Readiness for the Avian Flu Pandemic:  
An Occupational Health Perspective

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PREAMBLE

This paper has been written for the benefit of Occupational Physicians, Occupational Health Nurses, and all other Health & Safety personnel.

Most of the information contained in this document is obtained from the website of the World Health Organization (WHO) and is current as of October 2005. When new information becomes available, the opinion of the author may change. Please contact your local public health official for the latest updates and recommendations.

Please feel free to distribute this document to other Health & Safety professionals as long as acknowledgement is given to the author.

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INTRODUCTION

Bird flu or avian influenza is an infection caused by the influenza A viruses which occur naturally in the intestines of wild birds. The infections, though very contagious among birds, usually do not cause sickness in the wild birds, but can be fatal in domesticated birds, including chickens, ducks, and turkeys. Bird flu viruses do not usually infect humans, but several cases of human infection with the bird flu virus H5N1 have occurred since 1997.

There are many different subtypes of influenza A viruses. These subtypes differ because of certain proteins on the surface of the virus (hemagglutinin [HA] and neuraminidase [NA] proteins). There are 16 different HA subtypes and 9 different NA subtypes of flu A viruses resulting in many different combinations of HA and NA proteins. All known subtypes of influenza A viruses can be found in birds. When we talk about “bird flu” viruses, we are referring to influenza A subtypes chiefly found in birds which do not usually infect humans. When we talk about “human flu viruses” we are referring to those subtypes that occur widely in humans. There are only three known A subtypes of human flu viruses (H1N1, H1N2, and H3N2); it is likely that some genetic components of current human influenza A viruses came from birds originally. Influenza A viruses are constantly changing, and they may adapt over time to infect and spread among humans.

The first documented human infection of Avian influenza occurred in Hong Kong in 1997. During that time, there was an epidemic of H5N1 influenza in the poultry population. Eighteen people were documented to be infected resulting in six fatalities with the H5N1 subtype of the virus. The prompt culling of the entire poultry population in Hong Kong controlled the spread of Avian flu at that time. No human to human transmission was documented.

Since 2003, H5N1 influenza has been discovered in Korea, Vietnam, Thailand, Cambodia and Indonesia. The WHO (World Health Organization) reported that between December 26, 2003 and November 1, 2005, a total of 112 human cases of H5N1
infections were documented and 62 of the confirmed cases did not survive. For most of the cases, direct contact with poultry was documented. There were sporadic cases of possible human to human transmission. As of October 2005, H5N1 Avian flu has been identified in birds in Russia, Kazakstan, Mongolia, Turkey, Romania, and Greece.

Other pathogenic Avian influenza viruses of the subtype H7N7 (Netherlands, 2003), and H9N2 (Hong Kong 1999 and December 2003) have also been reported.
POTENTIAL HAZARDS

All influenza viruses undergo constant changes in their genetic material. The minor changes are called antigenic drift while a major change, the acquisition of an H antigen to which the world’s population has not been exposed, is called antigenic shift. It is antigenic shift that make the virus resistant to vaccine protection.

The H5N1 virus has shown to be highly pathogenic in humans. Currently, most H5N1 human cases have documented human exposure to poultry. Human to human transmissions have been difficult to prove. It has been postulated that it is a matter of time before the H5N1 virus will mutate either inside humans or in other animals, e.g. pigs and become highly transmissible between humans.

Currently, humans do not have natural immunity to H5N1 virus. Vaccines against HSN1 for use in humans are not available. It is estimated that during a pandemic of H5N1 infection, up to a total of 1/3 of the population could be infected during that period. It is also postulated that about 15% of the healthy population would have to stay home to look after the sick. This will have a major impact on the viability of many businesses.
RECOMMENDATION FOR OCCUPATIONAL PHYSICIANS

Business Continuation Plan: It is essential for Occupational Physicians/Nurses to consult with the company executives to ensure that a “business continuation plan” is established as soon as possible. Based on the assumption that about one quarter of the working population may be absent from work at any one time, the business continuation plan should consider both the operation of the company and the protection of its workers. The plan may include: determination of which positions are considered essential for the viability of the company; criteria for when to stop international travel; a checklist for screening of visitors; consideration on whether or not “working from home” is an option; and decision-making about when to suspend the company’s operation. In general, workers who have flu-like symptoms should be encouraged to stay home during the pandemic period to avoid spreading the infection at work.

Prophylaxis: Although the day-to-day operation may be shut down by the pandemic, some essential staff will be required to carry on with the core business. For these indispensable personnel, a prophylaxis program should be considered.

Currently two anti-viral medications have been shown to be effective in controlling the H5N1 infection: Oseltamivir Phosphate (Tamiflu) and Zanamivir (Relenza). Oseltamivir can be taken in pill form and has a shelf life of about four years. Zanamivir is an inhalable powder and is more complicated to administer. In a recent study, published in the October 20, 2005 issue of the journal Nature, Japanese researcher found that one human case of infection with H5N1 virus has developed resistance to Oseltamivir following treatment.

The government has stockpiled anti-viral medications and will dispense them to selected populations when the pandemic occurs. It is speculated that the selected population will be the front-end healthcare workers, essential service workers and persons at high risk. Certainly, company executives or factory workers will not be the first group of individuals who will get access to these publicly funded medications.
Occupational Health Physicians and Nurses have a mandate to protect the interests of the company with regards to the health of its workers. It may be advisable to stockpile some of the anti-viral medication inside the Occupational Health Centre so that when the pandemic occurs, the companies will have medications in their possession for the protection of the workers. As with any other medications in the Occupational Health Centre, a written medical directive should be established and the criteria for dispensing and receiving such medication be clearly outlined.

**Personal Protective Equipment (PPE):** It is well known that the influenza virus is spread through droplet transmission. A good surgical mask should be sufficient. However, public pressure may dictate the use of more stringent personal protective equipment i.e. the N-95 Respirator. The decision of whether N-95 Respirators should be used rests on the decision of Occupational Health Professionals. A respirator program including the selection, proper fit-testing and training on the care and use of the respirator should be provided well in advance.

It is also recommended that when a “sick” worker arrives at the Occupational Health Centre, he or she should also be provided with a surgical mask, to act as a “sneeze guard.”

Impervious gloves i.e. nitrile gloves can be part of the personal protective equipment for the healthcare staff. After the removal of the gloves, proper hand washing is mandatory.

**Other Measures:** Proper hand washing techniques must be emphasized. The use of infrared activated water taps should be considered to prevent the spread of infection through contact. In areas where hand washing facilities are not available, waterless disinfectants should be provided.
RECOMMENDATION FOR HOLIDAY TRAVEL TO AREAS WHERE AVIAN FLU IS FOUND

The following six suggestions should be made for those who travel into an area where avian flu is found/suspected:

1) Travelers should check with their local public health department to see whether their destination(s) are areas where Avian flu is found.

2) The traveler should avoid contact with live or uncooked fowl, including not purchasing live fowl in any market or going to any farm area where direct contact with birds is anticipated.

3) Travelers should not consume any uncooked or partially cooked fowl, eggs or egg products.

4) The travelers are encouraged to wash their hands on a frequent basis. Using hot soapy water and lathering for at least 20 seconds is essential. Waterless disinfectant should be used if hand washing is not feasible.

5) The traveler should be vaccinated against influenza for the current year to avoid becoming a “mixing vessel” for both Avian flu and regular influenza virus.

6) Upon return to Canada, the traveler should monitor his/her symptoms. Should symptoms of influenza develop within 10 days after return, appropriate medical attention should be sought.
For further and up-to-date information please visit the website at: