

EDITORIALS



Nosocomial transmission of avian influenza virus A (H7N9)

We should not accept nosocomial transmission, of any pathogen, in any setting

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Since the first notification in March 2013 through to 15 October 2015, a total of 679 laboratory confirmed cases of human infection with avian influenza A (H7N9) viruses, including 275 (40%) deaths, have been reported to the World Health Organization.¹ These individuals have presumably contracted their infection in China directly from infected birds or their environment, particularly when visiting live poultry markets. Limited human to human transmission has been suspected in a few clusters of cases of family members.² In a linked article, Fang and colleagues report on a presumed case of nosocomial, human to human, transmission of influenza A (H7N9) between unrelated individuals.³ Both patients, showing symptoms, spent time in the same hospital room, were infected with comparable strains, and—because no other common exposure was identified—the authors concluded that nosocomial infection was the most likely route of transmission.

Although Fang and colleagues' report does not prove nosocomial transmission beyond any doubt, the findings should not be completely unexpected. Sporadic human to human infections with a range of avian influenza viruses have been reported regularly over the past two decades, including suspected nosocomial transmission.⁴ This case report once again reminds us to strengthen our efforts to keep healthcare facilities safe for patients. If we cannot ensure a hygienic care environment, we risk wasting any benefits of new (and often expensive) preventive, diagnostic, and therapeutic interventions. We need to strengthen surveillance among humans, poultry, and wild birds; develop rapid diagnostic tests; standardise serological assays; develop broadly protective effective vaccines; and do more basic (immunological, genetic, virological) and applied epidemiological and behavioural research. But we must also not forget to maintain and protect the basics of public health, including hygiene in healthcare settings.

This same lesson should be learnt from recent nosocomial outbreaks of Middle East respiratory syndrome coronavirus (MERS-CoV), another zoonosis. Nosocomial transmission of antimicrobial resistance in many hospitals and care institutions

for older people worldwide also indicates that we still have not implemented these basic measures well enough.

In October 2015, the Food and Agriculture Organization of the United Nations announced that a fourth wave of avian influenza A (H7N9) had started among poultry in southern China,⁵ with the potential for another seasonal increase of (sporadic) human infections over the coming weeks and months. New infections will be impossible to prevent while undetected transmission in the poultry reservoir persists. For H7N9, prevalence among small backyard poultry has been found to be much lower than among poultry in retail and wholesale markets, implying that the markets, in particular live poultry markets, pose the largest risks to humans.⁶

Some have called for the closure of live poultry markets.^{7,8} However, these markets are also important economic and social hubs for large groups of people, and the poultry being traded here provides a major source of protein for many. A better understanding of the virus's transmission, including to what extent occasional severe cases reflect isolated transmission events, or represent a larger group of mild or subclinical infections,⁹ would help us get a clearer picture of the effectiveness and proportionality of such large scale interventions. This requires the development of standardised, validated sero-epidemiological studies to improve understanding of risks in the exposed human population,¹⁰ in order to develop and implement targeted, proportional, and justifiable interventions.

It is surprising that infections with influenza A (H7N9) have received so little attention compared with influenza A (H5N1). H5N1 has been known to cause severe disease in humans since 1997. A total of 844 laboratory confirmed cases (including 499 deaths) of H5N1 infection in people have been reported to WHO from 16 countries. However, this number has been reported over a period of more than 15 years, compared with the 679 cases of H7N9 over less than three years. As with all avian influenza viruses, the big question remains: will the H7N9 virus change in such a way that sustained human to human

transmission will occur? We don't know yet, but there is a major risk that the absence of large scale human to human transmission leads to complacency in our clinical, diagnostic, and public health preparedness.

Well described and researched case reports, such as Fang and colleagues' contribution, are vital to keep researchers focused on promoting the wellbeing of patients in hospitals and other healthcare settings. We must remain alert for (re)emerging infections, including avian influenza, particularly when we still cannot tell how risks to humans will evolve. We also need to invest more in clinical, epidemiological, and virological research to unravel the risks posed by sporadic human infections with any avian influenza virus. First and foremost, however, we should do no harm to our patients, and so should not accept nosocomial transmission, of any pathogen, in any setting.

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