

11TH CALL OIE AD HOC GROUP ON COVID-19 AT THE ANIMAL-HUMAN INTERFACE

15th December 2020

Participants: Billy Karesh (Chair OIE Wildlife Working Group), Thomas Mettenleiter (OIE CC, Germany), Dirk Pfeiffer (Hong Kong City University), Andrea Ellis, Primal Silva and Bradley Pickering (CFIA, Canada), Casey Barton Behravesh (OIE CC, USA), Jane Rooney (USDA-APHIS, USA), Linfa Wang (Duke University, Singapore), Malik Peiris (HKU), Jean-Claude Manuguerra (OIE CC, France), Misheck Mulumba (OIE CC, South Africa), Marco Vigilato (PANAFTOSA/PAHO-WHO), Arjan Stegeman (University of Utrecht, Netherlands) Karl Stahl (SVA, Sweden), Nikita Lebedev and Artem Metlin (Federal Veterinary and Phytosanitary Service, and Federal Centre for Animal Health, ARRIAH, Russia, respectively), Ann Cullinane (OIE CC, Ireland, and OIE BSC), 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 work
3. Outputs of the meeting of the Informal Advisory Group on SARS-CoV-2 evolution in animals
4. Follow-up on the bio-detector discussion

Meeting notes

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

USA: Cases of mink infected with SARS-CoV-2 have been detected in a total of 16 farms in the country. Human COVID-19 cases were the likely source of SARS-CoV-2 introduction on all affected farms. On all farms, except the last farm detected in Oregon, there were increased mink mortalities over a one week period, and animals had clinical signs consistent with SARS-CoV-2 for multiple weeks after the initial mortality event. Additional investigations are ongoing to assess length of viral shedding on mink farms. For the Oregon farm, people associated with the farm reported human COVID-19 cases to state authorities who then tested mink and confirmed SARS-CoV-2 in mink; these mink did not have a mortality event and only a few exhibited mild illness. A wild mink infected with SARS-CoV-2 was recently trapped by USDA APHIS Wildlife Services staff performing active surveillance around an infected farm. Genetic analysis of the mink provided evidence that it was a wild mink and not one that escaped from a nearby farm. Snow leopards in a zoo have also been found to be infected with SARS-CoV-2. These animals seem to have been infected through an asymptomatic keeper with COVID-19. CDC and USDA are collaborating to sequence samples from people and animals from affected U.S. mink farms including people working on mink farms, people in surrounding communities, mink, and other animals associated with farms.

Canada: Cases of mink infected with SARS-CoV-2 were detected in one farm in Fraser Valley, British Columbia. Canada has 70 mink farms. It appears that the virus was transmitted to mink by sick workers. Genetic sequencing has shown that the virus circulating in mink was close to the early European isolates. Pelting has been halted while risk mitigation measures are being studied.

Netherlands: The pelting of the last Dutch mink had been concluded during the previous week. The mink farming industry was therefore terminated in the country. This termination was made effective earlier than the January 2024 deadline that had been set before the COVID-19 pandemic.

Russia: In the context of active surveillance, during the month of December 2020, 1088 samples from mink, ferrets, and sable coming from various regions within the country were tested for SARS-CoV-2. All samples were RT-PCR negative. From June to November 2020, 177 samples from different animal species (dogs, cats, hedgehogs) were tested and only 2 cats were found to be positive.

Sweden: 13 out of the 34 mink farms in the country were affected by SARS-CoV-2. The majority of these farms is located in the same region, which is densely populated with mink farms. The Swedish Authorities have decided not to cull the animals in any farm and have proceeded with pelting, which has been almost finalized. There are discussions on how to proceed during the breeding season, in Spring, but no decision has been taken thus far. In neighboring Denmark, all infected herds had been culled and all remaining (non-infected) herds were pelted.

None of the participating experts could provide information related to active surveillance of SARS-CoV-2 in mink and other highly susceptible animal species in Asia.

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

Russia: a vaccine to be used in mink, cats and other animals is undergoing clinical trials in mink, ferrets, cats, and dogs. This is an inactivated vaccine, which will be submitted for registration in Russia in early 2021. RT-PCR test kits for use in animals have been developed by ARRIAH (Vladimir) and VGNKI (Moscow) and distributed to veterinary laboratories in Russia.

Zoetis: a veterinary vaccine (for use in mink, cats, and dogs) and three diagnostic tests (PCR, lateral flow and ELISA) all using a recombinant SARS-CoV-2 spike protein were presented to the group.

The group discussed the development and use of SARS-CoV-2 vaccines in animals. SARS-CoV-2 vaccines have potential public and animal health benefits by reducing the risk of SARS-CoV-2 reservoirs becoming established in animals, protecting endangered or high value animals, protecting the mink farming industry, preventing potential animal-to-human transmission in settings with vulnerable humans, and preventing interspecies transmission in settings where many animal species are artificially gathered. Queries were raised about the size of the market for animal vaccines, the inexistence of a DIVA vaccine, and the necessity to vaccinate companion animals as they do not play a significant epidemiological role in the COVID-19 pandemic and there are no reports of infection of humans by companion animals.

From the discussion, it appeared that there are arguments for vaccinating animals in certain situations, for example if they have the potential to become a reservoir, to play a role in recombination events, or are endangered or high value. There may also be a role for animal vaccines in settings where vulnerable people are exposed to susceptible animals.

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

The FAO-OIE Informal Advisory Group on SARS-CoV-2 evolution in animals had met during the previous week. The group shall operate as a joint Advisory Group to FAO and OIE and will not duplicate the work of WHO's viral evolution group but rather work in synergy with it. The Terms of Reference for the Group are:

- 1- Advise FAO and OIE on risks related to the evolution of SARS-CoV-2 (through mutation or recombination) in animal populations, specifically:
 - a. List knowledge gaps and priority research areas in relation to SARS-CoV-2 viral evolution, thereby contributing to the R&D Blueprint

- b. Monitor, review, assess the latest information in relation to SARS-CoV-2 viral evolution in all animals, focusing on animal infection resulting from human-to-animal transmission and considering both spillover events and long-term transmission and establishment of viral circulation.
- c. Collate and synthesize a list of mutations observed in SARS-CoV-2 in animals.

2- Liaise with the WHO viral evolution group

During the first discussion, the group discussed the latest findings and noted that none of the mutations found thus far in animals has been shown to impact vaccination efficacy. The group's recommendations included performing structured targeted active surveillance in species known to be highly susceptible to SARS-CoV-2, doing whole genome sequencing of viruses found in these species, and sharing sequences and reagents amongst countries. Serological surveillance should also play a role in the strategy in order to have a retroactive picture of the animal health situation, and to not raise premature concerns that may arise from molecular findings.

4. Follow-up on the bio-detector discussion

WHO is evaluating the best way of engaging the public health sector with the work being done by teams that train dogs to detect SARS-CoV-2. A one pager is circulating internally in an attempt to gather will to fund biodetector activities, such as the development and publication of a standard for training of these dogs, that would ensure that different people using the same training method would achieve the same results. This is considered to be a great example of the One Health approach.

The next call of this AHG will take place on the 26th January 2021.