An ostrich eye view of avian flu?

Until recently I have had my head in the sand about a potential influenza pandemic. I hadn’t fully taken in the implications of numbers of people infected, potential loss of life or the huge disruption to communities and services. I hadn’t thought that it is not really a matter of if a pandemic occurs, but when.

However, over the past month the issue of ‘flu’ has come across my radar in a number of ways. The annual vaccination sessions for seasonal influenza at our practice seem like a major social event in the over 65s calendar, but do take a considerable amount of effort for our practice staff to organise. I also edited many articles on travel medicine, attended a local educational meeting on pandemic influenza planning and read Jonathan Anderson’s article on the subject in April Australian Family Physician.1

Many of you I’m sure are well ahead of me on these issues, but it is worth reiterating some of the sobering facts.

The influenza A virus has haemagglutinin (H) and neuraminidase (N) viral surface antigens. Genetic mutations causing small changes in the H and N proteins (antigenic drift) create a new subtype but one to which people previously exposed to influenza will have some degree of immunity. This is the type of change that results in annual seasonal influenza outbreaks. A major genetic mutation in the H and N antigens (antigenic shift) produces a subtype with potential to affect large numbers of people because immunity to previous strains will not offer protection. This antigenic shift can cause a pandemic, in which infection spreads across communities, populations and geographical boundaries infecting many people at once.

There have been three pandemics of influenza A in the past century: 1918–1919 (‘Spanish flu’), 1957 (‘Asian flu’) and 1968 (‘Hong Kong flu’). The 1918–1919 pandemic had a case fatality rate of approximately 1% whereas the 1957–1958 pandemic had a lower case fatality rate, ranging from 1 in 2000 to 10 000.2 Although the severity and attack rate can’t be predicted for a new strain before its emergence, attack rates in past pandemics reached 25–35% of the total population. The number of cases in Australia in a pandemic with similar attack rates could be over 5 million. Even at a 0.1% case fatality rate, that would cause 5000 deaths.

Avian flu is an excellent candidate to be the source of a pandemic. It is an H5N1 strain of influenza A. This strain has not infected human populations before and has been shown to cause severe disease in humans. As of April 2007 there have been 291 laboratory confirmed cases and 172 deaths. The high case fatality rate may be related to its viral proteins inducing an adult respiratory distress syndrome.2 The only thing avian influenza lacks is ease of human-to-human transmission. There have been rare instances of limited human-to-human transmission of H5N1 but the virus has not spread beyond a first generation of close contacts or caused illness in the general community.2

Every new human case gives the virus an opportunity to improve its transmissibility in humans. This could occur by either ‘re-assortment’, in which genetic material is exchanged between human and avian viruses during co-infection, or by ‘adaptive mutation’, in which the capability of the virus to bind to human cells increases in a stepwise way.2 Re-assortment could result in a sudden surge of cases with very rapid spread whereas adaptive mutation would initially produce small clusters of human cases with some evidence of human-to-human transmission, giving some warning of a developing pandemic.

Even if avian influenza is not the virus that causes the next pandemic, at some stage another candidate will arise. So it is an important exercise to ask ourselves the practical and ethical questions outlined in the Anderson article.1 ‘Do team members all know how to recognise and respond to avian flu?’ ‘Would your practice be able to remain open in a pandemic?’ ‘How would you or your staff react to working in a dangerous environment?’ ‘Do you know how to use personal protective equipment (PPE)?’ ‘Have you bought any N95/P2 masks?’ ‘Do you know who to contact if you see a case of avian flu today?’ ‘How will your practice handle the number of home visits?’

Even if a pandemic does not occur in the next few years, undertaking the planning process within the practice will have benefits in improving our handling of other infectious diseases and outbreaks, planning for unexpected workforce shortage and dealing with other local disasters.

References