



ACDP/83/P9

Advisory Committee on Dangerous Pathogens

Challenge testing of respiratory protective equipment and surgical masks against airborne virus – interim results

Health and Safety Laboratory (HSL)

Background

There is currently a debate over the level of respiratory protection considered adequate to protect healthcare workers and others engaged in managing people suffering from respiratory illness or certain medical conditions and this extends to concerns about the potential for an influenza pandemic. HSE's position is that use of FFP3 (filtering facepiece 3) devices represents best practice. Some work was done by HSL a number of years ago to test the effectiveness of some respiratory protective equipment (RPE) and surgical masks against a bacterial aerosol challenge but there is a need for scientific evidence with regard to potential penetration and leakage of respiratory viruses through RPE and surgical masks.

Current HSL studies

A project currently being done by HSL aims to provide that evidence by a combination of challenge studies to measure non-biological airborne particles and subsequently to use a microbiological challenge using an attenuated strain of influenza virus.

To date, tests have been conducted to determine the relative levels of protection afforded by FFP1, FFP2 and FFP3 RPE and surgical masks against simulated cough / sneeze generated aerosols. The RPE and surgical masks were chosen based on those frequently used in the health services. To perform these tests, a volunteer wore the RPE or mask as well fitted as possible whilst an aerosol of simulated saliva particles was generated. A particle counting system measured the number of particles as sampled outside the RPE/mask compared to the number sampled inside the mask. From this was derived a reduction factor by which to assess the overall protection afforded, as well as that which may be attributed to leakage around the face seal.

In summary, as may have been anticipated, the protection afforded by RPE increases progressively from FFP1 to FFP3. The surgical masks tested

performed worse than FFP1. These data provide a baseline for comparison of results which will be derived from the next planned phase, in which surgical masks fitted to a manikin head will be challenge tested with attenuated influenza virus.

Action

Full details of the results will be presented. Members will be asked to provide any comments/ views on the results to date and on the next planned phase of tests.