LETTER

How should data on airborne transmission of SARS-CoV-2 change occupational health guidelines?

Sir,

On the 6th of April, the WHO provided guidance about personal protective equipment (PPE) for healthcare workers (HCWs) in healthcare settings areas that have reported cases of COVID-19, stating that HCWs working in settings where aerosol-generating procedures were performed should wear a particulate respirator (N95 or FFP2), whereas in their previous recommendations, such masks were restricted to those who actually performed such procedures. This a step forward, although insufficient, towards the recognition of aerosol transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its consequences in terms of PPE choice.

COVID-19 has been considered as a droplet transmitted disease by WHO, which means that it can be prevented using surgical masks and hand hygiene. However, there is now increasing evidence suggesting that SARS-CoV-2 may also be found in droplet nuclei, defined by WHO as respiratory droplets smaller than 5 µm, which can travel on long distances and remain in suspension in the air for a long time.[1 2]

SARS-CoV-2 RNA is easily detected in nasopharyngeal swabs during the presymptomatic stage of the disease and asymptomatic patients may shed droplet nuclei that contain the virus. Two studies performed in medical units where patients with COVID-19 were hospitalised have found SARS-CoV-2 on surfaces and in the air of patients' rooms, and even in the medical staff office, with peaks in the submicrometre size.[2 3] Although it is widely acknowledged that the identification of viral RNA does not necessarily imply the presence of an infectious virus, experimental data have demonstrated that SARS-CoV-2 can survive in an aerosol for up to 3 hours.[4]

Furthermore, investigations of COVID-19 clusters in various environments such as restaurants, ships or buses have concluded that direct contact transmission was insufficient to explain all cases and that airborne transmission was likely.

Indeed, the use of PPE and infection control training has been associated with decreased infection risk for HCWs.[5] However, droplet and contact precautions have not been sufficient in many cases. A recent study on anaesthesiologists performing spinal anaesthesia showed that the use of category 3 PPE (including self-contained breathing apparatus) as defined by the EU Regulation 2016/425 reduced the risk of contamination by 95% compared with category 1 PPE (including surgical mask), which are known to offer little protection against droplet nuclei.[6]

Therefore, it is more and more challenging to rule out the risk of airborne transmission of COVID-19. Given the severity of the disease that is concerning HCWs more than any other occupational group, it seems reasonable to adjust occupational health guidelines.

Systematic use of N95 or FFP2 respirators should be discussed when caring for a patient with COVID-19, as a piece of a broader strategy that must include education, fit-checking, frequent hand hygiene, respiratory etiquette, organisational factors and engineering controls (maximising ventilation and avoiding recirculation). As many clusters have started in professional settings such as factories and have spread up in the communities, protecting workers against COVID-19 is of utmost importance for the public health response to the pandemic.

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