

Briefing note: Briefing note: SARS-CoV-2 in animals and food

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Although the COVID-19 pandemic started with the transmission of the SARS-CoV-2 from an animal to humans, the transmission is now from human to human with no evidences to date of human-to-animal or animal-to-human transmission. Scientists are continuing their effort to find out which mammal (bat, pangolin or other) started the epidemic and to determine the current role animals play in the transmission of the SARS-CoV-2 to humans. Based on currently available data, transmission to humans of this virus from pets appears unlikely. Some precautions are recommended to avoid transmission from humans to pets, even if deemed unlikely. No case of SARS-CoV-2 infection has been reported in livestock. Regarding wildlife, very little data is available.

Current testing methods to detect the virus are based on molecular analysis by PCR. Routine animal testing for SARS-CoV-2 is currently not recommended because the disease appears to be transmitted primarily human-to-human and not through animal contact. Thus, *Centers For Disease Control and Prevention* and the Canadian Food Inspection Agency state that it is not currently clinically relevant to test SARS-CoV-2 in pets or other animals.

Birds

Birds are naturally infected by several avian coronaviruses; those viruses are delta and gamma coronaviruses and it is well known that they do not affect mammals, including humans. The other coronaviruses are alpha and beta coronaviruses and they infect only mammals. The SARS-CoV-2 being a betacoronavirus, it is unlikely that birds will be infected by this virus from an infected human. A mutation allowing a spill over between mammals and birds is still possible, but the risk of human infection from birds remain closed to zero for the moment.

Consequently, there appears to be very little risk that COVID-19 can be carried north by geese.

Mammals

The results of a study in China revealed that cats and ferrets could be infected experimentally, but pigs, ducks and chickens were not susceptible to the infection, while dogs had low susceptibility. This study should be interpreted with caution due to its methodology (high infectious dose for animals and small sample size) and the results should not be extrapolated to a naturally acquired infection.

For the moment, there have been very few reports of domestic animals infected with SARS-CoV-2 worldwide: two dogs and a cat showing no clinical signs, in addition to a cat which has developed symptoms of the disease. All of these animals were in close contact with an infected person.

A tiger in the United States has also tested positive after showing clinical signs and appears to have been infected by a zookeeper. This would seem to indicate that human-to-animal transmission is possible, but there is no evidence that the reverse (animal-to-human transmission) exists at this time.

Concerning animals belonging to infected individuals, the recommendations based on the precautionary principle are to limit contact with their animals. Whenever possible, it is suggested that these animals be taken care of by another member of the household. If this is not possible, it is recommended to avoid kissing, petting, sharing food, etc. with these animals and wash hands thoroughly before and after giving basic care.

Therefore, with the evidence currently available, there appears to be a very low risk of transmission from wildlife to humans. No information is available on arctic wildlife so the situation is in constant evolution and information could be added as new data become available.

Risks of SARS-CoV-2 contamination through country food

The coronavirus cannot grow on food. However, “it is possible to contract COVID-19 by touching a surface or object where the virus is found and then by bringing your hand to your mouth, nose or eyes, but this is not the primary means of transmission

(https://www.mapaq.gouv.qc.ca/SiteCollectionDocuments/Avis_publicite/English_Questions-ReponseclienteleMAPAQ.pdf)”

A person infected with SARS-CoV-2 could contaminate country food or food in general by touching it with hands contaminated with the virus, or by coughing or sneezing on the food. Therefore, people who tested positive for SARS-CoV-2, people who have cold-like or flu-like symptoms or people who are in isolation following contact with a positive case of SARS-CoV-2 should not manipulate, cut, prepare or distribute food to other people in the community.

Other persons should follow basic rules of hygiene while manipulating meat, fish and food in general, such as:

- Coughing or sneezing into their elbow
- Washing hands before cutting meat and before eating
- Cleaning and sanitizing the butchering surface as well as tools used to cut the meat

Additional resources:

AVMA, SARS-CoV-2 in animals, including pets: <https://www.avma.org/resources-tools/animal-health-and-welfare/covid-19/sars-cov-2-animals-including-pets>

Canadian Poultry, Ask the Vet: COVID-19 and poultry: <https://www.canadianpoultrymag.com/faqs-about-covid-19-and-poultry/>

CDC, COVID-19 if you have animal: <https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html>

CFIA, Coronavirus (COVID-19) : <https://www.canadianveterinarians.net/coronavirus-covid-19>

OIE, Questions and Answers on the 2019 Coronavirus Disease (COVID-19):

<https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/>

OMVQ, COVID-19 : soyons vigilants avec nos animaux : <https://www.omvq.gc.ca/l-ordre/nouvelles-et-evenements/2372-covid-19-soyons-vigilants-avec-nos-animaux.html>

<https://www.inspq.gc.ca/sites/default/files/covid/2952-transformation-alimentaire-covid19.pdf>

https://www.mapaq.gouv.qc.ca/fr/Publications/Fiche_Gibier_public_web.pdf

<https://www.quebec.ca/sante/problemes-de-sante/a-z/coronavirus-2019/reponses-questions-coronavirus-covid19/isolement-symptomes-traitements-covid-19/#c52311>