



## Coronaviruses in domestic species (Updated February 18, 2020)

### Note

The [WHO](#), [FAO](#), and [CDC](#) indicate that [pets and other domestic animals](#) are not considered at risk for contacting COVID-19 or transmitting the virus that causes COVID-19 (also known as 2019-nCoV).

The USDA has recently commented on the impact of COVID-19 on [U.S. agricultural trade](#).

### Taxonomy

- The [Coronaviridae](#) family gets its name, in part, because the virus surface is surrounded by a ring of projecting proteins that appear like a solar corona when viewed through an electron microscope.
- The main Coronaviridae subfamily is subdivided into alpha- (formerly referred to as type 1 or phylogroup 1), beta- (formerly referred to as type 2 or phylogroup 2), delta-, and gammacoronavirus genera.
- Coronaviruses have been isolated from dogs, cats, horses, cattle, swine, chickens, turkeys, and humans with clinical signs of disease. Most of these diseases are gastrointestinal or respiratory, but encephalomyelitis has been reported as occurring in pigs. A brief summary of these diseases by species can be found below the table.

### Coronaviruses recognized in domestic animals

Host	Genus	Virus - Disease	Organ system	USDA licensed vaccine	
Dog	Alpha	CCoV - <a href="#">Canine coronavirus</a>	Enteric	<a href="#">Yes</a>	
Cat	Alpha	FECV - <a href="#">Feline enteric coronavirus</a>	Enteric	<a href="#">No</a>	
		FIPV-FIP	Systemic	<a href="#">Yes<sup>1</sup></a>	
Horse	Beta	ECoV - <a href="#">Equine coronavirus</a>	Enteric	<a href="#">No</a>	
Cattle	Beta	BCoV - Calf diarrhea	Enteric	<a href="#">Yes</a>	
		<a href="#">Winter dysentery</a>	Enteric		
Swine	Alpha	BRD	Respiratory		
		PEDV - <a href="#">Porcine epidemic diarrhea virus</a>	Enteric		
		TGEV - <a href="#">Transmissible gastroenteritis virus</a>	Enteric	<a href="#">Yes</a>	
		PRCV - <a href="#">Porcine respiratory coronavirus</a>	Respiratory		
Chickens	Beta	PHEV - <a href="#">Porcine hemagglutinating encephalomyelitis virus</a>			
		Delta	PorCoV - <a href="#">Porcine coronavirus</a>	Enteric	
		Gamma	IBV - <a href="#">Avian infectious bronchitis virus</a>	Respiratory	<a href="#">Yes</a>
Turkeys	Gamma	Bluecomb - <a href="#">Turkey coronavirus</a>	Enteric	<a href="#">No</a>	

<sup>1</sup> Not recommended by the AAFP for administration. See species notes later in document

## Dogs and cats

- Canine enteric coronavirus typically causes mild [gastro-intestinal clinical signs](#).
- Although [feline](#) enteric coronavirus generally results in infections without clinical signs, it can cause mild diarrhea. Veterinarians will also that recognize changes in FCoV can give rise to development of a serious and almost always fatal disease—feline infectious peritonitis (FIP).
- Therapy for CCoV- and FCoV-associated gastroenteritis is mainly supportive, including administration of maintenance fluids and electrolytes.
- The USDA has licensed multiple vaccines against [canine coronavirus](#), and in the United States, vaccination of dogs is recommended as part of a core canine immunization strategy. [There is also one USDA-licensed FIP vaccine](#); however, it is not generally recommended by the American Association of Feline Practitioners Feline Vaccine Advisory Panel because its effectiveness may be minimal.
- In recent years, a betacoronavirus (canine respiratory corona virus [[CRCoV](#)]) has also been reported in some dogs presenting with the respiratory disease commonly referred to as “kennel cough.”

## Horses

- Equine coronavirus typically presents with fever, inappetence, colic, and occasionally diarrhea.
- An incubation period of two to four days, and a shedding period of up to 21 days, have been reported.
- Supportive care is the primary therapy.

## Cattle

- Bovine coronaviruses have been associated with calf diarrhea, winter dysentery, and the bovine respiratory disease complex.
- Winter dysentery typically presents as diarrhea, anorexia, and depression with mild respiratory signs. Recovery is normally seen in a few days.

## Swine

- Five coronavirus-associated diseases have been reported in swine: porcine epidemic diarrhea virus (PEDV), transmissible gastroenteritis virus (TGEV), porcine coronavirus (PorCoV), porcine respiratory coronavirus (PRCoV), and porcine hemagglutinating encephalomyelitis virus (PHEV).
- Pigs with PEDV, TGEV, and PorCoV typically present with gastrointestinal signs. PEDV is associated with vomiting, diarrhea, and death in 50-100% of affected piglets. Mortality in adult pigs is uncommon. TGEV also causes vomiting and diarrhea in young pigs, with less severe signs in adults and pigs more than 4 weeks of age.
- Pigs with PRCoV typically present with mild respiratory disease. Although a vaccine has been described, humoral immunity is not long-lasting. Viral shedding often peaks after two to four days and has been detected for 10 days after infection.
- Pigs with PEHV also present with vomiting and wasting, but PEHV may also cause encephalomyelitis, especially in pigs younger than 4 weeks old.

## Chickens

- Infectious bronchitis in chickens typically presents with respiratory signs, reduced production, and occasionally nephritis.
- Live and killed vaccines may not provide protection from the disease strain.

## Turkeys

- Turkeys affected with coronavirus typically present with depression, anorexia, diarrhea, and reduced weight gain.
- Vaccines are not available.
- Premises should be disinfected and kept free of new birds for at least three weeks.

## Humans

- Seven coronaviruses that can infect people have been reported by the [CDC](#).
- Four common human coronaviruses—two alphacoronaviruses and two betacoronaviruses—commonly occur in people around the world and typically result in clinical signs consistent with the common cold.
- Three other human betacoronaviruses have recently been identified: Middle East respiratory syndrome coronavirus ([MERS-CoV](#)), severe acute respiratory syndrome coronavirus ([SARS-CoV](#)), and most recently the [COVID-19](#) virus .
- The genetic sequences of these [three newer human coronaviruses are most closely related to bat coronaviruses](#); none are closely related to either CCoV or FCoV.

## Additional information

Dogs and cats	<a href="#">AAHA</a>	<a href="#">AAFP</a>
Chickens and turkeys	<a href="#">AAAP</a>	
Horses	<a href="#">AAEP</a>	
Cattle	<a href="#">AABP</a>	
Swine	<a href="#">AASV swine information library catalog</a>	