Letters & Notices

CORONAVIRUS

Protecting against Covid-19 aerosols

The value of masks has been debated throughout the Covid-19 pandemic. There seems little doubt that the dispersion of coronavirus droplets is reduced when people with Covid-19 wear masks or face coverings. What has been more unclear is whether masks, of which there are many types, will protect wearers against inhalation of the virus. Recent research at Cambridge University Hospitals NHS Foundation Trust has shown that the quality of masks that healthcare workers wear makes a huge difference to their risk of coronavirus infection. The research showed that wearing a high-grade mask known as an FFP3 (also called a respirator) can provide 100 per cent protection whereas there is a far greater chance of staff becoming infected if they wear a surgical mask.1

These results are not surprising since experiments performed more than 50 years ago at the Animal Virus Research Institute, now The Pirbright Institute, showed that only a very small amount of protection was provided by surgical or industrial masks, and none by paper masks, against the inhalation of virus associated with large airborne particles (16 microns in diameter). Based on those results it was proposed that ‘the only effective method of protection would be provided by respirators capable of trapping large and small particles’.2

This and the Cambridge data suggest wearing an FFP3 mask is advisable in any scenario where there is a risk of inhaling aerosols of coronavirus, particularly in poorly ventilated areas.

Alex I Donaldson, former head of the Institute for Animal Health
290 London Road, Burpham, Guildford, Surrey GU4 7LB
email: alex.donaldson3@virginmedia.com

References
1 Ferris M, Ferris R, Workman C, et al. FFP3 respirators protect healthcare workers against infection with SARS-CoV-2. Authorea June 24, 2021. doi: 10.22541/au.16245491.1172637231.v1
2 Sellers RF, Donaldson AI, Hemiman KA. Inhalation, persistence and dispersal of foot-and-mouth disease virus by man. J Hyg 1970;68:565–73

WILDLIFE

Botulism and Bisgaard taxon implicated in Arctic tern deaths in the UK

In 2016, the APHA Diseases of Wildlife Scheme (DoWS) investigated a mass mortality of Arctic terns (Sterna paradisaea) at a breeding site in north Wales where at least 800 birds of a colony of over 3800 breeding pairs died.

In 2019, the DoWS also investigated the deaths of 900 adult terns and over 1000 chicks at a breeding colony (1500–2500 pairs) in Northumbria. The findings, in particular the clinical signs, in both investigations indicated the involvement of avian botulism (Video 1). Botulinum C toxin was isolated from carcasses from the Welsh site, but no toxin was detected from tissues taken from the Northumbrian site.

Both sites have mixed species seabird communities; however, at both sites other species, including other species of tern, were not significantly affected; deaths occurred for several weeks; and at neither site did similar deaths recur the following year.

Avian influenza and West Nile viruses were excluded and there was no clear evidence at either site of significant starvation, predation, trauma or parasitism in the terns, or other species. Further examinations revealed histiological evidence of bacterial rhinitis with spread to the surrounding tissues in birds from Northumbria. From respiratory tracts, a Pasteurella-like bacterium, Bisgaard taxon 40 (BT40, 99.8 per cent match on partial 16S rRNA sequence analysis), was cultured from birds from the Welsh site and another Bisgaard taxon – Spirabilisibacterium mucosae (BT14, 98.8 per cent match on partial 16S rRNA sequence analysis) – was found at the Northumbrian site.

There are few published records of these bacteria; some are considered to be avian respiratory tract commensals. However, in the USA several mass mortality events in seabirds were recorded in 2016 (Jeffrey Lorch, personal communication) and in terns in 20183 where BT40 was the suspected causal agent.

Our findings suggest that the Welsh and Northumbrian Arctic tern mass mortalities shared common features; however, they may have had different aetiologies. Whether these incidents relate to the 2016 and 2018 US deaths is not known but we will attempt to compare isolates.

It is important to draw attention to these UK Arctic tern deaths because they were unusual with no known precedent, they involved significant losses at large breeding colonies and they may possibly involve a new pathogen or disease, concurrent with botulism. These events were transient in nature, occurring at a site during a single breeding season.

We would be grateful to be informed should similar incidents occur.

Letters are not peer-reviewed, unless stated

Video 1: Adult Arctic tern in a day roost area near the breeding colony. Several other healthy terns had just flown off. This bird was weak, unresponsive to human approach, with signs typical of avian botulism (not holding wings close to the body, mouth breathing) but not pathognomonic for the disease. The video can be viewed at bvajournals.onlinelibrary.wiley.com/toc/20427670/2021/189/2

These UK Arctic tern deaths were unusual with no known precedent... they may possibly involve a new pathogen or disease

VET RECORD | 24/31 July 2021

20/07/2021 12:29