



Association of Veterinary Consultants

COVID-19 in Animals

STaDG-ER 9.12.2020 – *Meredith Lloyd-Evans VetMB*
MAVC



AVC – role and activities

- All qualified veterinarians, almost 60 in number, international in geography and scope
- All working in small independent consultancies or SMEs
- Providing advice, practical assistance and support to enterprises such as feed additive, pharmaceutical, vaccines, food production companies & governments
- Organising laboratory, pre-clinical and clinical studies for new animal health and nutrition products
- Experienced with all types of animals including pets, farm, aquaculture and bees, epidemiology, disease management
- Some also involved in other aspects of applied biosciences eg human biotechnology, biomaterials, investment, market strategy, communication and education
- AVC is an Interested Party at EFSA, EMA and HMA and provides responses to consultations

AVC and Emerging Risks - Topics

SARS-CoV-2, cause of COVID-19, is also the cause of tremendous societal and economic disruption

In addition to humans, there is evidence that SARS-CoV-2 can infect domestic animals

Are pet and farm animals a significant and newly emerging hazard for humans? What risk identification and assessment actions might be needed, if so?

OIE World Animal Health Information Service

- Feb-Nov 2020 **dogs and cats**
 - Hong Kong, USA, Chile, Russia, UK, Japan, Brazil, Argentina
 - oronasal swabs (dogs), oronasal and rectal swabs (cats)
 - positive; variable seroconversion; variable disease signs - sneezing, ocular discharge, coughing or asymptomatic
 - source – owners with COVID-19
- April-Oct 2020 **zoo felids**
 - USA 3/3 lions, 4/5 tigers Bronx Zoo NY; USA 3 tigers Tennessee; South Africa: 1/2 pumas
 - cough, lethargy, wheezing
 - source – assumed from zookeepers
- July-Nov 2020 **commercial American mink**
 - USA 15 farms; France
 - respiratory disease, sudden death
 - 16,128/165,357 (10%25%-3%)
 - associated COVID-19 in farmworkers

https://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/WI

Denmark and mink

- April 2020, COVID-19 in mink and farm-worker in Netherlands
- April-Nov, COVID-19 in mink in Denmark, Sweden, Spain, Italy, USA
- June-Nov, Denmark, 214 human COVID-19 cases due to SARS-CoV-2 mink variants: Cluster 5 variant has spike-protein changes of theoretical concern
- Transmissibility seems no greater than other SARS-CoV-2
- Disease severity seems no greater
- ECDC concludes that risk to humans no different from previous strains – highest for medically-vulnerable people with occupational exposure
- 229 farms affected by Nov 2020, hence announcement 5.11.20 to cull all (>17M) mink
- Decision was rescinded 9.11.20, with many farmers already having killed their animals

ECDC Rapid Risk Assessment Detection of new SARS-CoV-2 variants related to mink 22 November 2020

Other refs

- China
 - 1,914 sera from 35 spp tested in ELISA for SARS-CoV-2 specific antibodies
 - Validation controls, SARS-CoV-2-infected mink, seropositive
 - **Pet and street dogs and cats seronegative**
 - **Pigs, sheep, cattle, horses, poultry seronegative**
 - **Mink, other mustelids, pangolins, wild boar also negative**
- Germany
 - Intranasal inoculation of fruit-bats, ferrets, pigs and chickens
 - **Pigs, chickens not susceptible**
- USA
 - **Asymptomatic infected cats can transmit SARS-CoV-2 to in-contact cats without producing disease**
 - Pig cells can support virus replication, **live pigs are not infected**

Deng Jh, Jin Yp et al. (2020) doi: 10.1111/tbed.13577; Schlottau K, Rissmann M et al. (2020) doi: 10.1016/S2666-5247(20)30089-6; Gaudreault NN, Trujillo JD et al. (2020) doi: 10.1080/22221751.2020.1833687; Meekins DA, Morozov I et al. (2020) doi: 10.1080/22221751.20201831405

ER Criteria

- **New Hazard**? YES: SARS-CoV-2 has emerged only since late 2019 and become global during 2020.
- **New or increased Exposure**? MAYBE: for mink farms. In other cases, direction of infection seems to be humans-to-animals, ie increased exposure for animals and not for humans.
- **New Susceptible Group**? YES: animal-operatives, animal-owners, pet and potentially farm animals.
- **New Drivers**? NO
- **Soundness of data**?: increasingly so; peer-reviewed papers and reviews available.
- **Severity**?: not in animals, not so far increased risk to humans.
- **Imminence**?: here now.
- **Scale**?: potentially huge, wrt pet-ownership in Europe and especially if, contrary to expectations, farm animals become a hazard.

Thoughts and recommendations

- Rapid, sensitive, discriminatory animal-side diagnostic needed for animals with respiratory disease: RA
- Surveillance programmes for dogs and cats in COVID-19 households, as in USA, South America: RA
- High alert needed for susceptibility of farm livestock, such as sheep, rabbits (also pet rabbits): RA
- Vaccines for susceptible animal species (currently mink, cats, felids) need development as rapidly as vaccines for humans: RM (in development in Russia for cats, dogs, mink)
- Masks and other protective gear inappropriate for animals (except horses and possibly dogs): RM
- Mass slaughter for mink? Or selective depopulation?: RM
- Euthanasia for cats? Or isolation & vaccination?: RM