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Contact: Kath Tracey
Kath.Tracey@ed.ac.uk
44-131-650-5456
University of Edinburgh

Bird flu study highlights need to vaccinate flocks effectively

Incomplete vaccination of poultry flocks could make the spread of deadly strains of avian flu such as H5N1 worse, scientists at the Universities of Edinburgh and Warwick have found. The research shows that even though the available vaccines are effective on individual birds, the disease is likely to spread unless almost all of a flock has been protected. The study, published in Nature journal, is the first to quantify how incomplete vaccination of flocks can contribute to the undetected spread of the disease.

Vaccination of commercial poultry against highly pathogenic avian flu like H5N1 is proving controversial because it is thought that it can lead to unseen transmission between poultry farms, a phenomenon known as 'silent spread'. This unseen transmission occurs because as protection levels rise in a flock, it becomes ever harder to detect the spread of avian flu quite simply because fewer birds die. The result is increasing amounts of bird flu virus contaminating the birds' surroundings without farmers realising it.

In practice, it is very hard to protect more than about 90 per cent of the birds in any given flock, and protection levels are usually much lower than this. The new study estimates that protection levels of more than 95 per cent would be needed to guard against silent spread.

The study, funded by the Department of Environment, Food and Rural Affairs, suggests that the most effective way of tackling silent spread of the disease would be to place unvaccinated 'sentinel' birds in poultry flocks. By monitoring birds carefully, silent spread could be reduced (though not completely eliminated) because sentinels allow for the rapid detection of bird flu, irrespective of the level of vaccine protection in a flock.

Dr Nick Savill, of the University of Edinburgh's Centre for Infectious Diseases, said: "Vaccination reduces the chance of birds becoming infected and reduces the amount of virus they shed and the time over which they shed it. If vaccination is to be used it needs to be done extremely well or it could make the problem worse, rather than better.

"The research underlines that vaccination, if used, should be part of a comprehensive control strategy including biosecurity, surveillance and diagnostics, education, movement restrictions and elimination of infected birds."

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