

Top eight questions about virulent, systemic feline calicivirus

By Alice M. Wolf, DVM, DACVIM, DABVP, and Richard B. Ford, DVM, MS, DACVIM, DACVPM

Feline calicivirus (FCV) is best known for its role in causing acute upper respiratory disease and oral ulceration in kittens and cats. Although morbidity in routine calicivirus infections is high, these infections are rarely fatal. Kittens that recover from the disease may become a chronic carrier, which is characterized by continuous shedding of virulent virus from the oral cavity and respiratory tract that may last for months to years. The calicivirus strains include a variety of small, nonenveloped, single-stranded RNA viruses that are regarded as being relatively short-lived outside the cat. More than 40 calicivirus strains have been identified¹ and are known to vary significantly in virulence and antigenicity. Despite widespread vaccination against FCV, this virus is still known to occur in the domestic cat population, particularly in multiple cat households and animal shelters.

Since 1998, at least six outbreaks of a virulent feline calicivirus have been reported.² In these outbreaks, virulent, systemic strains of feline calicivirus (known as VS-FCV or hemorrhagic feline calicivirus) were recovered. Unlike FCV, which is associated with routine, acute upper respiratory infection in kittens, infection with VS-FCV has resulted in high mortality among previously healthy kittens and cats.

Although the incidence of infection is quite low within the cat population, new vaccines are being developed to protect cats against the emerging strains of VS-FCV. This column is an overview of the clinical aspects of VS-FCV and will facilitate decisions regarding the use of new vaccines as they enter the market in 2007.

1. What is virulent, systemic feline calicivirus?

VS-FCV is a newly recognized feline calicivirus variant that causes severe systemic disease with up to 60% mortality in the affected cat population. Clinical signs and findings include upper respiratory disease (*e.g.*, oculonasal discharge), oral ulcers, pneumonia, peripheral edema and skin sloughing (especially on the face and limbs) due to cutaneous vasculitis, and systemic vasculitis with disseminated intravascular coagulation, which may cause multiple organ and system failure and death.

2. Which cats are most likely to be affected?

Outbreaks of virulent calicivirus have been isolated and rare. VS-FCV has occurred almost exclusively in populations of group-housed cats, such as in shelters and rescue catteries. Several epizootics in veterinary facilities have occurred because of the introduction of a sick shelter cat into the hospital. Because this calicivirus variant is so pathogenic, the disease usually burns itself out in the affected population over several weeks, and a general spread to and among household pets in the surrounding community has not been reported. However, in at least one outbreak, veterinary personnel handling cats in an affected population have carried the disease to their own pets at home.

In each documented outbreak, the disease seems to have spontaneously appeared in the population, most likely by mutation of caliciviruses already circulating among the cats. This is supported by genomic analysis of the virulent strains—they are unique, rather than clonal, and have no common mutations that could easily explain the change in virulence.³

3. How can I recognize this disease?

Typically, VS-FCV emerges as an apparent epizootic of upper respiratory disease that causes severe respiratory signs but progresses to produce cutaneous and systemic complications with a higher-than-expected mortality rate among affected cats. The incubation period for VS-FCV is one to five days.⁴ Adult cats often have more severe disease than juvenile cats. Keep in mind that VS-FCV is a very rare variant of feline calicivirus—the vast majority of cats with clinical signs of upper respiratory disease are infected with more common disease agents.

4. How is VS-FCV spread among cats?

Like other caliciviruses, VS-FCV is present in the secretions and excretions of affected cats. Once the virulent mutant appears, spread may occur by direct contact among cats, transfer by hospital personnel handling cats, and fomites. If an outbreak of VS-FCV is suspected, strict quarantine and isolation of affected cats and scrupulous cleaning procedures must be



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initiated to contain the infection and avoid spread of the disease. Hospital personnel should wear protective clothing (e.g., gowns, caps, and shoe covers) and disposable gloves when handling affected cats. Food bowls, medical equipment, and supplies used in the isolation area should remain there. Personnel should wash exposed body parts well and change their clothing and footwear before returning home to avoid transmission of the disease to their own household cats. The hospital should avoid admitting new feline patients until the disease outbreak is under control.

5. What should I do if I suspect that I have a patient with VS-FCV?

If you suspect a VS-FCV case, you should immediately institute the isolation and sanitation procedures described previously. Researchers at the University of California-Davis School of Veterinary Medicine are performing limited diagnostics on suspected cases. For recommendations about submitting samples for testing to confirm a VS-FCV diagnosis, visit www.sheltermedicine.com/portal/is_vs_fcv.shtml.

No new cats should be introduced into the environment unless testing does not identify the presence of VS-FCV or until the disease has run its course. Recovered cats may shed infectious virus for several weeks to months postinfection, so they should not be commingled with susceptible cats during this time.

6. How can I prevent VS-FCV from being introduced into my veterinary hospital?

Virtually all nosocomial cases of VS-FCV in veterinary hospitals have occurred because a sick shelter or rescue cat was introduced into the hospital environment. The best method to prevent the introduction of this disease is to avoid hospitalizing sick cats from shelter and rescue facilities. If such cats must be admitted into your hospital, they should be kept in strict isolation as described previously to prevent spread of VS-FCV to other cats.

7. Does VS-FCV occur in well-vaccinated cats?

Traditional calicivirus vaccines (e.g., those containing calicivirus strain F9 or others) do not protect cats against the VS-FCV variant. One killed, adjuvanted VS-FCV vaccine is now available. Several other manufacturers are developing feline vaccines that will

include the VS-FCV antigen, and these products should be available later this year.

8. When VS-FCV vaccines are available, should I change my vaccination protocol for cats to include this antigen?

Practitioners should consider several important criteria when deciding whether to change their current feline vaccination protocols. Risk assessment is an important part of this decision-making process. Although its mortality rate is high, VS-FCV is not a common disease and outbreaks have almost always involved shelter or rescue cats, not household pets.

The second point to consider is whether the risk of exposure to or infection with VS-FCV is greater than the risk of potential harm from a vaccine containing this antigen. As many practitioners are undoubtedly aware, the American Association of Feline Practitioners' 2006 Feline Vaccine Advisory Panel report recommends limiting the number of antigens administered to those that commonly cause significant morbidity and mortality.

References

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Suggested reading

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