10TH CALL OIE *AD HOC* GROUP ON COVID-19 AT THE ANIMAL-HUMAN INTERFACE

10th November 2020

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Agenda

1. Use of biodetector dogs to identify SARS-CoV-2 infections in humans
2. Update on SARS-CoV-2 events in animals
3. Presentation of the draft OIE Guidance on working with farmed animals of species susceptible to infection with SARS-CoV-2
4. Update on animal-human interface related research and animal/wildlife work – WHO call for proposals for human-animal interface research

Meeting notes

1. Use of dogs to detect SARS-CoV-2 infections in humans

Anna Hielm-Bjorkman (Helsinki University), James Logan (London School of Hygiene and Tropical Medicine) and Claire Guest (Medical Detection Dogs) joined the group to share their experience training and using biodetector dogs to identify SARS-CoV-2 infected humans. Preliminary results are encouraging; trained dogs have been able to discriminate between samples from infected and non-infected humans with very high sensitivity. The use of biodetector dogs has several advantages – it is less invasive and causes no discomfort compared with diagnostic tests; it does not involve close contact or handling of samples (less biosafety risk); large numbers of individuals can be screened quickly; it can be cost effective. However, it is important that standardised methodologies for training and using biodetector dogs are implemented to ensure optimal results and welfare. Applications include, at care homes, borders, airports, schools, mass gatherings. (Sources: 10.1186/s12879-020-05281-3 and https://doi.org/10.1101/2020.06.03.132134) Results from peer reviewed studies with a larger sample size are expected soon

Action: OIE to follow up with WHO, CFIA (who raised the issue to the group) and the researchers on possibilities for collaboration, including on guidance on standardized approaches/methodology to using biodetector dogs, networks for sharing validation data etc.

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

Denmark: To date, mink in 237 out of 1500 farms have been infected with SARS-CoV-2. A culling policy was implemented and to date mink in 116 out of 237 infected farms have been culled. Pelting on infected farms has been prohibited due to occupational risk for COVID-19 infection and the lack of a market for the pelts. The Danish Government has halted mink production.

Surveillance is underway on all mink farms in the country (twice per week in affected areas and once per week in unaffected areas) and involves close collaboration with public health authorities. Surveillance involves 1. testing mink farms where public health authorities have established contact with a human case; 2. testing animals found dead; 3. clinical surveillance. It is important to note that SARS-CoV-2 transmission has occurred before signs were evident. Therefore, people and other farms have been exposed before the authorities had realised there was a problem. On infected farms studies have shown environmental contamination to be high.

Recently a variant virus strain was detected in mink. This variant falls into 'cluster 5' and is characterized by 4 mutations and a deletion in the region of the genome coding for the spike protein. The mutations are thought to be a result of the SARS-CoV-2 virus adapting to a new host. There has been concern about implications for vaccine strategies because human convalescent sera had a reduced neutralizing effect against this variant compared with other SARS-CoV-2 viruses circulating in humans. The virus variant had been introduced to humans resulting in community spread (204 cases with 'cluster 5' SARS-CoV-2 to date).

Netherlands: there is ongoing transmission in the area of the country where most of the mink farms are located, despite a policy of culling of mink in affected farms. In this area, the same virus clusters have been circulating since June. So far, there is no record of mink infection in other areas of Netherlands nor record of mink variant viruses being detected in the human population. The cluster 5 variant of SARS-CoV-2 has not been detected in the Netherlands. Mink farming in the Netherlands will be prohibited at the end of the current pelting season instead.

USA: the US fur industry is smaller than in parts of Europe and Asia and there is a lower density of mink farms in the USA. To date, SARS-CoV-2 infection has been detected in 15 farms in 3 states. USDA and CDC are closely collaborating. In the USA there is no policy to cull animals on infected mink farms. On infected farms 20-50% mortality has been seen at the peak die-off period; widespread infection occurs in the farmed mink (confirmed by PCR and serology); on some farms with repeated sampling over time, mink were still PCR positive for at least 9 weeks after their initial onset of clinical signs. Cats and dogs also tested positive for SARS-CoV-2 on infected mink farms. So far, whole genome sequencing of SARS-CoV-2 isolates from mink did not identify the same collection of mutations found in Denmark and The Netherlands. Investigations of affected mink farms are ongoing.

Sweden: Since May the Veterinary Services have asked the fur industry to be vigilant. Active surveillance started in October 2020 and involved testing dead mink; it took only a few days before the first case was detected. There are about 40 mink farms in Sweden, it is a small industry, but it is densely concentrated in the south of the country. Sweden is not implementing a policy of culling infected mink farms, rather they will continue with killing and pelting (starting this week). This will rapidly reduce numbers of mink. The virus isolated are being sequenced and scientists are alert for genetic changes. No changes to the region of the genome coding for the spike protein have been detected.

Points from the discussion

- Communication can be complicated with different countries applying various policies in response to SARS-CoV-2 infection in mink.

- Culled carcasses are often sent for rendering – byproducts are thought to be safe if the virus is destroyed by the rendering process.
- Currently there does not appear to be a standardized system of nomenclature for different virus clades.
- Countries should be encouraged to do full genome sequencing on isolates from mink and other animals.
- Sharing of isolates to test against different sera should be encouraged.

Actions:

- OIE to promote active monitoring of mink (also considering other susceptible fur animals such as racoon dogs), risk mitigation to avoid transmission between mink and humans, and reporting of positive cases to OIE in line with reporting requirements as an emerging disease.
- OIE to gather information about surveillance being done in other OIE Members with large fur farming, where populations of mink and racoon dogs exist.
- Encourage OIE Members to share virus isolates.
- Organize a Group to discuss surveillance, antigen profiling, and antigen cartography.

3. Presentation of the draft OIE Guidance on working with farmed animals of species susceptible to infection with SARS-CoV-2

The draft Guidance was presented to the Group by the Chair of the sub-Group that worked on its development. The Group agreed that an early release was the best option considering the growing interest that outbreaks in mink farms were raising. The Group emphasized the point that outbreaks in mink populations easily go unnoticed and that the virus is circulating among these animal populations long before the first additional deaths are noticed. The Group debated the risk associated with the virus that is present in pelts and carcasses. Since the persistence of the virus largely depends on how these commodities are preserved, it is not possible to make an all-encompassing risk statement at this point. The Guidance will be revised and re-published this week. However, it will remain a living document.

4. Update on animal-human interface related research and animal/wildlife work – WHO call for proposals for human-animal interface research

WHO updated the Group on the result of the call for proposals for human-animal interface research that had been released in September. The contribution of this Group to the WHO R&D Blueprint for COVID-19 resulted in a list of priorities for human-animal interface research being identified in February and consolidated in July. In the scope of these priorities, a list of proposals was reviewed. 18 proposals will be supported through this initiative. There is limited time for implementation of these 18 projects, which, for now, should be implemented before the end of December 2020. The 18 projects fall into one of the following categories: animal susceptibility to infection (about half of the projects), retrospective studies, active surveillance, environmental studies and food value chain (persistence in different conditions, etc.).

The next call of the AHG will take place on a date to be determined in December.