



How to Prevent Deadly Viruses in Your Cattery

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Outline

- Feline Leukemia Virus (FeLV)
- Virulent Strain-Feline Calicivirus (VS-FCV)
- Feline Panleukopenia (FPV)
- Feline Infectious Peritonitis (FIP)
- What they looks like?
- Where do they get them?
- How can you control them?
 - Vaccines
 - Disinfectant
 - Isolation
 - Weaning Practices

FeLV

● Clinical Signs 3,21,22

- Anemia
- Chronic Inflammation or Infections
- Poor Doers
- Oral ulcers and irritation 25
- **HEALTHY!!!!**
- These are the scary ones!!!!

Who is most at risk

22,42

- New Born Kittens - Virtually 100% of newborn kittens infected with FeLV are persistently infected for life
- 2 weeks to 2 months - 85%
- 4 months to 1 year - 15%
- Dropped to 5-15% for cats greater than 1 year
 - This is due to the development of natural resistance

Where is it most likely to come from? 3,22

- From Queen in uterus (before birth)
- From Queen in milk
- From Queen when grooming
- From Queen's feces or urine



Additional sources of infection

- From Queen's respiratory secretions
- Any nasal secretion, saliva, feces, and urine
- During Breeding
- Fighting between Toms



What can you do?

3,21



- Test all new cats into catteries initially and 60 days later; before exposing to other cats in cattery
- Test all cats annually in breeding program to ensure they remain negative, especially show cats

Which Test?

3,21,22

- ELISA Snap Test is easy and accurate
- Simple blood snap test, results in minutes
- Confirm any positive test with an Immunofluorescent Antibody (IFA)
- Saliva and tear tests are not accurate

Prevention in your Cattery

- Isolate new cats for at least 30-60 days
- Ensure two negative FeLV/FIV tests prior to exposing your cattery
- Test all cats in breeding program annually to ensure still a Negative Cattery

What about the FeLV vaccine?

3,21,22,37,42

- Considered a non core vaccine
- If proper testing and isolation is practiced, annual vaccination is may not be necessary
- Kittens and young adults are at highest risk
- If they are going to be shown, may be a good idea to vaccinate at 8 weeks, 12 weeks, and again at 1 year

Merial PUREVAX® Recombinant Leukemia

28,29

- Only non adjuvanted feline leukemia vaccine available
- First vaccine can not be given until 9 weeks of age
- Requires Vet Jet system
- Not all veterinarians will carry this vaccine system
- Only requires 0.25 mLs versus 1 mL



Disinfectants

- Leukemia only able to live off host for few hours in environment
- General cleaning and disinfecting will kill virus
- Bleach 1/2 cup/gallon water



Many Faces of Feline Calicivirus (FCV)

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- Acute Upper Respiratory Disease
 - Fever
 - Ocular or Nasal discharge
 - Sneezing
- Ulcerations in mouth
- Pneumonia

- Limping Kitten Syndrome
 - Fever
 - Lameness
 - Reluctance to walk
 - Swollen joints
 - Rarely associated with vaccine



Virulent Strain Calicivirus (VS-FCV)

12, 40, 41, 42

- Mutation to strain of Calicivirus circulating in certain population of cats
- Each outbreak has had different strain isolated

- Multi Organ Involvement
 - Liver
 - Pneumonia
 - Pancreatitis
 - Diarrhea
- Mortality rate can reach 50%

VS-FCV Signs



- Nasal or ocular discharge
- Fever
- Oral Ulceration
- Swelling of feet, face, ears, and limbs

How do we identify it?

2, 12 42

- Based on clinical signs
- Comes in and affects multiple cats quickly, then burns itself out and disappears suddenly
- There is not a good test available
- Many of the tests available interfere with routine non virulent strain calicivirus

What triggers it?



- Poor Husbandry
- Overcrowding
- Stress

Control

42

- Isolate any cat showing signs of respiratory disease or fever immediately
- Calicivirus is relatively stable in environment



Best Disinfectants

- Virkon
 - Antec International
- Trifectant
 - Vetoquinol
- Accelerated Hydrogen Peroxide
 - Virox Technologies
- Bleach
 - Very Efficacious and Cost Effective, but can be very irritating

Vaccine

- Vaccine will not prevent disease, but will help decrease significant signs of respiratory disease
- Due to rapid evolution and plethora of variants recent study suggests single strain vaccines protect against only 75-87% of strains ⁴²
- Commercial VS-FCV is available but is killed virus and uses adjuvant, and only effective in same strain of VS-FCV used in vaccine, may not be same strain seen in your cattery ^{12, 42}

What Vaccine to give and when

3,7,28,30,42

- Kittens starting at 8-9 weeks and every 3-4 weeks until 16 weeks of age
- Booster at 1 year
- Booster every 3 years
- Use only Modified Live Vaccines
- Intranasal vaccine resulted 100% antibody detection as compared to parenteral administration₂₀



Panleukopenia (Distemper)

4,36

- What causes it?
 - Feline Parvovirus (FPV)
- How do they get it?
 - It is virtually everywhere in the environment and virtually all kittens and cats are exposed to the virus at some point in their lives
- Shed in urine, stool, nasal secretions, or even fleas from infected cats
- Infected cats only shed for 1-2 days

Who is most at risk and why?

- Kittens 3-5 months of age 4,36
- Infects and kills rapidly dividing cells
 - Bone marrow
 - Intestines
 - And cells in developing fetus

What does it look like

4,36

- Depression
- Vomiting
- Decreased appetite
- Severe diarrhea
- High fever
- Nasal discharge
- Lethargy
- Severe Dehydration

Pregnant Females and FPV

- Pregnant females that become infected with the virus will either abort or give birth to kittens with damage to cerebellum
 - Dizzy, shaking, uncoordinated kittens

How is it diagnosed?

- Complete Blood Count (CBC)
 - Low red blood cells &/or white blood cells
- Confirmation
 - Canine Fecal Parvo Snap Test
 - Idexx Snap test
 - AGEN SPV Test

Prevention & Control

1,4,36

- Immediately isolate any infected/sick cats
- If confirmed case, very important to keep any bedding, food dishes, and clothing worn separate for those cats
- Unvaccinated cats should not be allowed in an area that an infected cat has been, even if the area has been disinfected

Disinfectant

4,36,37

- Parvovirus is very resistant to extreme temperatures
- Is stable in environment for weeks.
- Many disinfectants are not effective
- Very important to remove any organic material prior to disinfecting
- Bleach 1/2 cup/gallon water
 - Allow to have contact for 30 minutes

What about Vaccines?

19,32

- Modified-Live vaccines provide stronger immunity as compared to inactivated vaccine
- Eclipse 3 by Schering Plough provided 100% protection within 14 days of vaccine
- Inactivated vaccines only gave up to 38% at two weeks following first vaccine
- Intranasal vaccine gave 75% protection at two weeks
 - Not as effective in high risk environments if need fast protection

Precautions of vaccines

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- Due to rapidly developing brain tissue in kittens:
 - Do not use modified live in pregnant queens
 - If necessary to vaccinate due to outbreak give inactivated vaccine
 - Do not use MLV in kittens less than 4 weeks of age

Vaccination Schedule

36,37

- If kittens from vaccinated queen:
 - Start between 8-9 weeks of age
 - Repeat every 3-4 weeks until 16 weeks of age

- If unknown vaccine status:
 - Start with killed vaccine at 4 weeks
 - Repeat with MLV every 3 weeks until 16 weeks of age

Feline Infectious Peritonitis (FIP)

23,33,43

- Virulent Strain of Feline Coronavirus (FeCoV)
- Uncommon manifestation, occurring only 5-10% of Coronavirus infected cats
- Any cat that carries any Feline Enteric Coronavirus (FeCV) is potentially at risk for developing FIP
 - 30% of Household Pets carry virus
 - 80-90% of Cattery Cats carry virus



Feline Enteric Coronavirus (FECV)

15,23,33,44

- These Feline Coronaviruses typically cause little to no disease
- Mild self limiting diarrhea

How is Coronavirus spread?

15,23,33,43

- Often spread via fecal-oral route
- Can also be shed in saliva during upper respiratory infections
- Highest shedding occurs in early infection, before clinical signs of FIP develop

Why my Cattery?

15,33,38,43

- Certain Breeds have a genetic predisposition
 - Bengals
 - Birmans
 - Persians
 - Himalayans
- Susceptibility along a familial line has also been documented

Stressors

15,33,43

- Crowded Housing
- Breeding/Pregnancy
- Fighting
- Surgery
 - Spay
 - Neuter
- Parasites
- Poor Sanitation



What does it look like?

15,23,33,43



- Anorexia
- Weight Loss
- Intermittent fever
 - Non responsive to antibiotics
- Potbellied appearance
- Seizures
- Jaundice

When do they show signs

- 6-12 months at highest risk
- Fairly common up to 5 years
- Noticeable decline in incidence in middle aged cats
- Increases again in cats over 13 years of age

Diagnosis

11,15,23,33,43

- Very difficult to diagnose
- Many tests can help confirm while still alive, but none are definitive
 - Increased Serum Proteins
 - Increased Albumin:Globulin ratio
- May have kidney and liver disease present
- Decreased lymphocytes on CBC

Fluid Analysis

11,15,23,33,43

- Fluid from abdomen/thorax usually thick and straw colored
- Total Protein of fluid is usually high
- Can run Coronavirus PCR on fluid



Kitten Prevention

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- Kittens raised under foot with all adult cats
 - 52% positive for coronavirus at 12-16 weeks
- Kittens raised with only queen
 - 30% positive for coronavirus at 12-16 weeks
- Kittens weaned at 4-6 weeks and kept separate from all adult cats
 - 100% negative at 16 weeks of age
- You can verify success by having PCR performed on fecals of kittens
 - If samples are negative weekly for 4 weeks, then kittens are not shedding virus

Breeding Guidelines

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- Recommend no more than six breeding animals
- Maintain a larger proportion of older cats (at least 3 years)
- Highly selective in the breeding program and produce a small number of litters
- Control genetics by not using any Tom (at a minimum) that has produced kittens that have developed FIP
 - Recommended to not use any Tom nor Queen that have produced kittens that died from FIP

Husbandry

33,43

- Manage feces to mouth spread by properly managing litter boxes
 - Litter replacement, daily if epidemic
 - Bleach litterboxes regularly to kill virus
 - Dust regularly to remove litter dust from surfaces
- If able separate all cats to have own water and food supply and their own litterbox.
 - This will help control viral spread during high shedding

Protecting Your Cattery

- If all cats have tested negative for antibodies against Coronavirus it is very important to test any new cat before exposing it to your cattery
 - This will be very expensive the first time you have them tested
- Remember just because they have titers does not mean they will ever develop FIP

Vaccine

33,37,42,43

- Not recommended
- Kittens become infected with virus between 4-6 weeks
- Vaccine not labeled until 16 weeks of age, most kittens are already infected
- Not beneficial if cat/kitten already has coronavirus antibodies
- Only benefit may be if cat/kitten that is negative for coronavirus is entering coronavirus infected cattery

General Vaccine Guidelines

- Remember all killed vaccines contain adjuvant
- Adjuvants are likely to cause more of an inflammatory response
- Ongoing Inflammatory response more likely to result in injection site sarcoma/tumor
- Sarcomas can take years to develop

Additional Vaccine Information

- Intranasal Vaccine can induce protection against upper respiratory pathogens faster in an epidemic
- Intranasal Vaccines can cause transient mild upper respiratory signs
- Parenteral vaccine with modified live virus is recommended in a Panleukopenia epidemic

Summary

- Bleach diluted at 1/2 cup to gallon water is great disinfectant
- Keep cats in as small of groups as possible to prevent spread of disease
- Isolation of new cats into cattery for at least 30-60 days is vital to the health of your cattery
- Modified Live Vaccines are recommended to help prevent chronic inflammatory responses

Questions?





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