

New test can diagnose emerging strains of canine parvovirus

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The Kansas State Veterinary Diagnostic Laboratory has developed a diagnostic test that can detect emerging strains of canine parvovirus, a severe -- and potentially fatal -- virus that affects dogs. Credit: Kansas State University Photo Services

A new test developed at the Kansas State University Diagnostic Laboratory is leading to earlier detection of a severe — and potentially fatal—virus that affects dogs, especially puppies.

Canine parvovirus is a highly contagious worldwide disease that involves both domestic and wild canines. It can be fatal in immunocompromised dogs or puppies that have not yet been vaccinated, said Richard Oberst, professor of diagnostic medicine and director of the Molecular Diagnostic Laboratory in the Kansas State Veterinary Diagnostic Laboratory.

The molecular diagnostics team has developed a newer, more effective [test](#) that can detect an emerging 2c strain of the virus while simultaneously detecting existing 2a and 2b strains.

"Canine parvovirus is a very severe disease,"

Oberst said. "Usually dogs who have canine parvovirus are already immune suppressed, not only because of their young age and having immature immune systems, but also because of having intestinal parasites."

Canine parvovirus causes hemorrhagic enteritis resulting in [bloody diarrhea](#) several days after exposure to the virus. It spreads from dog to dog through contact with feces. The virus infects lymphocytes and causes immune suppression, Oberst said, but it also can cause dogs to bleed to death through their intestines.

A major worldwide parvovirus outbreak occurred in the 1970s and involved a pathogenic form of the virus that killed many dogs. Since the 1970s, the virus has evolved into the type 2a and type 2b strains found around the world, Oberst said. A type 2c has recently emerged, too.

"While parvovirus doesn't seem to be causing quite the same widespread outbreaks that we saw in the 1970s, a lot of dogs are still infected and coming down with the disease," Oberst said.

Often, survival rates depend on how quickly and accurately the virus is detected. Commercial tests for veterinarians are not as effective at detecting newer strains of the 2c virus, Oberst said, and have resulted in some false negative results.

Jianfa Bai, assistant professor of diagnostic medicine, and collaborators at the Kansas State Veterinary Diagnostic Laboratory developed a real-time polymerase chain reaction, or PCR, test to detect the 2c virus strain and the 2a and 2b strains. While the [diagnostic laboratory](#) has been able to test for the 2a and 2b strains for years, the new test extends the laboratory's capabilities to quickly and accurately detect canine parvovirus.

"With this test we can now test all strains simultaneously and differentiate which strains of the

virus might actually be causing the infection," Oberst said. "That's a unique aspect to this test."

While canine parvovirus is a severe disease, the good news for dog owners is that the disease is preventable through vaccinations, Oberst said. Getting a dog in a vaccination program as soon as possible is the best way to prevent spreading the virus.

"It's totally preventable if the dogs are immune competent and have gotten into a vaccine program at an early age before they can become exposed to the virus," Oberst said. "That's why getting dogs vaccinated and getting their immune systems ready for exposure to parvovirus is very important."

Young dogs—usually 6-16 weeks old—are more likely to show symptoms, Oberst said, because they have not yet been vaccinated or are immunocompromised. Parvovirus symptoms among dogs include fever, bloody diarrhea or lethargy.

If pet owners suspect their dog has canine parvovirus, they should talk with their veterinarian, Oberst said. He recommends that pet owners separate the dog from healthy dogs so that the virus doesn't spread. He also recommends using bleach to disinfect surfaces of which the parvovirus-infected dog may have come into contact.

While the [virus](#) does not infect humans, the researchers are seeing that parvovirus can infect cats, but not necessarily with the severe clinical problems found in [dogs](#). Oberst said further studies are needed to learn more about the feline strain.

Provided by Kansas State University

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