrg.com) -- Social interaction between neighbours, work colleagues and other communities and social groups makes voluntary vaccination programs for epidemics such as Swine Flu, SARS or Bird Flu a surprisingly effective method of disease control.

New research published today, Thursday 11 February, in [New Journal of Physics](#), shows that contact with others can positively influence individuals to choose voluntary vaccination when considering the pros and cons.

The group of Chinese researchers found that in scale-free networks — social networks with an uneven distribution of connectedness such as neighbourhoods, work places or gyms — the so-called hub nodes, people with multiple [social connections](#), tend to choose to vaccinate themselves as they are at higher risk of infection from others, thus containing the spread of epidemics.

Based on their studies, the researchers have observed that at the beginning of an epidemic, when levels of infection are high, a large number of people will gradually take vaccination. As the effects of the temporary vaccination wear off, a second wave of outbreak will occur, however on a

less severe level due to the number of individuals with still effective immunisation.

This is why outbreaks of disease and voluntary vaccination occur periodically, eventually settling down to a stable state. Individuals with a large social network play a crucial role in this cycle as, given information on the spread of the disease is freely available, the majority of them will choose voluntary vaccination.

In order to set up an effective vaccination strategy it is therefore crucial to affect the hub nodes' willingness to vaccinate, which can potentially be negatively influenced by factors such as the risk of infection, the coverage of disease and the cost of vaccination.

As the researchers write, "Sometimes the high costs of vaccination or misunderstanding the side effect of vaccinations can reduce the enthusiasm for taking vaccination. In this case the external incentives such as subsidy of vaccination cost would be helpful in enhancing the vaccination inclination of the hub nodes."

**More information:**

[www.iop.org/EJ/abstract/1367-2630/12/2/02301](http://www.iop.org/EJ/abstract/1367-2630/12/2/02301)

Provided by Institute of Physics

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