

The Magic Year of Ernie

A cat guardian shares her learning curve and the emotional lows and highs of treating a cat suffering from a deadly virus. FIP is treatable, but it's not an easy road.

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Ernie, after treatment for FIP

I. Introduction

Ernie was already down a couple of lives when he came to us. Found in the streets of Albacete, Spain, he had been born with a truncated, off-center tail and an anal prolapse. He appears to be a tabby point Siamese, and perhaps he was a breeder cat tossed on the street because he was “defective”. I will never know, as we adopted him from a shelter in another European country in May 2020. According to his cat passport, he was eight months old.

Ernie had been through two surgeries for his anal prolapse by the time we adopted him. Soon after he settled in, he started having intermittent and serious diarrhea. In the summer of 2020, at the height of the pandemic, we put him through multiple tests and on various medical and dietary regimens to try to address his problem, which, in retrospect, was quite possibly linked to the life-threatening illness he was eventually diagnosed with. He seemed better for a few weeks at a time, but the apparent digestive difficulties persisted.

In January 2021, Ernie underwent surgery to have five loose teeth pulled, as he was evidently in pain when he ate. After the operation, he seemed well, even playful, and more affectionate. I thought we were in the clear.

II. Diagnosis and Decision

Ernie's apparent good health was short-lived. By mid-February 2021, he was eating less, and seemed to be losing energy. One night, I looked at him sleeping on the sofa in my office. He was listless, his eyes looked huge in his small face and his coat was shabby. I was so alarmed by his state that I took him to the vet the next morning.

That led to more tests, and at the end of February, the vet called with bad news: Ernie most likely had feline infectious peritonitis, or FIP. This is currently a virtual death sentence for cats (95-100% mortality rate). But if the disease is caught early, and the cat is treated promptly and aggressively with an experimental drug, GS-441524 ("GS"), there's a very good chance of survival. That is the upside. The downside: because GS is not licensed for veterinary use, cat guardians are generally on their own in procuring and administering the medication, unless they can find a sympathetic vet willing to take the risk of giving the illicit drug.

Further, the treatment is arduous for both caregiver and cat. It must be given every day – at the same hour – for at least 84 days and is administered either orally (pills) or by subcutaneous injection. The three months of medication are followed by three more months of observation. The drug costs a small fortune, and as it is not regulated for this use, there is no guarantee those buying it will not get a "bad batch". There are also multiple blood tests and other exams along the way.

That February evening, when the vet called with the test results, I'd never heard of FIP. The doctor told me there was a drug, and that he could not prescribe it or give it to Ernie, but that it might be worth a try. He also said it would be expensive, and that at best it could lead to "remission" but not a "cure" per se.

After absorbing the diagnosis and some information I found online about FIP, I had to make a decision. Did I go forward with it, or should we have Ernie put to sleep? The alternative, I understood from the vet, was to watch our cat deteriorate and die, possibly within weeks or sooner. In the meantime, my daughter went online and found a FIP support group in the region of the European country where we live and located the administrator. The woman was very encouraging about GS. Her own cat had undergone the treatment the previous year and was now "FIP-free".

I also contacted Dr. Niels Pedersen, a professor emeritus and world-renowned veterinary researcher at University of California-Davis, who has done groundbreaking work treating FIP with GS. He put me in touch with another veterinary professor in Munich, who was starting a clinical trial for cats with FIP. I was willing to try it, but it was moot because, due to COVID,

they could not accept cats from outside Germany (this was pre-vaccination times). Our only choices left were euthanasia or administering the treatment ourselves.

I had to weigh several factors. There was the significant expense and logistical and emotional challenges of giving Ernie the treatment myself. It was not guaranteed to be successful, and it carried considerable risks: with no regulation of the drug, how could I be sure I wasn't buying a placebo, or worse? On the other side of the scale, this was the only chance Ernie had, and he'd already known a lot of suffering. How could we not try? We decided to move forward.



Ernie at the outset of treatment

III. The Treatment

In early March 2021, I joined the local Facebook support group and we began the injections. GS-441524 is very similar to the drug Remdesivir,¹ which has been used in treating severe cases of COVID-19 in humans. This makes sense, as FIP is caused by a coronavirus as well. GS has been tested by Dr. Pedersen and his colleagues at U Cal-Davis for many years, and the findings have been remarkable.² As *The Atlantic* noted in 2020, the pharmaceutical company Gilead Sciences holds the patents to both Remdesivir and GS-441524. The company will not license the latter for use in cats because of concerns that the feline research could get in the way of Remdesivir's

¹ In scientific terms, GS-441524 is the “parent nucleoside” of Remdesivir. On the relationship between Remdesivir (GS-5734) and GS-441524 and how the latter came into use for treating FIPV, as well as its effectiveness, see N.C. Pedersen, M. Perron, M. Bannasch, E. Montgomery, E. Murakami, M. Liepnieks and H. Liu, “Efficacy and safety of the nucleoside analog GS-441524 for treatment of cats with naturally occurring feline infectious peritonitis”, *Journal of Feline Medicine and Surgery*, 2019, Vol. 21(4) 271–281
<https://journals.sagepub.com/doi/10.1177/1098612X19825701>

² See, for example, N.C. Pedersen et al, “Efficacy and safety...” and B.G. Murphy et al, “The nucleoside analog GS-441524 strongly inhibits feline infectious peritonitis (FIP) virus in tissue culture and experimental cat infection studies”, *Veterinary Microbiology* 219 (2018), 226-233.

approval for use in humans, and “a black market has sprung up to fill the vacuum left by Gilead”, with GS being manufactured in China.³

FIP: QUICK FACTS

FIP is caused by a feline coronavirus, FIPV. Most cats exposed to the virus do not get very sick, but in a small percentage, the virus mutates into FIP and becomes fatal. FIP incidence seems higher “among young cats coming from catteries and shelters”.⁴ FIP can be “wet” (marked by thoracic or abdominal fluid) or “dry” (no fluid). In some cats, it’s further complicated by neurological or ocular disease. Cats cannot pass FIP to humans. Vaccines have not proven effective, and, as Pedersen and colleagues note, the infection “kills 0.3–1.4% of cats around the world.”⁵

The Shots

When we started the shots, I knew it would be difficult. But nothing prepared me for how hard it was. Yet once the treatment was underway, I became determined to keep going despite the physical and emotional stress of the daily injections. This was because we began to see positive results in Ernie – increased appetite, playfulness, high energy – literally within the first couple of days.

Someone in our support group wrote about needing three people to hold their cat, “two of them in motorcycle gloves”, to do the shots. For each of the 84 shots we gave Ernie, we, too, had at least three people. We’d put Ernie in an examining sack, which I’d borrowed from a local veterinarian. The sack was helpful at first, as it confused Ernie. But after a couple of days, he figured it out, and the sack, while still essential, was not a silver bullet. Our three-person team consisted of my adult daughter, who would fold Ernie’s front legs into the sack and hold his head so he couldn’t turn around and bite me); my husband, who folded Ernie’s back legs into the sack and held the cat’s bottom so he couldn’t move; and me, the injector, wearing fingerless bike gloves so I could grasp the needle and pinch the skin into a “tent” for the shot. We often had a fourth person there for moral support.

To top it off, we were injecting our cat at home, not in a vet’s office, where – any cat guardian can tell you – animals often become magically docile on the examining table, no matter how unhappy they are. In fact, some of the injection “training” videos I watched obsessively during

³ Sarah Zhang, “A Much-Hyped COVID-19 Drug Is Almost Identical to a Black-Market Cat Cure”, *The Atlantic*, May 8, 2020 <https://www.theatlantic.com/science/archive/2020/05/remdesivir-cats/611341/>

⁴ SOCK FIP, “Understanding Feline Infectious Peritonitis”, an interview with Niels C. Pedersen, DVM, PhD, by Nancy Reeves, September 2008,

https://ccah.vetmed.ucdavis.edu/sites/g/files/dgvnsk4586/files/local_resources/pdfs/pedersenfipinterview9-10-08.pdf

In this interview, Dr. Pedersen notes that FIP affects both pedigreed and “random-bred cats”, and that cat breeding, “improper husbandry”, overcrowding (as in shelters) and “genetic susceptibility” are all factors in its incidence.

⁵ Pedersen et al, “Efficacy and Safety...”

Ernie's treatment were downright unhelpful: they portrayed cats getting injections by vets or vet assistants, and the cats were inevitably either immobilized with fear, or must have been cat actors, able to feign nonchalance about getting stuck with a needle. That might have been a funny thought if I weren't in such desperate straits. Ernie's horrible yowls when I stuck him with the needle (or sometimes before I'd even touched him) were an infuriating contrast to the videos.

When shot time arrived each day, poor Ernie almost always cowered someplace where I was able to grab him pretty easily. Sometimes he'd be sitting on the living room couch, looking for all the world like someone awaiting execution. And yet, once I picked him up and started toward the room for the injection, he'd begin to fight mightily, digging his nails into my shoulder and squirming to get away. When it was time to put him in the restraining sack, he became a revolving claw machine, a blur of paws bearing down on me.

It became a routine I dreaded, probably as much as Ernie did. Every afternoon, as we approached 6pm, I'd start to get anxious. The first few days, I felt physically nauseous. After that, it was mostly heart palpitations and insomnia. Over and over, I'd rehearse in my head how the shot was going to go, which way I would grasp Ernie's skin, which spot I'd need to inject (I had to vary this daily to prevent open sores from forming), how I would insert the needle. And every time, it seemed to come down to chance: did he struggle less that day? Were we feeling more confident? Did I hit a particularly painful spot? A weird outcome of my obsessive thoughts about whether I'd be able to do the injection correctly was that I found myself looking at random cats on the street and wondering if their skin would tent up more easily than Ernie's.

It's also worth noting that a cat's skin can harden, or at least seem to harden, as the shots go on. It's not clear to me whether their skin actually changes texture during treatment or if the cat's extreme stress causes the skin to tense up at the moment of injection. Either way, it added to my daily woes. Sometimes I had to jab Ernie more than once to get all of the medication in. Here was one of my journal entries toward the end, when I was obsessing about the lack of viable spots left for injection:

It occurs to me it's just hit or miss at this point, trying to find a place on Ernie's body that won't cause him great pain, or lead to bleeding, or be too hard to tent up. Today he has a big swelling on the left mid-flank where I first attempted the shot yesterday. I feel kind of screwed. Do I randomly try a spot and hope for the best? It haunts me, along with everything else about this treatment. I want to cry when I see his bumpy, scabby, little body. He has been through so much.

But within a relatively short time, we began to see extremely encouraging results. After the first month of shots, Ernie's blood test values were all basically moving into "normal" range, except for a "slight hyperglobulinemia" (excess of globulins). This was an astonishing development, given how sick he'd been at the outset. His progress – and weight gain – meant I had to increase his daily dose several times. The one-month results gave me huge motivation for the following weeks, though the shots continued to be very difficult. Indeed, as he put on weight, he gained strength, and the battles at injection time became more intense.

After the second month of shots – and another set of blood tests – the vet said the results were fine, but not as good as he'd hoped for. On the advice of the FB administrator and the volunteer technical medical assistant who interpreted all of the member cats' tests, I switched GS brands. The new formulation was at a higher concentration, and each vial cost more. But the switch seemed to have worked, as the results a month later – the final test before the observation period – were very good.

Setting aside the mechanics of the treatment, the emotional strain was high. Although we were a team, my husband, our daughter and I would snipe at each other when a shot didn't go well. It's to be expected, because the stakes were high, and we were all under pressure. But it added to my own inner turmoil and self-doubt during the treatment. Another thing: cats are smart. Each time we'd gain a slight advantage by changing the scenery, or adding an obstacle, such as the examination sack, Ernie would figure it out and twist himself into new contortions the next day, making the process even more difficult. But in the end, it's good to remember that humans are bigger, and we must prevail because the cat's life depends on it. That thought kept me going even at the worst of times.

In terms of Ernie's emotions, it's funny how many people asked me whether I thought he knew, on some level, that I was trying to help him. It's an interesting question. He remained affectionate on and off during treatment, so I had to assume he didn't hate me for giving him the injections. From there to the notion that he was grateful for the treatment is a leap. But who knows?

Perhaps the craziest thing about this treatment is the fact that so many people with no veterinary training are taking on the responsibility of injecting a writhing, stressed-out animal. Just about every day, I reflected on this astonishing fact. Here's a typical journal entry, from three weeks in:

When you think about it, it's insane that a lay person like me is tasked with injecting a live animal for 84 days straight. It's so difficult and stressful, it just seems it can't be right. And the background stress factors (what if this vial is tainted? What if it's a placebo? What if Ernie's skin starts to harden up or get covered in lesions? What if he has a relapse? Etc.) are overwhelming if I stop to recount them.

I don't want to get into comparing humans and animals, but it occurred to me that, if you were the loved one of someone diagnosed with cancer, the doctor would not ask you to give the patient their daily chemo. But there is a hint of that here. The risks of taking on this responsibility are real, but the stakes – the possibility of helping the animal vanquish the disease – are also very high.

Moral Support

A large cast of characters can be involved in treating a cat for FIP. Besides my husband and daughter, whose roles were essential, several friends came over numerous times to help hold Ernie, distract him and provide us with moral support. One friend was there night after night and worked to calm Ernie (and me!) down before each shot. This help meant more than I can express. The veterinarian, while understandably unwilling to administer the treatment himself

because of legal risks, provided the necessary monthly blood tests as well as counsel along the way. One of the vet's assistants took pity and came over a few times to administer the shot when I simply couldn't go through with it. Family members sent encouraging messages, and even mailed us birthday checks earmarked for his treatment.

Perhaps most helpful and steadying daily was the Facebook "FIP" support group. Members sent advice on the group chat, and the group administrator was always there to answer questions, help interpret test results and prop me up when I was convinced that I was doing everything wrong. This group has grown steadily, supporting a total of 176 cats in its first 21 months.⁶ The trajectory is clear evidence that GS is saving cats' lives. But the fact that these cats' guardians must get most of their support from a social media platform, as opposed to the medical establishment, is emblematic of the dilemma here: an effective treatment exists, but the obstacles to getting and giving it remain exceedingly high. More on this below.

Observation Period

Late May marked the end of the 84 days of injections. By that time, I felt I was losing my mind: I couldn't take one more day. And yet there were people in the group who had to give their cats more than the minimum three months of shots, because test results indicated a possibility of relapse, so they were told to add two more weeks, another month...in one case, six months in total. And when the observation period begins, one is waiting on tenterhooks for the end of *that* period and yet another blood test that confirms – or not – that the cat has entered remission. But dealing with that tension, I found, was far easier than going through with the shots. Ernie agreed.

The results at the end of the injections were very encouraging: all values were pretty much within normal, and the globulins had come down significantly in the third month.

A New Life

In late August, just after the observation period ended, I took Ernie for his blood test: the one that would tell us if the good results in May had stayed stable. They had. The vet said Ernie's blood values after the observation period looked the same as those of a cat who had never had FIP. The relief I felt was palpable, but I was also exhausted.

My fatigue was neatly contrasted by Ernie's energy level. He'd started to gain force even a couple of weeks into the shots; this, plus his tremendous appetite, were signs the treatment was taking hold. Many support group members noted the same with their cats. Ernie was acting up, jumping onto surfaces where he had no business being, rolling objects (pencil sharpener,

⁶ According to the group's administrator, as of August 2022, 87 cats had beaten the illness, 32 were in treatment and 28 in the observation period. Twenty-nine had died: six of these died for reasons other than FIP and 17 died during the first two weeks when the GS had not had time to take effect. Four died after the first two test weeks and two died after a relapse (of the six relapses in total, four of the cats were still alive as of this writing after undergoing the treatment a second time.)

paperclips, stapler, mascara, pens, erasers...) under the couch just for fun. And because I was so relieved to have a healthy cat, I allowed him to do most of that stuff. He was simply making up for lost time, after all. He'd spent the first two years of his life in sickness; now he was being a kitten. Or maybe a rambunctious teen, given his age in cat years.

Despite the traumas that have been visited on this poor cat, his spirit is indomitable. I tear up when I think about his suffering, and his brave battle against everything that's been thrown at him. He is an inspiration, and much loved. And though it sounds corny, I believe he loves me despite everything I put him through. He singles me out for head bonks, after all. If I were worried the treatment would turn him against me, I've been completely disabused of that notion.

IV. A few final thoughts

The treatment of FIP with GS has important implications not only for the multitudes of cats who may someday be spared from dying of the virus. The drug's use in cats seems to have advanced human medicine, as well. A recent [article](#) in *The New York Times* cites one veterinarian's observation that "remdesivir, an important drug in combating Covid-19, was first successfully used against a cat disease caused by another coronavirus." She is referring to FIP and GS.

A cure exists: now what? As Dr. Brian Murphy, a veterinary researcher at U Cal Davis, put it: "This is a treatable disease...We basically have the cure now. It's a matter of finding the exact right drug and combination and making it available at an affordable price."⁷ The difficulty, risks⁸ and financial costs of gaining access to the drug are clearly standing in the way of widespread successful treatment of cats diagnosed with FIP. As a rough estimate, we spent the equivalent of almost 5,500 USD over the course of six months to treat Ernie, about half of which was for the medication. The total also included vet bills during treatment, but not the numerous tests and vet visits in the months leading up to diagnosis, when we were trying to figure out what was wrong.

The cost was much more than I'd anticipated when we were making our decision, but once we did so, and started to see its astonishing effect on Ernie, we felt we had to move forward. Very few people have thousands of dollars to spend on this treatment; and no one should have to go into hock to choose a regimen that so clearly can save their pet's life.

Added to that is the considerable challenge of lay people having to administer the drug. This factor was, for me, the single biggest hurdle, and I doubt I am alone. Even if veterinarians were willing and able to give the shot daily, that would make the cost even more astronomical.

⁷ Sarah Dowdy, "Feline Infectious Peritonitis – From Fatal to Treatable," *dvm360*, January 2020, Volume 51, Issue 1, <https://www.dvm360.com/view/feline-infectious-peritonitis-fatal-treatable>

⁸ For more on the downside of acquiring GS on the black market, see Tom Porter, "People are paying as much as \$10,000 for an unlicensed remdesivir variant for their cats, in a thriving black market linked to Facebook groups", *Business Insider*, 8 June 2020, <https://www.businessinsider.com/coronavirus-treatment-cats-fip-sold-10k-black-market-2020-6?r=US&IR=T>

This is an experiment that seems to be moving us closer to a day when FIP won't be a death sentence. We owe it to the next group of cats and their guardians to keep going. Ernie and other cats like him seem to be paving the way to getting veterinarians involved, too. At the end of the treatment, my vet told me Ernie was the first of his patients to be "cured" of FIP. Days later, the vet's office asked if I would speak to a woman who was considering putting her cat on GS. I spoke to her that week, and she promptly started her cat on the medication. So, the resources, time, energy – and heartache – expended on Ernie's treatment go well beyond bringing just one cat back from the brink of death. We are a movement now.

Epilogue: In February 2022, the British veterinary journal Vet Times reported a breakthrough in the UK in availability and use of remdesivir and oral GS-441524 for treatment of FIP in cats.⁹

Treatment and Practical Advice: What You Need, What Helps

Length of treatment: The recommended length of treatment is 12 weeks, though this may be extended if the blood results after three months do not show enough progress.

Needles: many people try out needles of various gauges and lengths until finding the one that suits them (and their cat). We eventually settled on 21G and 25 mm (a finer gauge than that is probably less painful for the cat but it slows the passage of the viscous medication, making the injection take longer. A longer needle, at least for me, proved harder to keep steady at the moment of injection and more likely to poke out the other side of the tented skin.)

Supplements: Ernie needed vitamin B12 oral drops at the outset, but only for one month. Fortunately, he did not need liver supplements during the treatment, as some cats do. I tried the "anti-anxiety" products Feliway and Zylkène (Feliway as a spray in the room where we did the injections and Zylkène powder sprinkled on Ernie's food). I cannot say whether they made any difference. Given his extreme resistance to the injections, I'm not sure even a moderate reduction in his stress level would have made the shots noticeably easier. Some support group members found these and other products helpful. Like many aspects, this seems to vary from cat to cat.

Eating: Everyone does their own thing to get their cat to eat more during treatment, as we're all trying to get the cat's weight up and their strength back. I would prepare dry-fried turkey or chicken for Ernie after each injection and follow him around the house with warmed up baby food on my finger. I also left him plates of dry food on the night stand next to our bed, which he would chow down in the wee hours of the morning. His crunching was the most wonderful sound to wake up to.

Dosing: Ernie began at 1 milliliter of GS, and by the end of the 12 weeks, the dose had

⁹ D. Gunn-Moore et al, "An update on treatment of feline infectious peritonitis in the UK", *Vet Times*, 1 February 2022, <https://www.vettimes.co.uk/article/an-update-on-treatment-of-feline-infectious-peritonitis-in-the-uk/>

doubled.¹⁰ This is not unusual, as cats are often underweight at the beginning of treatment, but if they respond well to the medication, they gain weight steadily throughout the period of injections. The type and concentration of the medication will also vary depending on the cat's blood test results. We received advice on these parameters, free of charge, from the FB support group administrator and volunteer technical assistant. After treatment, Ernie's body weight had increased by almost one-third.

Indispensable: money, medical support and advice, the right logistics (the ability to administer 84 days of treatment at the same time every day; another person to help, if possible), and the mental strength to get through it (see above, "moral support"). FB groups are currently an essential part of this (see below), and some groups may help with financial support. Crowdfunding and sales of crafts and other goods to benefit cat owners who cannot afford the treatment are ideas I've seen on our group.

Veterinary care is needed before, during and after treatment: for diagnosis of the virus; monthly bloodwork to determine progress (including at the end of the observation period); and attention to any side effects of the treatment (e.g. lesions from injections).¹¹ Cat guardians must also weigh their cat two to three times weekly (more often for kittens) and adjust the dose accordingly.¹²

Extremely useful: a cat examination sack to immobilize the animal during injections; thick gloves (with fingertips cut off) to protect from bites and scratches.

Also, keep a journal! I journaled daily, even when I didn't have the energy or time to write much. I noted how the day's injection had gone, my mental state, Ernie's state, and – importantly – where on his body I had injected him. I also used a wall calendar to mark the location of the shot each day (very useful as one must alter the spot daily to avoid skin lesions forming).

Good to know: it's useful every once in a while to change the room in which the injection takes place. This can catch the cat off guard, which is important, because, if the treatment goes as planned, the animal becomes stronger with the passing days, and better able to resist the shots. Anything that distracts them or puts them even the slightest degree off-kilter, gives the injector an advantage.

Giving the cat a treat after each shot might give the animal a positive association after a nasty experience. It didn't seem to hurt in our case. It's also helpful to close doors to rooms just before the shot so the cat has fewer places to run and hide. Shaving a line of fur on both sides of the backbone, exposing the areas where injections are to be done, makes it easier to pull up the skin and to see if there are lesions to avoid. Keeping the cat's nails clipped reduces the possibility of getting scratched during the injections. If possible, keep an outward calm during the shots (or

¹⁰ For cats taking GS orally, multiple pills might have to be administered daily.

¹¹ Our Facebook support group recommends the following after each month of treatment: biochemistry, hematology, serum amyloid A (SAA) and electrophoresis, and the first three of these tests after six and then 12 weeks of observation.

¹² For a useful reference, see General Feline Infectious Peritonitis Resources, UC Davis Veterinary Medicine, <https://ccah.vetmed.ucdavis.edu/cats/resources/general-feline-infectious-peritonitis-resources>

administering of pills). When I made a point of remaining quiet and firm with Ernie, those shots seemed to go better. Finally, if you're able to find someone – a veterinary technician, for example – to do a few injections in your stead, it provides a welcome respite here and there.

If your cat is diagnosed with FIP, you can find a Facebook support group and other resources at FIPWarriors: <https://fipwarriors.com/>. Many resources can also be found at <https://sockfip.org/>. Here is a useful Q&A from Dr. Petersen: <https://sockfip.org/miscellaneous-questions-frequently-arising-during-antiviral-drug-treatment-for-fip-and-aftercare/>.