Avian Influenza
Protection – Concepts & Recommendation

Introduction

Experts world-wide have declared an international alert to detect and isolate a lethal H5N1 subtype of Avian Influenza that may possibly mutate into one that can spread among humans.
Unprotected workers in contact with birds could become infected with the Influenza. These workers, if unprotected and exposed to infected poultry or birds, may become the main cause of cross contamination and cross infection from bird to bird. Within a very short time, an outbreak of the disease could reach pandemic proportions.
In the event of infection, current policy states that all birds within a radius of 3km should be destroyed. Such a lengthy operation would involve many workers. These workers must receive the best available protection at an affordable price. It is not yet known precisely how Avian Influenza Virus spreads - both amongst the avian family and/or from birds to humans.

Filter Properties

The CDC and WHO suggest the use of N-95 face masks. N-95 filters are similar to P-2 filters in the European Standards. Both definitions require the mask to filter 95% - 94% of particles respectively. There are almost no tests or requirements set for virus or bacteria filtration.
To be on the safe side, requirements from the filters should not rely on filtration of particles only, but they should filter 99% of particles in the size of 0.1 micron and higher, as well as 99.9% of microorganisms.

Spread of Virus - Contamination

The actual means of spreading the virus from birds to humans has not yet been specifically defined. It can be assumed that contamination could stem not only via aspiration or digestion, but possibly also via contact to the exposed eyes or even bare skin.

Protection

People in high risk areas should be well protected by separating their bodies from the outer environment. Protective covering to protect all head orifices and bare skin, as well as complete body-cover garments, gloves, shoe covers and masks are recommended. Without this type of protection they are unable to work safely and confidently.

Level "A" Protection

Optimum protection would be “Level A 0r B” protection gear. Psychologically, workers in contaminated areas or suspected contaminated environments require such protection. “Level A” protection however, is not economical and very expensive. Even if equipment is de-contaminated for re-use, there is still the risk of Cross Infection. (Multi State Investigation of the actual disinfection/sterilization of endoscopes... Kaczmarek RG. et. al. Am J Med 1992,92:257-61, Reprint: HFZ-161 CDC, and FDA) - and even such protection allows only 20-30 minutes working time.

Disposable Device Concept

The concept should be to promote the use of disposable devices only. (i.e. Masks, Garments, and Gloves). All should be disposable for one-time single use. If re-usable devices and equipment are used, there is the risk of Cross Infection, and any contaminants, viruses, microorganisms, or particles can be transferred from one area to another by means of the actual equipment/devices.
This is a more competitive and safer procedure than “Level A” protection.

Half Face Masks

If half face masks are used, eyes are unprotected. A Research conducted by the Israeli Ombudsman after the 1991 Gulf War, (when the population used "Simplex" face masks), concluded that 30% of faces did not fit the size/shape of the face mask- thus preventing a ‘complete seal’. To the best of our knowledge, above applies also to half face masks that cannot seal hermetically. The incomplete seal of half face masks allows air to enter not only via the filters, and contaminated air within the mask is inhaled. Verbal communication will induce leakage.

Hood Mask

The use of disposable protective garments including a hood mask provides inexpensive protection. The wearer is able to work for 3 hours or more (provided that the filter does not become too clogged), and is relatively comfortable. He is able to communicate verbally, and can drink from a water bottle that can be safely incorporated into the system. The risk of Cross Infection is decreased. The suggested hood mask should provide full protection against microorganisms and optimal protection against particles. Accumulation of Carbon Dioxide (CO_2) within the mask should be minimized.

Method of Use

After each use, garments are removed by turning them inside-out. Gloves are removed in the same way. The mask is removed by lifting it upwards from its bottom edge over the head, thus turning it inside-out, and turning it into a receptacle to accommodate all other disposable garments being worn. The mask "bag" is then re-sealed by means of the rubber bands already provided with the mask (for sealing it around the neck whilst wearing it) - and the entire package can then be safely discarded. This is a cost effective, inexpensive and safe procedure, providing the wearer and the public with maximum available protection.

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