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# Epizootic Catarrhal Enteritis (ECE or “Green Slime Disease”) in Ferrets

## Basics

### OVERVIEW

- Epizootic catarrhal enteritis (ECE) is a disease of the intestinal tract characterized initially by lack of appetite, vomiting, and lethargy, followed by profuse green, mucous-covered diarrhea. Due to the characteristic diarrhea, this disease is often called “green slime disease.”
- Following the diarrhea phase, some ferrets recover with no further symptoms; other ferrets develop long-term, intermittent, grainy diarrhea.
- Typically, large numbers of ferrets will become ill from this disease, but few die with appropriate treatment.
- Symptoms are usually seen within 48 to 72 hours following exposure to sick ferrets or asymptomatic carrier ferrets.
- Initial symptoms of ECE are usually caused by an intestinal virus called enteric coronavirus, although secondary bacterial and/or parasitic infections may contribute.

### SIGNALMENT

- Middle-aged to older ferrets usually have more severe symptoms.
- Young kits, 6 to 16 weeks of age, usually have mild to moderate disease or are asymptomatic carriers.
- Males and females equally susceptible

### SIGNS

- Within 48 to 72 hours of exposure, sudden onset of not eating, lethargy, and repeated episodes of vomiting
- Diarrhea is usually (but not always) seen—profuse, bright-green colored, large mucous component; lasts several days and may recur off and on
- Sudden profound weight loss common, especially in older animals with diarrhea
- In breeding facilities, pet stores, or multiferret households, all ferrets show varying degrees of symptoms within



a short period of time; younger animals are often less seriously affected.

- Following the diarrhea phase, long-term or intermittent diarrhea (often lasting months) is seen due to damage to the intestinal tract, which prevents food from being properly absorbed. Diarrhea is often granular ("bird seed" or "millet seed") in appearance, pale brown to green in color; mucus or fresh blood is sometimes seen.
- Some ferrets will appear to completely recover, then relapse weeks to months later.
- Lethargy, chronic wasting, and decreased appetite may be seen for weeks to months.

## CAUSES

- Initially caused by an intestinal virus (enteric coronavirus)
- Infection with the virus promotes coinfection parasites, other viruses, and certain bacterial species (e.g., *Helicobacter mustelae*, *Campylobacter*, *Clostridia*), leading to more severe or long-term illness.

## RISK FACTORS

- Ferrets from kennels, animal shelters, pet shops, or elsewhere where ferrets have congregated are at greatest risk.
- Older ferrets are at higher risk of severe infection, especially those that have other illnesses, such as insulinoma or gastrointestinal, cardiac, or adrenal disease.
- Crowding and poor sanitation increase the risk of infection, especially in kennels or animal shelters.

## TREATMENT

### HEALTH CARE

- Ferrets with severe vomiting, diarrhea, and lack of appetite require hospitalization for IV fluid therapy and supportive treatment.
- Mildly affected ferrets may be treated at home.
- Infected ferrets must be kept isolated from other ferrets to prevent spread of the virus.

### ACTIVITY

- Activity should be restricted until ferrets fully recover.

### DIET

- Food and water should be withheld if vomiting; fluids are given by IV or subcutaneous injections until vomiting abates
- Many affected ferrets will refuse kibble; however, most ferrets will accept high-calorie diets such as Eukanuba Maximum Calorie diet (Iams Co., Dayton, OH), Feline a/d (Hills Products, Topeka, KS), human chicken baby food, or Clinicare Feline liquid diet (Abbott Laboratories, North Chicago, IL); may also add dietary supplement such as Nutri-Cal (EVSCO Pharmaceuticals) to increase caloric content to these foods.
- Warming the food to body temperature or offering via syringe may increase acceptance.
- Ferrets with chronic, intermittent diarrhea (characterized by grainy feces, weight loss) often respond well to a diet consisting of chicken-based human baby foods and high-calorie dietary supplements until diarrhea resolves.

## MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered all-inclusive.

- Drugs to stop vomiting (antiemetics)—may be needed in ferrets with prolonged vomiting; examples include metoclopramide or maropitant citrate (Cerenia)
- Antacids—may reduce nausea; such as cimetidine, ranitidine, famotidine
- Antibiotics—to combat generalized bacterial infection (sepsis); specific antibiotics used for helicobacter infections
- Corticosteroids—such as prednisone, are used to manage long-term, intermittent diarrhea

## FOLLOW-UP

### PATIENT MONITORING

- Aggressive therapy improves survival in ferrets with severe vomiting, diarrhea, and dehydration.
- Some ferrets that recover from the diarrhea and vomiting stage will relapse. Monitor for decreased appetite and diarrhea or grainy-appearing stools.

### **PREVENTION/AVOIDANCE**

- No vaccine is currently available.
- Isolate all ferrets with suspected ECE.

### **POSSIBLE COMPLICATIONS**

- Generalized bacterial infection (sepsis)
- Death due to dehydration, liver disease, or severe bacterial infections
- Long-term, intermittent diarrhea that may occur off and on for months to years

### **EXPECTED COURSE AND PROGNOSIS**

- Prognosis is guarded in severely affected ferrets.
- Prognosis is good for ferrets that receive prompt initial treatment and survive the initial crisis of illness.
- Recurrence of grainy stools or green diarrhea is common in many ferrets and can last for weeks to months.

### **KEY POINTS**

- ECE is a contagious disease caused by a combination of an intestinal virus and other bacterial or intestinal parasites.
- Any aged ferret may become ill, but older ferrets are usually more severely infected.
- Thorough disinfection of the environment and isolation of sick ferrets is important to prevent the spread of disease to other ferrets on the premises.
- After the initial symptoms of diarrhea and vomiting, some ferrets will develop grainy diarrhea and decreased appetite that may persist for weeks to months, requiring long-term treatment.

## Notes

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