



United States Department of Agriculture

Animal and Plant  
Health Inspection  
Service

Veterinary Services

June 2021

## SARS-CoV-2

### Case Definition – June 11, 2021 *Subject to change as situation evolves*

#### (Notifiable Emerging Disease)

#### 1. General Disease/Pathogen Information

**1.1** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes the disease known as COVID-19 in humans, is an enveloped, positive sense, single-stranded RNA virus that belongs to the family Coronaviridae. Based on phylogenetic analyses, SARS-CoV-2 is currently believed to have originated from an animal host; however, investigations into the origins of SARS-CoV-2 are ongoing. Since the introduction of SARS-CoV-2 into human populations, the COVID-19 pandemic has been driven by person-to-person spread. Based on the information available, the risk of animals spreading the virus to people is considered to be low; however, SARS-CoV-2 spread from an infected person to several animal species has been documented.<sup>1</sup>

**1.2 Clinical Signs:** The clinical spectrum of illness in animals infected with SARS-CoV-2 is still being defined. Some infected animals may show signs of illness, while others may not. When present, clinical signs may include a combination of the following:<sup>2</sup>

- Fever
- Coughing
- Difficulty breathing or shortness of breath
- Lethargy
- Sneezing
- Nasal discharge
- Ocular discharge
- Vomiting
- Diarrhea

**2. Laboratory criteria:** The decision to test any animal for the SARS-CoV-2 virus will be made collaboratively between local, state, or federal public health and animal health officials<sup>3</sup>, and/or between federal agencies<sup>4</sup>, using a One Health approach. SARS-CoV-2 is an OIE reportable disease in animals. The USDA APHIS VS National Veterinary Services Laboratories (NVSL) performs confirmatory testing of SARS-CoV-2 infection in animals<sup>5</sup>.

**2.1 PCR:** Detection of genetic material of SARS-CoV-2 on a quantitative PCR assay using manufacturer's standards for identifying a cutoff cycle threshold (Ct) value. Nasal,

<sup>1</sup> For more information see the [OIE COVID-19 Q&A](#)

<sup>2</sup> For more information see [CDC COVID-19 and Animals](#)

<sup>3</sup> For more information see [FAQ for State Animal and Public Health Officials on Animal Coronavirus Testing](#)

<sup>4</sup> Federal officials will consult on decisions concerning animals maintained in federal facilities or on federal lands.

<sup>5</sup> For more information see [USDA One Health](#)

oral, and rectal/fecal swabs are recommended per OIE. Store nasal, oral, and rectal swabs in separate vials of viral transport media and maintain the cold chain at 2-8°C.

**2.2 Serology:** Detection of antibodies against SARS-CoV-2 in an unvaccinated animal.

Blood samples may be collected; remove from clot prior to storage. Serum may be frozen at -20°C.

**2.3 Virus characterization:** Genomic sequence generated either directly from diagnostic sample or from virus isolate.

### **3. Case definition and reporting criteria\***

**3.1 Suspect case:** Animal determined to have an epidemiologic link with a confirmed human COVID-19 patient, SARS-CoV-2 infected animal, or other exposure of public and animal health concern OR the detection of SARS-CoV-2 antibody by a test intended for use in that species. If the animal is clinically ill, with the above exposures, other potential causes of illness should be ruled out by a veterinarian.

**3.2 Presumptive positive case:** Nasal, oral, or rectal swabs, tissues, or fecal samples from an animal tests positive by a real-time RT-PCR assay developed specifically for SARS-CoV-2.

**3.3 Confirmed positive case<sup>6</sup>:** A suspect or presumptive positive case as above with: sequence confirmation of virus either a) direct from nasal, oral, or rectal swabs, tissues, or fecal samples from an animal with SARS-CoV-2 or b) from virus isolate or from SARS-CoV-2 virus recovered from the animal,

OR

an animal with demonstrated SARS-CoV-2 neutralizing antibody.

**3.3.1** An animal **may** be excluded as a confirmed case after review of all available case information if any of the following applies:

- An alternative diagnosis can explain the illness fully.<sup>7</sup>
- Antibody to SARS-CoV-2 is undetectable in a serum specimen obtained at least 14 days after initial test or onset of illness.
- Test result(s) are poorly or not repeatable and resampling is either not possible or testing from resampling is negative.

\*Additionally, given the emerging nature of SARS-CoV-2 and the speed at which tests have been developed, laboratories should select test(s) appropriate for the sample type and interpret results in the context of all available information for each case. Collection of additional sample(s) from the animal and testing for virus neutralizing antibody is

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<sup>6</sup> **All confirmatory testing is currently conducted at NVSL**

<sup>7</sup> Factors that may be considered when assigning alternate diagnoses include the strength of the epidemiologic evidence for SARS-CoV-2 exposure, the specificity of the alternate diagnostic test, and the compatibility of the clinical presentation and course of illness for the alternative diagnosis.

recommended where test result(s) are poorly repeatable and/or approach the limit of detection for an assay.