

FIP WARRIORS[®]

TREATMENT GUIDE

FROM DIAGNOSIS THROUGH CURE

A complete guide to treating your FIP cat using GS-441524

FOR PET PARENTS AND VETERINARIANS

As compiled by the FIP Warriors team under the supervision of Dr. Niels Pedersen



DISCLAIMER

Please be advised that while we provide below information, we do not provide any guarantee of warranty of any kind or make any representation or otherwise confirm the concentration and/or biological activity of any GS products.

We are not affiliated with, or have any connection to any GS manufacturer or supplier and thereby cannot make any guarantees or representations of any kind in respect to any GS products.

We are the cat parents whose cats are/were affected by an incurable medical condition for which effective treatment is not available in the United States, either through commercial or clinical means. We are simply sharing information otherwise available on the internet.

We do not commercialize or promote any GS products, however, we are not aware of any unreasonable risk related to GS products and we believe that GS-441524 does satisfy GRASE criteria established for animal drugs by the FDA.

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THE FIP VACCINE

A vaccine has been developed and is available.

That said:

- It has to be used in kittens at least 16 weeks of age (most cats are already exposed to coronavirus at this age)
- It is not effective in cats already exposed to coronavirus (which is most cats)
- It is not effective against the common serotype of FIPV, and even when all factors are optimal
- It has low efficacy

In short, it does not work in the environments where it is needed most (catteries and shelters) and is not justified in older pet cats where FIP is hardly seen. UC Davis researchers and FIP Warriors do not recommend its use.

OVERVIEW

1

What is GS-441524?

GS-441524 or simply GS is an experimental anti-viral drug (nucleoside analog) that has cured cats with FIP in field trials conducted at UC Davis by Dr. Niels Pedersen and his team. See the original study here: <https://journals.sagepub.com/doi/full/10.1177/1098612X19825701>

2

How long is the treatment?

Based on Dr. Pedersen's original field trial, the recommended treatment is a **MINIMUM of 12 weeks or 84 days** of daily sub-cutaneous injections or oral medication. Blood work should be checked just before the end of the 12 week treatment period to confirm treatment can be stopped.

3

How much does the course of treatment cost?

Each vial of injectables costs from \$65 - \$120 depending on the brand and strength (concentration) of the medication. Daily dose is determined by the weight of the cat AND the type of FIP the cat has. This online calculator can help determine an estimate for the 12 weeks of treatment: <https://fiptreatment.com/dose-calculator/>

4

How do I give the injections?

The injections are given sub-cutaneously or "sub-cu" which mean just under the skin. **Injections are to be given every 24 hours as close to the same time everyday for at least 12 weeks.** The GS stings upon injection but the pain lasts only a few seconds. Your vet may be willing to teach you how to inject and below is a link of Dr. Pedersen demonstration how to inject: <https://www.youtube.com/watch?v=okZ4V3JbCgo&t=35s>

5

What are the side effects of GS?

The only known side effect of the GS injections are the pain of the injections themselves and some cats will develop injection-site sores. There are no known side effects of the oral meds.

6

How do I choose between injections and pills?

FIP causes inflammation of the intestinal tract. Asking an inflamed colon to now absorb multiple pills a day can be challenging. FIP kitties are very sick and if you notice, vets will often give injectable antibiotics and steroids to very sick cats. This is because absorption through injection is easier on the sick kitty's body. Whenever possible, it is recommended to at least start with injections until cat is stable before considering switching to oral meds.

TREATMENT

WHAT YOU NEED TO KNOW BEFORE STARTING FIP TREATMENT

SUPPORTIVE CARE IS EXTREMELY VITAL
GS-441524 CANNOT CURE YOUR KITTY WITHOUT PROPER SUPPORTIVE CARE

BELLY FLUID

DO NOT HAVE IT DRAINED without discussing with your vet & admins.

- Draining the abdominal fluid is very risky and can cause your cat to go into shock and pass away.
- If fluid **must** be drained it should be **no more than 30%** and only if your cat's belly becomes so full that eating, bowel movements or breathing are affected.

CHEST FLUID

Can ABSOLUTELY and MUST be drained if kitty's breathing is labored. This fluid can be drained completely.

FEEDING

If your cat is not eating, he/she needs to be syringe fed to protect the liver.

- Lack of nutrition leads to hepatic lipoidosis which will kill your cat before FIP does.
- Adult cats need 200 calories a day. Kittens need 250 a day.
- <https://felinedm.com/tips-tricks-and-how-to-do-stuff/assist-feeding-syringe-feeding/>
- https://www.youtube.com/watch?v=68f4EHX-Zyc&ab_channel=VLLloyd
- https://www.youtube.com/watch?v=ECPS4PFgRqg&ab_channel=GriffithSmAnimalHosp
- https://www.youtube.com/watch?v=wAp24386UUg&ab_channel=pinnx

HOSPITALIZATION

Your cat may need to be hospitalized for supportive care such as blood transfusions, subcutaneous fluids or oxygen.

PREDNISOLONE OR DEXAMETHASONE SP

MANY but not ALL cats will benefit from a course of short-acting steroids.

- Please ask your vet for a prescription.
- This helps stabilize the kitty while the GS starts working.
- Once stable they need to be weaned off the prednisolone.
- The goal is to be off the steroids by week three.
- 2 mg/kg of Prednisolone for the first few days or a week, then drop down to 1 mg/kg and wean.
- Don't go over 1 mg/kg twice per day of Prednisolone, that is anti-inflammatory dosing.

INITIAL DOSING

- If your kitty isn't stable or begins to decline, your vet & admins may recommend that you dose twice daily.
- That means a full dose every 12 hours. Once kitty is stable, you will stretch out to 24-hour dosing.

WEIGHING AND ADJUSTING DOSE

- Please purchase an inexpensive digital baby scale to weigh with - see SUPPLIES section for links to buy.
- UNDER-DOSING increases the risk of relapse and resistance.
- Weigh your kitty in kilograms.
- If not, MAKE SURE YOU KNOW THE DIFFERENCE BETWEEN 3 lbs 2 oz and 3.2 lbs.

BLOODWORK

- CBC and full chem panel should be done **every 4 weeks** during treatment so that your admins can monitor your kitty's progress.
- Final bloodwork should be scheduled around day 80 so that your admins can give you the green light to enter observation after day 84.

DON'T MISS ANY INJECTIONS

- Injections should be at within one hour the same time every day. You can always inject EARLY but ask your admin for help if you need to move the time more than one hour later.
- Leaks and misses happen. If you think only some leaked, redo half the dose. If you think most of the dose leaked out, redo the entire dose.
- Make sure to clean the area thoroughly if the meds leak. Diluted dish soap works well.

COMMUNICATE WITH YOUR VET & ADMIN

- Let your vet and admins know about **ANY** negative changes with your kitty.
- Consult your vet and admin before making any changes to the treatment plan, and **do not give** any new medications without asking first.
- If there is an urgent issue, please tag your admin OR moderator in the group chat like this: @RobinKintz.
- **PLAN AHEAD** - Don't run too low on GS before ordering more as there can always be shipping delays.

TREATMENT

WHAT YOU NEED TO KNOW DURING FIP TREATMENT

TREATMENT OF FIP

The only effective treatment for neurological and/or ocular FIP is the antiviral drug GS-441524.

- We have found this treatment to cause a rapid reversal of clinical signs within days, a return to near normal within two weeks, and a return to full normalcy within 8 weeks or so.
- The best gauges of normalcy are weight gain, growth if retarded by the disease, and the ability to once again jump to previous heights without hesitation.
- Although GS-441524 is highly effective in reversing abnormal clinical signs in cats with neurological disease, it is not always curative.
- Relapses of disease following cessation of treatment have occurred within days to several weeks after stopping treatment and the relapse rate appears to be much higher than for cats suffering other forms of FIP.

DETERMINING DOSE

Your cat's daily injection dose will be determined by the cat's weight, dosage and concentration by your vet or Warriors admin.

FIP WARRIORS DOSAGE PROTOCOL*:

- **5mg/kg - 6mg/kg** - Wet or Dry FIP with no ocular or neurological involvement
- **8mg/kg (minimum)** - Ocular FIP (with wet or dry FIP)
- **10mg/kg (minimum)** - Neurological FIP
- **5mg/kg MORE than original dosage** - For RELAPSES

* These dosage protocols have been determined by treating hundreds and hundreds of cats world-wide and by observing what appears to work best for the different types of FIP. Occasionally we go above 15mg/kg for difficult cases. Please consult your vet or FIP Warriors admin for more information.

This is an excellent injections dosage calculator: <https://www.omnicalculator.com/health/>

A note on medicine concentration:
Currently GS is available in 15mg/mL, 17mg/mL and 20mg/mL concentrations. The HIGHER the concentration of the GS, the SMALLER the liquid dose will be.

Some larger cats on higher dosages will benefit by choosing a higher concentration of GS to make for a smaller daily injection.

Your weight	<input type="text"/>	lb •	Enter your cat's weight in either lbs or kgs
Dosage	<input type="text"/>	mg • /kg	Enter the DOSAGE here as determined by your vet or admin
Frequency	<input type="text"/>	once per day •	
Total daily dose	<input type="text"/>	mg •	
Liquid medicine	<input type="text"/>		Enter the CONCENTRATION of the GS liquid
Medicine concentration	<input type="text"/>	mg/mL •	This number is your cat's daily DOSE you will inject into the cat
Total liquid dose	<input type="text"/>	ml •	

FILLING THE SYRINGE FROM A VIAL

https://www.youtube.com/watch?v=6buCd7-nt_0&t=2s

<https://m.youtube.com/watch?v=jCG3Aupy6z4>

INJECTION TIPS AND TRICKS

- Using a “burrito” wrap can be very helpful as well - especially if injecting alone. (See first link below.)

Below are a number of links with injection “how-to” videos

<https://www.facebook.com/jessika.akanapalmer/videos/10158944826887302>

<https://www.youtube.com/watch?v=okZ4V3JbCgo&t=35s>

<https://www.youtube.com/watch?v=AniUhZSX7bo>

<https://youtu.be/ta43gSC3Nxxw>

<https://youtu.be/ju1VOH8CEmc>

<https://youtu.be/EPIIO307Ei8>

<https://m.youtube.com/watch?v=ayen-eRpBPo>

<https://www.zenbycat.org/blog/how-to-give-injections-for-fip-drugs>

- This is another holding technique called the “arm bar”. It opens up the whole side of the cat for injections and gives their back support too.

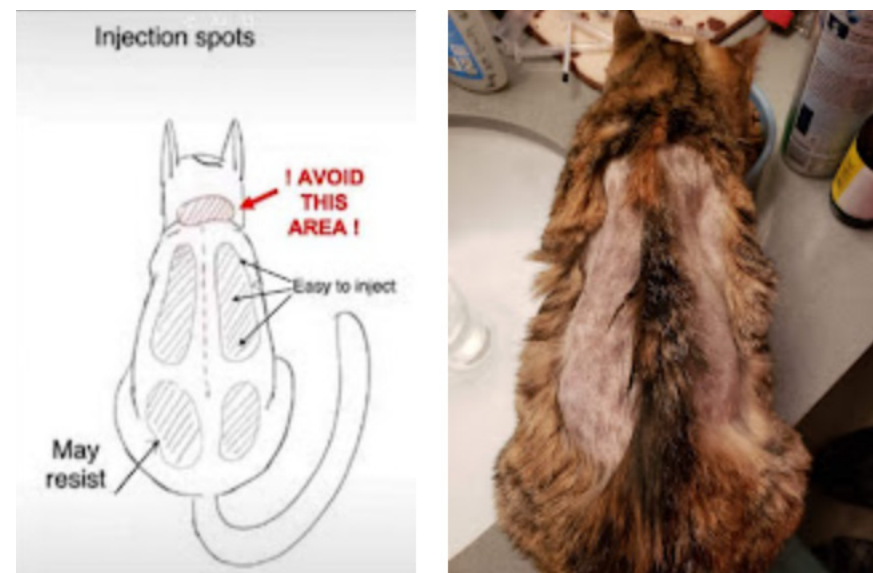


TREATMENT

WHAT YOU NEED TO KNOW DURING FIP TREATMENT

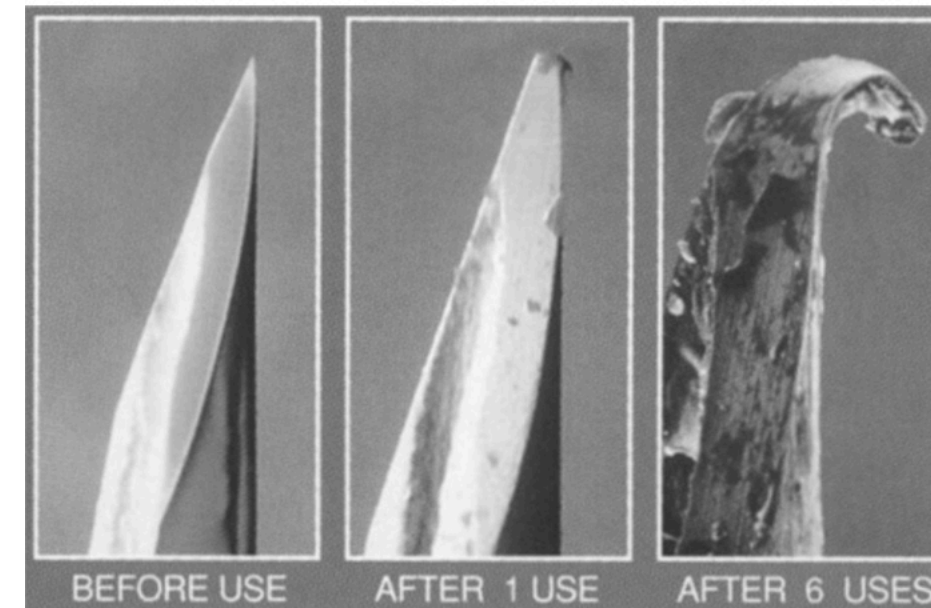
ADMINISTERING INJECTIONS

- Injections are easier to administer with two people as one can hold the kitty while the other injects.
- Some cat parents purchase cat grooming bags to hold the kitty for injections. (See SUPPLIES for details.)
- Shaving the areas of injections can be helpful - especially on longer haired cats. It also allows you to better see where you are injecting. If a sore or lesion does pop up, it's easier to find and treat.
- The below images show where the injections can be safely given on the cat. The shaved areas in the photo and the shaded areas in the illustration are the best places to inject. Avoid the cat's neck but the LOWER scruff in between the shoulder blades is okay.

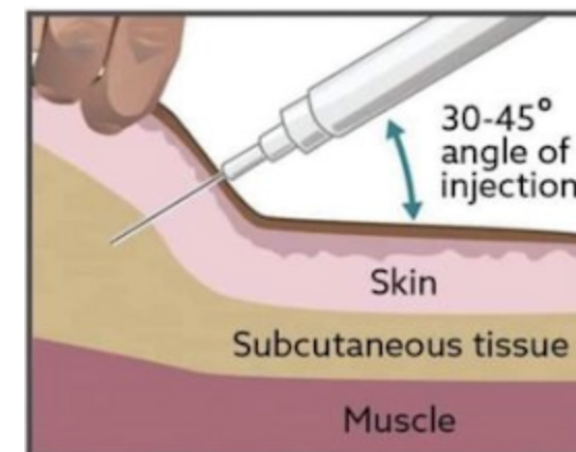


- The injections are given sub-cutaneously or “sub-cu” which means *just under the skin*.
- Injections are typically given every 24 hours at the same time of day for 84 days.
- Missing one dose is not serious, because effective blood levels are sustained over 24 h. However, missing a dose is something that should be avoided if at all possible.
- The needle should NOT poke into the muscle of the cat. Many vets will demonstrate how to do the shots.
- **LEAKAGE** - if some of the GS leaks out of the injection site, the rule of thumb is to reinject the amount you think leaked out. If you are unsure, reinject 1/2 of the original dose. Wash the area of the leak with mild soap - such as Dawn dishsoap and warm water. Rinse completely.
- This video shows Dr. Pedersen demonstrating how to inject GS:
<https://www.youtube.com/watch?v=okZ4V3JbCgo&t=35s>

SWITCH TO A NEW NEEDLE AFTER DRAWING UP THE MEDS



- It's important to **ROTATE** injection sites daily so cat isn't getting poked in the same spot every day.
- To make it easier to “tent” the skin before injecting, you can pull up on the base of the fur instead of the skin.



TREATMENT

WHAT YOU NEED TO KNOW DURING FIP TREATMENT

ADDITIONAL MEDS

Below is a list of items your admin may ask you to get from your vet:

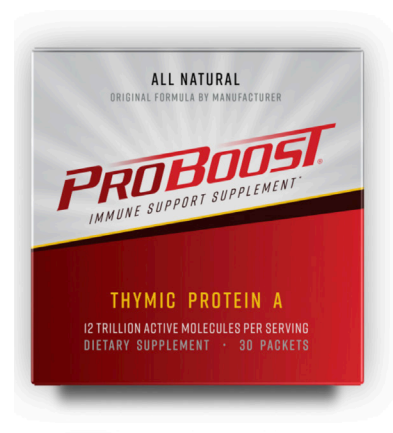
- **CERENIA** is given for nausea.
- **MIRTAZ** is a topical appetite stimulant that is rubbed on the cat's ear.
- **B-12 Vitamin injections:** 0.2 mL given subcutaneously once or twice a week. B-12 reduces inflammation and is very useful for cats who are anemic or have diarrhea.
- **DENAMARIN** is given for liver support. Ask your vet or admin if your cat needs this.
- **SUBCUTANEOUS FLUIDS** might be necessary if your cat is dehydrated.

SUPPLEMENTS

Some people use a variety of supplements during GS treatment to support organ and immune health. FIP Warriors and our vets have been recommending adding **ProBoost®** to their diet during treatment and through the 84 day observation period. ProBoost® is not an immune booster exactly, it actually helps to up-and-down regulate the immune system. The reason it's so helpful is because FIP is largely an inflammatory disease, so ProBoost® helps stop that overreacting immune process that causes inflammation, while at the same time boosting the virus fighting parts of the immune system.

Dosing for ProBoost®: Frequency is most important. Giving 1/3 packet three times a day or even 1/4 packet four times a day is best because of how the immune system is stimulated. Some cats do get GI side effects - usually diarrhea but occasionally can cause vomiting. As long as the cat can tolerate it, focus on frequency.

Order ProBoost® here: <https://proboostnow.com/product/proboost-30-pack/> Use discount code FIPWARRIORS



ProBoost Thymic Protein A 30-Pack

\$45.95

ProBoost Thymic Protein A: 30-pack. Our best selling product contains 30 single-serving powder packets of ProBoost, containing 4 micrograms (12 Trillion active molecules) of Thymic Protein A per serving.

1

Add to cart

HELPFUL LINKS

TREATMENT PLAN AND BLOOD WORK TEMPLATE:

<https://docs.google.com/spreadsheets/d/1aDyahsKnBbmRtP4At2XnqD5CLF8QslG053XqJey1Qig/edit#gid=1134637566>

DR. PEDERSEN'S SOCK FIP WEBSITE:

<https://sockfip.org/>

ZEN BY CAT - FUNDRAISER FOR FIP RESEARCH

<https://www.zenbycat.org/>

STUDY USING FIP WARRIORS DATA

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8388366/>

FIP WARRIORS IN THE NEWS

<https://news.vin.com/default.aspx?pid=210&id=9235321&useobjectypeid=10&fromVINNEWSASPX=1>

<https://news.vin.com/VINNews.aspx?articleId=54548>

<https://www.theatlantic.com/science/archive/2020/05/remdesivir-cats/611341/>

CURRENT STUDIES AND CLINICAL TRIALS

<https://www.fipvetguide.com/studies>

SUPPLIES

WHAT YOU NEED TO HAVE ON HAND DURING YOUR CAT'S FIP TREATMENT

NEEDLES

- Depending on your cat's dose, you can use either a **1mL, 3mL** or **5mL** syringe. 3mL are the most common. We recommend using an **18 gauge** or **20 gauge** needle to DRAW UP the GS from the vial into the syringe.
- Then it's best to switch to a new smaller gauge needle to inject the cat. **21 gauge** or **22 gauge** work best. The GS is thick and a smaller needle size would make it difficult to "push" the meds through the needle.
- The **LENGTH** of the needles you buy can be anywhere from **1/2" to 1 1/2" in length**. It's a personal preference what length you select. Some use the longer needles to try and avoid the GS leaking out of the injection site and some feel more comfortable injecting with a shorter needle.

Your vet, local pharmacy or Tractor Supply (or other feed store) can start you out with a few syringes and needles. Insulin syringes/needles are NOT recommended as they are too narrow for GS.

3 cc luer lock syringes: <https://www.amazon.com/dp/B08FJBWYBS>

21 gauge, 1-inch needles: <https://www.amazon.com/dp/B09B6WKWP5>
<https://www.amazon.com/dp/B081LLT8ZJ>

20 gauge, 1-inch needles: <https://www.amazon.com/dp/B08YKDHD67>
<https://www.amazon.com/dp/B088PYB8PF>
<https://www.shopmedvet.com/product/terumo-needles-20-x-1-100-bx>

3 cc luer lock syringes with 20 gauge needle already attached:

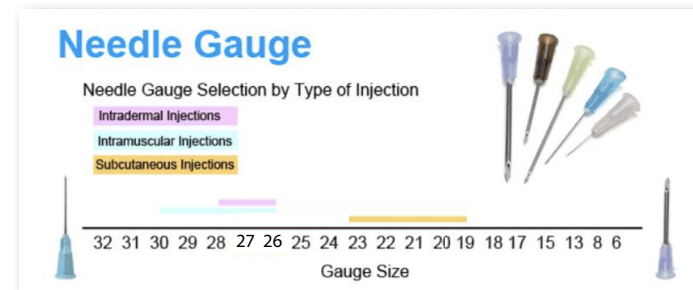
<https://www.shopmedvet.com/product/exel-3cc-syringe-with-needle-3cc-20g-x-1inch-ll-100-box>

A NOTE ON NEEDLE GAUGE SIZES:

- The number used to describe the circumference or "width" of the needle opening is called the needle's GAUGE.
- This number gets LARGER as the size of the opening gets SMALLER.
- For example, an 18 gauge needle has a larger opening than a 22 gauge needle.
- As you can see in the Needle Gauge chart below, for SUBCUTANEOUS injections, the 21-23 gauge are best.



A 3mL syringe



BABY SCALE

- <https://www.amazon.com/gp/product/B0009MFUZE>
- <https://www.amazon.com/dp/B00009KX5U>
- You may also be able to get one from FB Marketplace. I got mine for \$20, like new!

QUICK-READ DIGITAL RECTAL THERMOMETER

- Any inexpensive digital rectal thermometer like the below link will work just fine.
- <https://www.amazon.com/gp/product/B000GRXHIE>

OPTIONAL ITEMS

- **Insulin needles for B12 injections:**
<https://www.amazon.com/dp/B08M4GXCCJ>
<https://www.shopmedvet.com/product/AHS-u-100-insulin-syringe-with-29g-x-1-2in-needle>
- **Spray for Sores:** <https://www.amazon.com/dp/B002YHL82G>
- **Probiotics:** <https://www.amazon.com/dp/B0016500E0>
- **Oral Syringes for Feeding:** <https://www.amazon.com/gp/product/B07R19HW1H>
- **Restraint Bag:** <https://www.amazon.com/gp/product/B001VP61N8>
- **Calm & Cozy Cat Wrap:** <https://calmcozycat.com/>
- **Elizabethan Collar:** <https://www.amazon.com/gp/product/B01N9AHSLC>
- **Oral B12:** <https://www.amazon.com/gp/product/B07MWKYP86>
(Not as good as the injectable but better than nothing if you can't get it from your vet.)
- **LumaSoothe Light Therapy** <https://www.chewy.com/lumasoothe-light-therapy-dogs-cats/>
Can help improve skin stiffness and injection site sores

FIP INFO

FIP EXPLAINED BY DR. PEDERSEN

What is FIP?

FIP is ultimately caused by a feline enteric coronavirus (FECV). In about 10% of cats, mainly kittens, the virus will undergo specific mutations that allow it to escape the cells lining the lower intestine and infect the most basic cell of the immune system, the macrophage. This mutant virus is known as feline infectious peritonitis virus (FIPV) and is initially contained to local lymphatic tissues associated with the lower intestine.

FIPV-infected macrophages can then spread the infection to other sites within the abdominal and chest cavities and to distant organs such as the eyes and brain. When this occurs, we are dealing with either **OCULAR** or **NEUROLOGICAL FIP**. More detailed information on FECV infection and clinical manifestations of FIPV disease can be found at: ccah.vetmed.ucdavis.edu.

This initial infection is naturally eliminated in all but 0.3-1.4% of cats, which for unknown reasons are unable to develop the required protective immunity.

The form of disease that is manifested is referred to simply as wet (effusive) or dry (non-effusive). The wet form occurs in about two-thirds of cats and the dry form in one-third.

These two forms are easily distinguishable, although there may also be transition forms between the two.

WET FIP

The most common form of the disease is referred to as “wet FIP.” Wet FIP tends to be more acute in onset and is accompanied by:

- Lethargy
- Sneezing, watery eyes, nasal discharge
- Loss of interest in food
- Not playing
- Not socializing
- Excessive sleeping
- Not jumping or climbing
- Weight loss
- Fever unresponsive to antibiotics
- Jaundice (yellowing in the eyes and skin caused by the destruction of red blood cells)
- Severe anemia (Hematocrit or Hct of 20% is concerning; Hct 15% or less is an EMERGENCY)
- Stunted growth

Cats with abdominal effusions usually manifest with abdominal swelling, while cats with thoracic (chest) effusions often manifest breathing problems (dyspnea). Many of these cats will be noticeably jaundiced due to high levels of bilirubin and/or have strongly yellow-tinged serum and urine.

Neurological and ocular signs are seen in less than 1 in 10 cats with wet FIP.

DRY FIP

FIP can also take a more chronic form referred to as “dry FIP”. Dry FIP, as the name implies, is not associated with fluid accumulations in the abdomen or chest, but rather with more localized masses in the kidneys, spleen, liver and terminal bowel, eyes, and the linings of the lungs and heart, and central nervous system.

Uveitis (intraocular inflammation, also called **OCULAR FIP**) can affect the eyes, making them look cloudy and changing the colour of the iris. Inflammation can enter the brain and spinal cord and cause a spectrum of progressive neurologic abnormalities (also called **NEUROLOGICAL FIP**).

FIP accounts for over one-half the cases of inflammatory intraocular and nervous system disease in cats under 3-5 years of age. Ocular and neurological involvement is associated with 60% of cats with Dry FIP.

NEUROLOGICAL AND/OR OCULAR FIP

The neurological and/or ocular forms of FIP can be confused with feline systemic toxoplasmosis, which is why so many cats with these forms of FIP are tested for toxoplasmosis and treated with Clindamycin or other antibiotics. However, systemic toxoplasmosis is an exceedingly rare disease of cats, especially when compared to FIP.

FIP can be easily differentiated by origin (cattery, foster/rescue, shelter), signalment (age, gender, breed), and basic blood test results. Deep fungal infections (coccidioidomycosis, blastomycosis, histoplasmosis) can cause similar clinical signs to dry FIP but are still uncommon even in their endemic regions. Lymphoma may also be a differential diagnosis for dry FIP, but this disease is usually sporadic and in older cats.

The diagnosis of neurological and/or ocular disease is ultimately based on where a cat comes from, the clinical signs, age, common changes in complete blood count (anemia, lymphopenia), serum protein changes (high total protein, high globulin, low albumin, low A:G ratio). The diagnosis may be confirmed if there is still doubt, by characteristic changes in cerebrospinal fluid (CSF) and aqueous humor (high protein, high cells, neutrophils, lymphocytes, macrophages), suggestive lesions on MRI, PCR or immunohistochemistry on CSF, or high serum coronavirus antibody titer by IFA (>1:3200). One must be careful, however, to follow the 70% rule, i.e., no single typical laboratory abnormality will occur 100% of the time.

The rapid response of FIP to GS-441524 is in itself a diagnostic indicator.

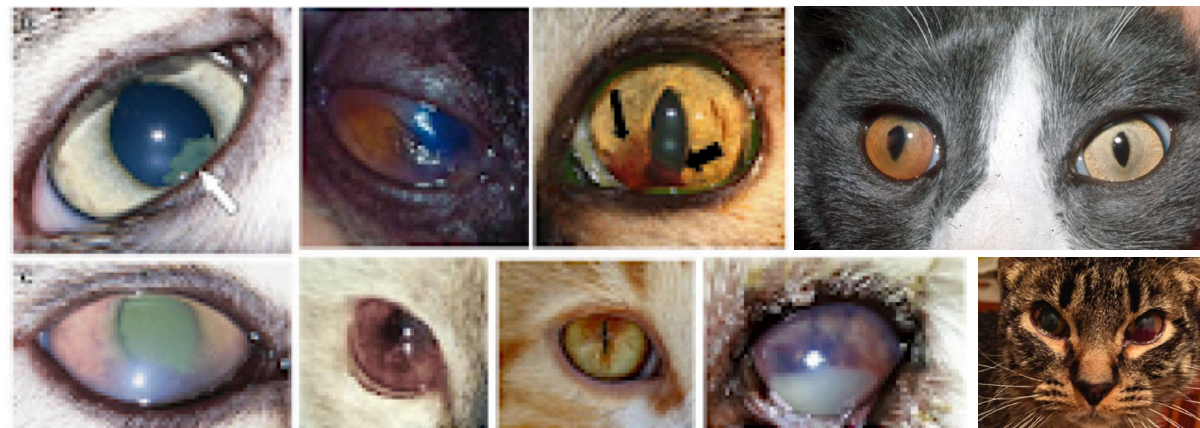
OTHER SYMPTOMS OF NEUROLOGICAL FIP

- Weakness of the limbs (usually affects hind legs but may affect any combination of limbs) Difficulty jumping or jumping in an atypical way
- Stumbling, tipping over, swaying
- Tilting head to one side
- Abnormal eye movements
- Depression, changes in behavior
- Seizures
- Hyperesthesia syndrome (brief strange bursts of abnormal behavior or rippling/rolling skin)
- Tremors, legs shaking, muscle twitching
- Peripheral neuropathy (weakness, numbness, or pain, usually in the paws)
- Urinary or fecal incontinence (unintentional or inappropriate peeing and pooping)
- Dementia

FIP INFO

SIGNS AND SYMPTOMS OF FIP IN DETAIL

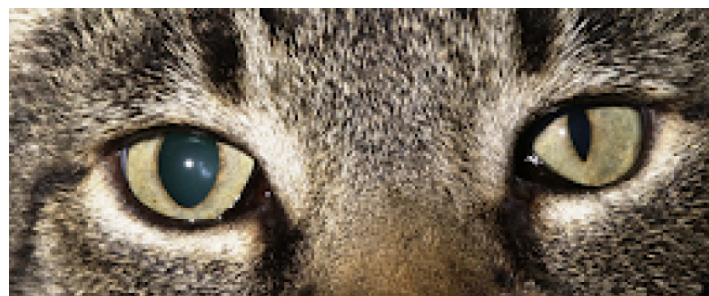
Below are examples of how OCULAR FIP can present:



Cloudiness or spots (described by vet as “anterior uveitis, keratic precipitates, hyphema, hypopyon, chorioretinitis, retinal hemorrhages, or retinal detachment”)

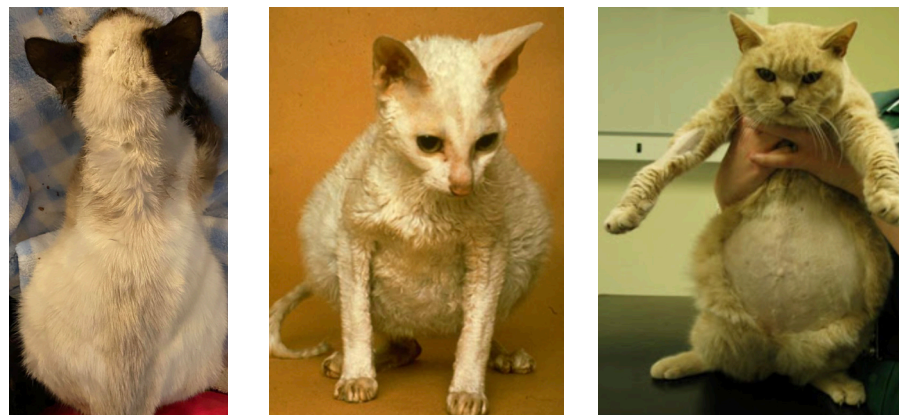
Nystagmus - “involuntary and rhythmic oscillation of the eyeballs... the eyes unintentionally move or swing back and forth.” (See example here: https://www.youtube.com/watch?v=RC27zbmy_Zs)

Below is an example of how anisocoria from NEUROLOGICAL FIP can present:



Unequal pupil sizes (anisocoria)

Below are examples of how WET FIP with abdominal effusion (acites) can present:



TREATMENT WITH ORAL GS

FORMULATION AND DOSING

- 1 of the 6mg tablets is generally recommended per kg of body weight for wet/dry FIP and 2 of the 6mg pills per kg for ocular/neuro. Some pills are available in 12mg and 24mg.
- Pills are dosed every 24 hours or in the case of one brand, every 12 hours.

COST

- The relative cost of oral GS is 20-40% higher (depending on the supplier) than their injectable version.
- Current available brands are available from your Warriors admins.

ADMINISTRATION

- Fasting for half an hour before and after giving the medication is generally recommended. A small amount of treat may encourage cats to take them, and many cats will consume them when put on a plate with a coating treat (e.g., Churu).
- If the cat does vomit within an hour of administering the pills, another full dose should be given.

FACTORS AFFECTING ORAL GS VS. INJECTIONS

- Cats experiencing vomiting and/or diarrhea are generally considered poor candidates for oral GS.
- Cats with serious gastro-intestinal issues are often started on injections, at least until those problems are resolved. At that point, switching over to oral GS can be considered.
- **Absorption of GS is also more reliable by the subcutaneous than oral route, which is often a critical factor in the initial treatment of cats that are severely ill and unstable at the onset.**

COMPARISON OF TREATMENT SUCCESS BETWEEN INJECTABLE AND ORAL GS

- When dosing is done correctly, oral GS is just as successful as injectable GS.
- In some cases, cats did better on injections than on oral and alternatively, some cats do BETTER when switched from injections to oral GS.

FIP FAQ

WHAT ARE THE SIDE EFFECTS OF GS INJECTIONS?

- The only known side effects of GS are pain during injections and the possibility of skin lesions forming at or near the injection sites.
- Rarely allergic reactions have been reported where there is hair loss or other skin conditions.
- After a series of injections, some cats' skin becomes thicker and harder to inject. Massaging the skin around all injection areas to help break up the fascia-the layer under the skin-that gets so tight and tuff sticking to the outer layer. Cold laser or light therapy can help the skin heal and improve.
- The pain reactions differ from cat to cat and can also vary from one brand of GS to another.
- There is no way to know in advance how your cat will react to the injection so please be prepared when

HOW DO I STORE THE GS VIALS?

- At room temperature or in the refrigerator. If you store in the fridge, allow vial to come up to room temperature before injecting.
- Most important is to store out of direct light such as in a cabinet or drawer

IS FIP CONTAGIOUS? DOES MY WARRIOR NEED TO BE SEPARATED FROM MY OTHER CATS?

- FIP is not contagious.
- It is not necessary to separate your FIP kitty from other cats in the home.

WHAT CAN I DO TO EASE THE PAIN OF INJECTIONS?

- You can ask your vet for gabapentin for mild sedation. It comes in pill or liquid form and is administered 2 to 2.5 hours before injection. Ask your admin about dosing.

CAN I GIVE MY KITTY L-LYSINE?

- L-Lysine should **NOT** be given during FIP treatment.
- L-Lysine binds with and ties up the body's arginine which is an essential part of the immune system.

WHAT SHOULD I DO IF MY CAT GETS A SORE?

- It's okay to let a sore heal on its own if it is scabbed over already.
- If the sore opens up, our group vets recommend Vetericyn Plus wound care spray.
- If your kitty is messing with the sore, you may want to cover it by putting your kitty in a t-shirt, baby onesie or recovery suit.
- If you see pus or the sore isn't healing, please consult your vet. Your kitty may need antibiotics if the sore gets infected.

WHAT CAN I DO IF MY CAT HAS DIARRHEA?

- Many kitties have diarrhea, especially toward the beginning of treatment.
- Add a probiotic to their diet such as Fortiflora, Pro-Pectalin, or Provable.
- 100% pumpkin puree (NOT pie filling), one to two teaspoons a day. Some pet stores also sell pumpkin especially for cats.
- B12 injections, .25 ml weekly, provided by your vet.
- Your vet may prescribe metronidazole which is safe with GS in low doses.

CAN I USE DEWORMERS ON MY KITTY DURING TREATMENT?

- Pyrantel and praziquantel are okay for tape worms.

SHOULD I CONTINUE TO USE FLEA/TICK TREATMENT WITH GS?

- There is currently no scientific evidence that any available flea treatment has a negative effect on GS treatment.
- There are however two possible areas of concern:
 - First, flea treatments, under normal circumstances can have neurological side effects, which could be confused for neurological FIP symptoms.
 - Secondly there theoretically may be a higher risk of these symptoms for FIP cats if the blood/brain barrier is inflamed.
- In the end, this comes down to a risk assessment based on your kitty's individual situation. While the risk of flea meds causing issues while under treatment may be low, it isn't zero.
- On the other hand, fleas pose very definite risk to cats -- ranging from discomfort to anemia, to spreading diseases -- and can also transmit some diseases to nearby humans (for example bartonella).
- In some areas ticks are also a health concern for both cats and their owners.

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- In many cases you can prevent or eliminate fleas without flea medications by treating the environment and removing fleas from your cat manually:
 - Vacuum daily (floors, closets, bedding, anything the cats come in contact with) and wash all bedding.
 - Flea comb your cat daily to remove fleas.
 - Make a mixture of water and apple cider vinegar (2:1) to apply on a cloth and wipe onto your cat daily so the fleas don't want to be on her.
- The decision whether or not to use flea medications AND which product you choose should result from a decision made with input from your vet and admin.
 - This is a case by case decision considering factors such the current medical state of your cat, whether or not your cat goes outdoors, the prevalence of fleas/ticks in your area, and whether or not it is practical for you to be able to prevent fleas from coming into contact with your kitty should be weighed in making the decision.

WHAT ANTIBIOTICS ARE SAFE TO USE DURING GS TREATMENT?

- Some members have needed to use antibiotics along with GS for secondary conditions.
- Thus far we have seen no adverse reactions with these generally used antibiotics: Zithromax, Cephalexin, Amoxicillin, Penicillin, Augmentin, Clavamox, Doxycycline, Clindamycin.
- The anti-viral Famciclovir also appears to be fine to use along with GS.
- The fluoroquinolone class of antibiotics such as Baytril, Zeniquin, Veraflox/Pradofloxacin and Orbax have fluorine so they can get into the brain/nervous system and can cause neurological symptoms. Since we are treating very sick kitties, we don't want new symptoms that could confuse treatment when possible.
- If your veterinarian determines a fluoroquinolone antibiotic is needed, please follow that advice, as there are some infections that must have this class of antibiotic.
- Disclaimer: No formal studies or testing have been done to determine whether there are any drugs contradicted to be used with GS treatment.

CAN I SPAY OR NEUTER MY CAT DURING FIP TREATMENT?

- The general recommendation is to spay or neuter while your kitty is still being treated, either about two weeks before completion or by extending treatment until two weeks after spay or neuter.
 - This is only recommended if kitty has great bloodwork and clinically doing well (acting back to normal). Then it's recommended to repeat bloodwork two weeks after the procedure to make sure bloodwork supports stopping treatment .
- There have been some cats who have been spayed or neutered during observation and unfortunately relapsed. There have also been some cats who have been spayed/ neutered during observation and have been fine, however it is risky and not recommended.

WHEN IS IT SAFE TO VACCINATE MY FIP KITTY?

From an FIP Warriors vet:

- Before making a decision, please discuss the risk/benefit for your cat with your vet. There are many factors which can have an impact, such as where you live, whether you have a single cat or multi-cat home, whether your cat is strictly indoor or not, if your cat has other health issues, etc. There is no one-size-fits-all answer.
- There are lots of different answers, but if a cat has received all its kitten shots including a Rabies vaccine, then the cat can wait a year from cure date to revaccinate or even skip vaccinating altogether.
- Personally, I am making all my patients wait a whole year then will booster their vaccines and go every 3 years for boosters. If a cat goes outdoors daily that increases health risks so then I'd probably want to vaccinate more often.
- If cat has zero rabies vaccines and needs one, I would still wait 6 months from cure date. Basically, if as a kitten, 2-3 FVRCP vaccines and a rabies vaccine were given prior to getting FIP they are good for a year or more so there is no hurry on those cases. Kittens with zero or only one FVRCP and no Rabies should wait 6+ months after treatment which equals 3 months after declared cured. Then my preference is to give one vaccine at a time spaced 2-4 weeks apart.

WHY IS GS-441524 NOT FDA APPROVED?

- Gilead Sciences, the patent holder, refuses to release the formula for veterinary use in the U.S.