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

- 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? 

- From Queen in utero (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?

- 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
- Saliva and tear tests are not accurate
- Confirm any positive test with an Immunoflorescent Antibody (IFA)
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?

- 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

- Only non adjuvanted feline leukemia vaccine available
- First vaccine cannot 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)

- 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 Calcivirus (VS-FCV)

- 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?

- 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

- 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.
- 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.
What Vaccine to give and when

- 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 administration\textsuperscript{20}
Panleukopenia (Distemper)

- 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
- Infects and kills rapidly dividing cells
  - Bone marrow
  - Intestines
  - And cells in developing fetus
What does it look like

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

- 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

- 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?

- 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

- 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

- 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?

- Certain Breeds have a genetic predisposition
  - Bengals
  - Birmans
  - Persians
  - Himalayans

- Susceptibility along a familial line has also been documented
Stressors

- 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
- Noticable decline in incidence in middle aged cats
- Increases again in cats over 13 years of age
Diagnosis

- 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

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

- 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

- 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
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

- 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 a 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?
QuickTime™ and a decompressor are needed to see this picture.
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