

PPE Protection & Influenza

Background

Influenza is most likely spread via

- droplet transmission up to 1 meter
- contact – direct contact transmission from a contaminated object
- airborne – little evidence of transmission over long distances, more likely occur when aerosols produced and during such activities, high level PPE is used.

Three points can be used in the support of PPE protection:

- There was compelling evidence during the SARS outbreak, that SARS coronavirus is spread through droplet and contact transmission. The paper below outlines the evidence around correct use of PPE and transmission of SARS to healthcare workers.
- Relative risk in a flu clinic
- Addressing GP concerns in Tasmania as identified in Kelly Shaw's paper

SARS & PPE Use

Although some healthcare workers (HCWs) were reported to have become infected with SARS despite using PPE, when this did occur it was found that it occurred during high risk aerosol and droplet generating procedures, **accompanied** by accounts of suboptimal compliance with protocols for the donning or removal of PPE, PPE reuse, inappropriate double gloving and gowning (cross infection), fatigue and lack of basic infection control knowledge.

Evidence to support this includes:

- Gamage et al (2005). Interdisciplinary Respiratory Protection Study Group. Protecting healthcare workers from SARS and other respiratory pathogens: a review of the infection control literature. *American Journal of Infection Control* (33) 114-21.
- Ofner-Agnolini et al. (2006). Cluster of cases of SARS using Toronto healthcare workers after implementation of infection control precautions: a case series. *Infection Control & Hospital Epidemiology* (27) 473-8.

In a study in a Hong Kong ICU where there was low staff exposure times, sub optimal standard of physical environment, the risk of contracting SARS was considered low. The retrospective study involved thirty five doctors, and 152 nurses / HCWs who worked in an ICU during the SARS epidemic. (Gomersall et al, 2006, *Intensive Care Medicine*, 32 (4), 564-569.

A study by Park et al, investigated the risk of SARS transmission in an area where there was a relative absence of high risk procedure (aerosol generating). They identified 110 HCWs who had exposure within droplet range (<1 metre), forty five did not have any mask, 72 had exposure without eye protection and 40 had skin to skin contact. The study found no serological evidence of healthcare related SARS-CoV. Such a situation/setting would be similar to that of a Flu Clinic, assuming minimal aerosol generating procedure were performed (Emerging Infectious Diseases, 10 (20) 244-248).

Relative Risk of Flu Clinic

Studies undertaken looking at SARS and transmission have tended to concentrate on areas where there is prolonged exposure and a large number of high risk exposures being performed. Flu clinics will have more controls in respect to interventions of high risk exposure activities, access to PPE and staff who have been given detailed training in the use of PPE.

Areas providing healthcare outside of flu clinics will have less control over:

- Knowing which patients present a risk;
- Adherence to infection control practices by the patient such as the patient using a surgical mask;
- Less familiarity with correct use of PPE;
- Environmental control, eg, layout of the patient area to minimise risk of transmission.

Addressing Specific GP Concerns

The paper by Kelly Shaw (2006) in Family Practice identified some concerns by GP regarding caring for patients with pandemic influenza. The concerns are outlined below, with suggested measures in place to address them.

- GP concerns regarding access to PPE:
 - All flu clinics will have access to PPE wherever possible;
- Need for strong leadership:
 - They felt this needed to be the Director of Public Health, which is occurring;
- Education / training
 - This will be provided from early 2009.

Conclusions

- During SARS outbreaks, PPE was highly effective in protection of HCWs. Where there was transmission to HCWs, other factors such as lack of training and incorrect use of PPE were seen as contributing factors.
- Flu clinics will have considerably more access to PPE than other settings, have more controls and have the necessary training and support .
- The risk of transmission of influenza remains. However, based on the above, it is potentially less likely to occur than other settings.