

12TH CALL OIE AD HOC GROUP ON COVID-19 AT THE ANIMAL-HUMAN INTERFACE

26th January 2021

Participants: Billy Karesh (Chair OIE Wildlife Working Group), Thomas Mettenleiter (OIE CC, Germany), Dirk Pfeiffer (Hong Kong City University), Andrea Ellis and Primal Silva (CFIA, Canada), Casey Barton Behravesh (OIE CC, USA), Jane Rooney (USDA-APHIS, USA), Linfa Wang (Duke University, Singapore), Jean-Claude Manuguerra (OIE CC, France), Misheck Mulumba (OIE CC, South Africa), Hiroshi Kida (OIE CC, Japan), Ottorino Cosivi (PANAFTOSA/PAHO-WHO), Arjan Stegeman (University of Utrecht, Netherlands) Karl Stahl (SVA, Sweden), Sten Mortensen (SSI, Denmark), Zheng Zengren (OIE CC, China, and OIE SCAD), Ann Cullinane (OIE CC, Ireland, and OIE BSC), Nikolaus Kriz and Alessandro Broglia (Animal and Plant Health Unit, EFSA), David Robertson (Centre for Virus Research, University of Glasgow, UK), Sean Shadomy, Etienne Bonbon and Sophie VonDobschuetz (FAO), Stephane de la Roque (WHO), OIE Preparedness & Resilience, Science, Standards and WAHIAD Departments.

Agenda

1. Update on SARS-CoV-2 events in animals
2. Update on animal-human interface related research and animal/wildlife surveillance work
3. EFSA-ECDC recommendations on monitoring strategies in mink
4. Outputs of the 2nd meeting of the Informal Advisory Group on SARS-CoV-2 evolution in animals

Meeting notes

1. Update on SARS-CoV-2 events in animals

USA: The 8-member gorilla troop at the San Diego Zoo Safari Park is recovering well following the diagnosis of SARS-CoV-2 infection (B.1.429 lineage) in several troop members earlier in January. Some of animals had presented symptoms including mild coughing, congestion, nasal discharge and intermittent lethargy. These animals would be vaccinated with a recombinant purified spike protein vaccine intended for non-human use.

It was noted that the Wildlife Working Group has a longstanding discussion with the OIE about vaccination of endangered/highly valued animal species. Some countries have concerns about the use of vaccines for diseases that are not present in their farmed/domesticated animal populations because it may have implications for disease freedom in relation to trade. It is hoped that the current situation sheds light on the topic and emphasizes the importance of vaccinating endangered/highly valued animal species.

2. Update on animal-human interface related research and animal/wildlife surveillance work

Many countries are doing active surveillance of their domestic, wild and farmed animal populations. The group stressed the importance of coordinating research to avoid duplication of work and ensure good scientific coverage. Considering the increase in new variants of SARS-CoV-2 in the human population, the Group deemed that it would be important to know how these viral adaptations affect the virus' ability to infect susceptible animal species. This work is starting *in vitro* in some laboratories – if it is found that the mutations in the human variants affect animal susceptibility, the animal infection experiments should be repeated. It is important to acknowledge that having a compatible ACE2 receptor is not the sole condition for SARS-CoV-2 to infect a certain animal species – animal-specific factors come into play. The Group recommended OIE Members to remain vigilant with regards to new animal variants and to share sequence data on publicly available platforms.

The group received an update on recent genomic research into the origins of SARS-CoV-2 virus. It was highlighted that despite the relative genetic similarity between RatG13 and RmYN02 viruses and SARS-CoV-2, as sister members of the nCoV lineage, RatG13 and RmYN02 are not direct ancestral viruses of SARS-CoV-2; decades have passed since they evolved from a common ancestor. The same is true for other recombinant viruses that were detected in Eastern China by sampling different bat species. Closely related recombinants are found in different bat species, their common ancestors separated by long periods of time. It is thought that the next step in this field of research could be to focus on sampling subspecies of bats, over a broader geographic range in China (<https://doi.org/10.1101/2021.01.22.427830>) and Southeast Asia, considering host range and geography.

A paper reporting molecular and serological evidence of SARS-CoV-2 related coronaviruses actively circulating in bats in Thailand and Southeast Asia will be published shortly and another focussed on Cambodia has just been made available <https://doi.org/10.1101/2021.01.26.428212>

A recent pre-print indicated that White-Tailed Deer (WTD) are susceptible to infection with SARS-CoV-2 and could transmit the virus to other WTD. Based on the results of this initial study in WTD, additional research is planned to determine whether adult WTD can also be infected and shed SARS-CoV-2, the contact distance required for other animals to be infected, and the duration that infected animals can shed the virus.

In South Africa, funding has been granted to conduct an experimental infection study on local breeds of pigs.

In the USA, 111 animals (pets, zoo animals and one wild-caught mink) have tested positive to SARS-CoV-2 infection. CDC and USDA are working closely to conduct sequencing of animal isolates and of the humans that care for them.

In Denmark, wild animals in areas with infected mink farms were trapped and tested without finding any positives. 101 minks, 113 foxes, 12 racoon dogs, 33 stray cats were all negative.

In Brazil, researchers have been trapping *Desmodus rotundus* (common vampire bat) for antigen detection from an area of the Amazon with high SARS-CoV-2 incidence in humans. The testing will start shortly.

3. EFSA-ECDC recommendations on monitoring strategies in mink

Two members of the Animal and Plant Health Unit of the European Food Safety Authority (EFSA) joined the meeting to present EFSA's recommendations on monitoring strategies in mink. This work was requested by members of the European Union (EU) with the objective of harmonizing monitoring strategies for mustelids at EU-level. The main focus of the recommendations is to establish early warning systems at farm level in order to contain the virus spread in and between mink farms. It is intended that mink are tested upon detection of clinical signs/production losses and that positive samples are sequenced to learn more about viral evolution. Wild mustelids are also covered by these recommendations – trapping around the premises of the farms should be conducted to assess if wild animals could possibly be carrying the virus out of the farm area.

4. Outputs of the meeting of the FAO-OIE Informal Advisory Group on SARS-CoV-2 evolution in animals

The Chair of the FAO-OIE Informal Advisory Group on SARS-CoV-2 evolution in animals joined the meeting to provide an update on the 2nd meeting of the advisory group, which had taken place during the previous week. The Advisory Group reaffirmed the importance of testing archived sera of species known or suspected to be susceptible to SARS-CoV-2 infection, especially in Southeast Asia, as well as sampling wild animals confiscated from illegal trade operations. While passive surveillance of animal populations would be enough for now (except for mink, where active surveillance is desirable) to detect eventual onwards transmission and establishment of host pools, the case of wildlife is different. The Group defended that it is crucial that a strategy is implemented to sample wild animals held in confiscation centres. The latter would clarify questions related to SARS-CoV-2 persistence in wildlife and viral evolution. Up to now, any virus detected in companion animals (except for mink) has been virtually identical to those found in humans. Therefore, the Advisory Group affirmed that it should be studied how many species of mink there are, how many production types, and how do those factors affect susceptibility.

The next call of this AHG will take place on the 2nd March 2021.