GENERAL

1 What is FIPGL?

An antiviral medication containing EIDD-2801 that inhibits the replication of feline coronavirus and FIP virus in cats. Field studies conducted in Türkiye have shown an 85% treatment success rate in cats diagnosed with FIP.

2 Treatment duration

The general scientific recommendation is to treat every cat for a minimum of 12 weeks, regardless of the form of FIP. However, for some cats 6 weeks, and for some 8–10 weeks may be sufficient.

3 Treatment cost

FIPGL23 is the most cost-effective and widely used treatment option for FIP. When properly dosed, it is effective for all forms of FIP. The cost varies depending on disease progression, dosage, and treatment duration.

4 Side effects

The most common allergy-related sign is increased hair shedding. Skin rash, itching, and acne are less common dermatological effects.

5 Relapse possibility

A very small number of relapse cases have been documented more than 3 months after completing FIPGL treatment. The risk of relapse depends on adequacy of the dose and drug administration. If proper dosing or administration was not achieved, treatment must be restarted for at least 8 weeks with a higher initial dose.

6 Injection or oral route?

There is no difference in efficacy between injectable and oral forms; only administration differences exist. In advanced FIP cases—especially when cats have severe illness, instability, vomiting, or diarrhea—oral treatment is not recommended initially. Injection therapy should be started until these issues resolve, and then treatment can continue orally.

FIP GL 23 CAT ECOSYSTEM RESEARCH TREATMENT

- Response Time: Early diagnosis yields faster responses. Young adult cats respond the fastest. Cats with dry FIP respond more slowly. Neurological and ocular FIP respond the slowest.
- Daily Oral (PO) Dose: Should be administered every 12 hours.
- Injection (SC) Treatment: Given every 24 hours. At higher doses, to avoid absorption saturation and large injection volumes, alternating 12-hour schedules may be used.
- Response Rate: Approximately 85%. Cats that normalize completely within ~30 days tend to have the best long-term response.
- Non-responsive Cats (Refractory cases): Some cats worsen in the first 2 weeks. If using oral administration, switching to injections, adding corticosteroid support, and increasing the dose should be considered.
- Relapse: Relapse is rare (<10%) but may occur within the first few weeks after completing therapy.
- Dosage and Response: TDM (therapeutic drug monitoring) and/or higher doses may improve response rates.
- Long-term survival outcomes: More information is still being gathered regarding long-term survival. Late relapses or reinfections are rarely reported.
- Long-term Outlook: Since this antiviral has been available since late 2021, lifetime cure potential is still being studied, but outcomes so far are promising.

FIPGL23 DIAGNOSIS

Patient characteristics and history

- **Age:** 70% of FIP cases occur in cats 1.5 years old or younger. Older cats may develop FIP due to age-related immune decline.
- **Breed:** Purebred cats are more predisposed to FIP due to genetic factors.
- **Origin:** Cats from crowded or stressful multi-cat environments (hoarding, crowded shelters) are more likely to develop FIP. If one sibling has FIP, the likelihood increases for the others.
- **History:** Poor development, frequent illness, recent stressful events (sedation, surgery, rehoming, travel, boarding, accidents, vaccination, grooming, or chronic diseases), unintentional weight loss, and loss of appetite are common in cats that develop FIP.

Common Signs Suggestive of FIP

- Cyclic fever unresponsive to antibiotics
- Jaundice
- Abdominal distension (suspected ascites)
- Dyspnea (suspected pleural effusion)
- Rhinitis
- Uveitis or retinitis (uni- or bilateral)
- Neurological signs (ataxia, seizures, hindlimb weakness, gait changes, tremors)

Diagnostic Tests

- Anemia
- Leuckocytosis
- Typically neutrophilic
- Lymphopenia
- Hyperproteinemia
- Hyperglobulinemia
- Hypoalbuminemia
- Albumin/Globulin ratio **< 0.6**
- Hyperbilirubinemia (and associated bilirubinuria)
- Liver enzyme abnormalities may or may not be present, depending on the degree of erythrocyte destruction.
- Elevated feline Serum Amyloid A (fSAA) — an indicator of early inflammation and tissue injury.

- RT-PCR testing may also be performed on **ocular fluid** and **CSF samples**.

FIPGL23 DIAGNOSIS

Additional Diagnostic Considerations

- **Symptoms:** Neurological and ocular signs may occur in any FIP form but are more common in dry FIP.
- **Blood tests:** Some cats with early disease (with only weight loss/appetite loss) may have normal CBC and chemistry values. Ocular and neurological FIP may be localized and may not show abnormalities in bloodwork. CSF or ocular fluid may show viral presence.
- **FCoV antibody titers:** Antibody titer testing is not diagnostic for FIP on its own. FCoV antibody titers can fluctuate greatly over time. High or rising titers may also be found in healthy cats infected with FCoV or may increase due to FCoV reinfection, therefore they do not confirm suspicion of FIP. Similarly, a negative FCoV antibody test does not rule out FIP. Low or negative titers can be seen in both wet and dry FIP cases.
- **A/G ratio:** When interpreting blood test results, it must be noted that these findings are not present in all cats with FIP, and many other conditions can produce similar abnormalities. FIP cannot be definitively diagnosed or ruled out based on blood tests alone. Although an A/G ratio below 0.6 is a classic diagnostic indicator for FIP, some cats with FIP may have a higher ratio, and conversely, common conditions such as dental disease can also result in an A/G ratio below 0.6.
- **RT-PCR tests**: Some tests (such as IDEXX) can specifically differentiate the biotype as FIP vs FECV. These tests have very high specificity and reasonable sensitivity for effusion samples, but they are not useful for blood. Positive results are considered reliable; however, there is an approximately 30% false-negative rate, meaning a negative result does not rule out FIP.
- **Biopsy:** When lymph nodes are enlarged and febrile, or when other lesions are present, a fine-needle aspiration can be performed and tested by RT-PCR. Invasive biopsies and exploratory surgeries should generally be avoided unless absolutely necessary.

Note:

Early diagnosis is critical for survival.

- In cases where FIP is suspected, obtaining RT-PCR results for a definitive diagnosis may take up to a week. In such situations, initiating an antiviral treatment trial and evaluating the clinical response is often a more practical and appropriate approach.

TREATMENT COURSE

In the first few days:

- Improvement in attitude and energy
- Increased appetite
- Fever reduction
- Decrease or regression of ocular/neurological symptoms

Peritoneal or pleural effusion:

- Dyspnea (shortness of breath) and the associated thoracic and abdominal effusion usually resolve within 2 weeks.
- If still present after 2 weeks, an increase in dosage as well as corticosteroid and diuretic support may be necessary.
- If the effusion does not resolve, other potential causes of effusion (hepatic, cardiac, renal, etc.) should be considered.

Increase in serum albumin and decrease in globulins:

- Their normalization may take several weeks.
- Globulins may initially rise while large-volume effusions are being reabsorbed.
- They may remain slightly elevated at the end of treatment, and if other parameters have normalized, this may not be associated with relapse.

Resolution of lymphopenia and anemia:

- May take up to 10 weeks to normalize
- During recovery, lymphocytosis and eosinophilia may occur

Enlarged lymph nodes:

- They generally decrease in size within a few weeks.
- They may not return to their original size or to normal ultrasonographic echogenicity.
- If other parameters have normalized, this does not indicate FIP relapse; treatment may be discontinued as planned and the patient can be monitored.

Note:

Important: Early in treatment symptoms may worsen :

- Development or reappearance of pleural effusion (drainage may be required)
- Development of neurological or uveitic signs (for example, changes in iris color)
- If these signs are observed, the dosage may need to be increased.
- If progress is not as expected, the diagnosis should be reconsidered and/or the dosage increased.

TREATMENT MANAGEMENT

Ensuring Proper Dosing: It must be ensured that the cat is receiving the medication correctly. Compliance and administration issues are among the most common causes of treatment failure. When this occurs, insufficient antiviral concentrations may reach certain lesions, which can lead to viral resistance against the antiviral.

Monitoring Weight Changes: Cats rarely lose weight during treatment. The recommended treatment doses generally accommodate normal weight gain; however, if there is a larger weight change (more than 1 kg), the dosage should be recalculated and adjusted as necessary.

Evaluating Effusions: If effusions are not improving within the expected timeframe, other potential causes should be excluded first.

Performing Additional Checks:

- If neurological or ocular symptoms develop, an increase in dosage may be required.
- If there is no clinical improvement, the dose may be increased.
- If bloodwork does not show improvement, a dose increase may be considered.
- If symptoms recur, the dose may be increased.
- Once a positive response is obtained, the increased dosage should be maintained for at least 4 weeks. This may require extending the treatment period to longer than 12 weeks.

Extending the Treatment Duration: If a relapse or a significant setback occurs during treatment, at least 8 weeks may be required from the point at which the dosage adjustments are made. This situation often necessitates extending the total treatment duration beyond 12 weeks.

Spaying/Neutering:

- For cats that respond well to treatment, spaying or neutering should be performed one month after completing therapy.
- If remaining intact is causing stress (such as escape attempts or issues during the female breeding cycle), the procedure may be performed during treatment. In such cases, it is recommended to schedule the surgery at a time when the cat is demonstrating a good therapeutic response and when at least 4 more weeks of treatment will continue.
- Before spaying/neutering, certain precautions may be taken to confirm that AGP (alpha-1-acid glycoprotein) levels have returned to normal.

Vaccination:

- There is no established data on vaccine response in FIP-treated cats. If urgent vaccination is required and the cat is stable, vaccinations may be administered based on infection risk.

SUPPORTIVE THERAPY

Providing good supportive care at the beginning of treatment can significantly improve the prognosis and allows even critically ill cats to successfully complete therapy. After treatment, the cat should be monitored for 3 months, with check-ups and blood tests performed every 4–6 weeks.

Infections:

- Due to immune suppression, treatment of upper and lower respiratory tract infections, urinary tract and bladder infections (the enrofloxacin group is contraindicated in case neuological FIP), as well as fungal infections, is important.

Use of Steroids:

- Short-term steroids (prednisolone or dexamethasone SP) may help stabilize the patient at the beginning of FIP treatment by reducing inflammation. However, once signs of improvement begin, these medications are generally discontinued. They are no longer beneficial once symptoms start to resolve.
- Long-term steroid use is not recommended unless necessary, as it may mask the degree of symptom improvement—especially in neurological FIP—and may interfere with the development of a protective immune response against the FIP virus. Long-acting formulations such as Depo-Medrol are strictly not recommended.
- **Exceptions:** In severe neurological FIP, cerebral edema may occur; in such cases, longer steroid use may be appropriate to reduce intracranial pressure (ICP) or to support lymphatic drainage when effusion persists.

Edema and Effusions:

- Short-term use of diuretics can help remove abdominal and peritoneal fluid.
- If pleural effusion is present, therapeutic thoracocentesis is recommended to relieve dyspnea. Thoracic fluid typically resolves more slowly than abdominal fluid, and clinical signs usually improve within 7–10 days.
- In cases where abdominal fluid primarily compresses the chest and causes difficulty breathing, abdominocentesis is recommended. In such situations, only the amount of fluid necessary to relieve symptoms should be removed. Abdominal fluid generally reaccumulates quickly, so repeated abdominocenteses have limited therapeutic value. Excessive fluid removal may deplete proteins and disrupt fluid and electrolyte balance.
- Pericardial effusion is less common, but if present, pericardiocentesis may be required.

Anemia:

- Anemia associated with FIP is generally mild and does not require significant intervention. However, in some cases, more severe anemia may require supplementation or even transfusion. Cats with FIP may have a weakened immune system, and secondary conditions that can cause anemia (for example, Mycoplasma) may be present.
- Anemia may also result from mechanisms such as autoimmune hemolytic anemia (AIHA) or chronic inflammation. In most cases, anemia improves without additional treatment or supplementation. However, in cases of severe intestinal involvement, hemolysis may lead to a high number of Heinz bodies in erythrocytes. In such situations, B12 supplementation can be beneficial, though it is unnecessary in most cases.

SUPPORTIVE THERAPY

Seizures and Other Neurological Symptoms

- **Anti-Seizure Therapy:** In cats with neurological FIP experiencing seizures, anti-seizure treatment (e.g., levetiracetam) should be initiated concurrently with antiviral therapy. Once inflammation caused by FIP is brought under control (e.g., with meloxicam) and the cat shows a good therapeutic response, the anti-seizure medication can be tapered in a controlled manner. Some cats may require lifelong anti-seizure therapy due to permanent neurological damage.
- **Steroids:** In neurological FIP cases, steroids may be required for a somewhat longer duration. However, once the cat is stabilized and neurological signs have improved significantly, steroids should be discontinued.

Ocular FIP

- **Topical Medications:** Cats with ocular symptoms may require topical medications to control severe inflammation and intraocular pressure (glaucoma), such as prednisolone acetate.
- **Surgery:** In cases where severe glaucoma persists despite high-dose therapy and enucleation is required, surgery should be postponed until the cat is responding well to antiviral treatment and is clinically stable. The 8th–10th weeks of treatment are generally appropriate for planning such procedures.

Appetite Loss and Nutritional Support

- **Vomiting/regurgitation:** In most cats with FIP, anti-nausea medications lead to improvement within a short period—typically within a few days to a week.
- **Appetite Stimulants:** Cats diagnosed with FIP often eat very little or not at all. Appetite stimulants may be used until normal appetite returns.
- **Feeding Tubes:** In neurological cats with swallowing difficulties, nasogastric or esophageal feeding tubes can be beneficial. In such cases, syringe-feeding is risky because of the potential for aspiration.

Diarrhea

- **Probiotics and Diet:** Diarrhea is common in cats with FIP and may resolve spontaneously. Probiotics or dietary adjustments can be helpful.
- **Secondary Infections:** Secondary infections and parasites are common in cats with FIP due to immunosuppression, and these can contribute to diarrhea. Deworming is safe during FIP treatment; however, metronidazole should be used with caution because it can cause neurological side effects that may be confused with FIP-related neurological signs.

Bioavailability:

- Orally administered medication is subject to absorption barriers and first-pass metabolism. As a result, the oral form shows much greater variability compared with the SC form.
- Factors influencing gastrointestinal absorption include surface area, gastrointestinal transit time, blood flow at the absorption site, and gastric/intestinal pH — all of which vary between individual cats.
- Hepatic and renal dysfunction can alter antiviral drug levels, as both liver and kidney function impact metabolism and clearance. Additional supportive care is strongly recommended during treatment.
- It is recommended to administer the medication with a small treat or on an empty stomach, and then wait at least one hour before offering a full meal.

END OF TREATMENT

Clinical Evaluation

The cat's clinical signs of the cat's health status should be assessed.

- Energy Level: Should be normal (or above normal).
- Appetite: Should be normal, and the cat should have gained weight.
- Neurological and ocular signs should have resolved. Neurological and ocular FIP may leave permanent deficits or sequelae in some cats.

Blood and Biochemistry Tests

- To determine whether it is appropriate to discontinue treatment, a complete blood and biochemistry tests are recommended. The values typically used to monitor FIP are generally expected to fall within normal ranges.

Extending Treatment

- If a cat does not meet most of these criteria, the dosage should be increased and treatment extended for at least 4 more weeks.
- Antiviral resistance is typically observed as lack of response to the antiviral or as relapses that continue despite progressive dose increases following an initial positive response.
- Aggressive dose escalation may overcome antiviral resistance.

Assessment at the End of Treatment

- If, at the point when treatment discontinuation is being considered, there is suspicion regarding the viral titer level but the level of concern is minimal, a trial of higher dosing for 2 weeks may be performed, followed by reevaluation of the cat.
- If improvement is observed during treatment extension, treatment should be prolonged for at least 2 additional weeks.
- If clinical signs or laboratory test values fail to normalize, these findings may not be associated with active FIP disease but may instead represent temporary or permanent sequelae secondary to inflammation. In such cases, treatment may be discontinued and the cat transitioned to a monitoring phase.

Monitoring Period:

- After a cat completes treatment, it should be monitored for 3 months to confirm whether treatment has been successful. During this period, check-ups and blood tests are recommended every 4–6 weeks.

Post-Treatment Assessment - Relapses and Treatment

- If the virus has not been completely eliminated after treatment, relapses may occur.
- In the event of relapse, the symptoms may differ from those seen at the initial diagnosis. For example, a cat with wet FIP and effusions may relapse with neurological or ocular symptoms.
- Relapses most commonly present with ocular and neurological signs, which may not have appeared previously during the initial episode.
- In some relapsed cats, neurological and ocular symptoms may be mild and may have been overlooked during the initial diagnosis or may not yet have been prominent. In such cases, the previous treatment dose was likely insufficient, resulting in partial suppression rather than elimination of the virüs or the virus may have reached the eyes or brain during treatment.