
FELINE HYPERTHYROID TREATMENT CENTER

RADIOIODINE TREATMENT FOR HYPERTHYROID CATS

What is hyperthyroidism?

Hyperthyroidism is the most common hormonal disease of cats resulting from secretion of excess thyroid hormone (T4). The average age of onset is 13 years of age. Thyroid hormone (T4) is responsible for regulating the metabolic rate of all cells in the body, which results in an overstimulation of nearly all organ systems. This overstimulation puts significant and ultimately fatal stresses on the body.

How does hyperthyroidism affect my cat?

95% of hyperthyroid cats are classical in their presentation and exhibit some or all of the following: excessive appetite, weight loss, attitude changes, overactive, aggressive, tremors, increased vocalization, hair loss/unkept coat, excessive drinking, excessive urinating, vomiting and/or diarrhea.

5% of hyperthyroid cats are apathetic in their presentation. These cats may be lethargic and actually have a decrease in appetite, with or without the above clinical signs. Some cats alternate between the classical and apathetic forms, thus having increases and decreases in appetite over time.

The most concerning group of cats are cats that manifest serious heart disease secondary to hyperthyroidism but without any other signs of hyperthyroidism to alert owners or veterinarians to the presence of the disease.

What can happen if my cat is left untreated?

In general, cats just waste away, manifesting any of the signs listed above, however, hyperthyroidism affects nearly every cell and organ in the body. The most significant problems are typically related to the cardiovascular system. Severe heart disease secondary to hyperthyroidism can occur even prior to weight loss. Hyperthyroid cats' heart rates are often between 220 – 350 beats per minute. This prolonged stimulation of the heart by the thyroid hormone will cause the heart muscle to thicken. This leads to smaller chambers within the heart and a subsequent loss the heart's ability to pump blood efficiently (hypertrophic cardiomyopathy). This is a very serious life threatening condition. If treated early, this problem can reverse itself after ¹³¹I treatment or surgery. Tapazole often does not control the progression of cardiac disease even though it may appear to resolve the other signs of hyperthyroidism. Another potentially serious complication to hyperthyroidism is hypertension. The elevation in blood pressure can cause debilitating strokes and /or blindness secondary to detached retinas. People with hyperthyroidism often experience severe anxiety and severe psychological disturbances. Although this is not something we can easily evaluate in cats, I'm sure they experience it too.

What are the advantages and disadvantages of the various treatment options?

Medical management

Medical management would seem to be the simplest and cheapest option available, but, in most cases, this proves to be untrue since the medication often has severe side effects and must be used for the cat's entire life. They do not cure the disease or kill the tumor cells causing the problem. Side effects of (Tapazole or PTU) are common (18.3%) and include anorexia, vomiting, lethargy, excoriations, bleeding, hepatopathy, thrombocytopenia, agranulocystosis, leukopenia, eosinophilia, lymphocytosis, positive ANA, and positive direct antiglobulin test.

In my experience cats rarely return to normal on Tapazole or PTU. Most cats seem to improve but never quite reestablish their prehyperthyroid state. Most disturbing, are those cats on Tapazole whose T4's return to normal, yet go on to develop secondary cardiomyopathy (heart disease). Owners must be aware of this potential risk when selecting medication as their medical choice.

Rev 5/08

Another misconception is that medical treatment costs less. Medications can cost \$1 -\$2 per day or approximately \$350 to \$700 per year. Monitoring side effects and dosage adjustments mandates that cats be re-examined and have blood tests repeated every 3-6 months. Assuming a more practical 6-month interval and an average cost of \$85 - \$100 for an examination, general diagnostic and T4, the annual cost incurred would be \$170 - \$200.. Some cats require more frequent follow-ups and incur greater costs. A conservative annual cost for medical management is approximately \$600 - \$900, year after year.

When considering actual costs, the inconvenience of twice daily pilling a cat for life, adverse effects of the medications, progressive cardiomyopathy that we can't resolve with medicine, and considering we are merely suppressing the disease and not curing it, medical management is rarely the best option for treating hyperthyroidism. Medical management may be the best choice in cats with concurrent life threatening diseases (e.g. cancer, severe renal disease) and whose life expectancy is short, hence the cost of therapy may not be justified for a few months of life.

Surgery

Surgical removal (thyroidectomy) of the diseased lobes of the thyroid gland has been a popular treatment. Most veterinarians suggest removal of both lobes due to the high probability (70 - 90%) that both are affected. When only one lobe is removed, the disease typically recurs in the other lobe within 1-2 years.

Surgery presents significant risks to the patient. First, and foremost, surgery often requires prolonged anesthesia of a geriatric patient who typically has compromised renal functions and varying degrees of heart disease. Surgery typically only involves thyroid tissue in the cervical area, any remaining ectopic (extra) tissue can perpetuate the hyperthyroidism.

Salvaging functional parathyroid tissue to maintain normal calcium and phosphorus levels is critical, but in some cases impossible. Albeit there is a wide range of success depending on surgical technique and skill. At best, cats with bilateral thyroidectomy typically require lifetime thyroid hormone supplementation (pills).

Thyroidectomy is the preferred treatment in some cats with severe decompensated heart failure where *immediate* resolution of the hyperthyroid state is required. These cats have heart disease so severe that it cannot be managed medically and cardiologists may advise an immediate thyroidectomy. ¹³¹I requires from 1-12 weeks, (generally 1-3) to achieve euthyroidism (normal thyroid function).

Cats with cervical thyroid carcinomas (cancer) may also benefit from a thyroidectomy. Debulking or totally removing affected tissue reduces the dose of ¹³¹I or eliminates the need for it all together. Technetium scintigraphy may be necessary to diagnose a carcinoma and identify its location(s).

Thyroidectomy for presumptive unilateral disease is of questionable efficacy, since grossly normal appearing glands may have a single small foci of atypical cells, thence the 70 - 90% recurrence rate 1-2 years post-operatively.

Technetium scintigraphy should be performed to identify these cats if one is considering surgery. Due to the risks of anesthesia and hypocalcaemia from parathyroid loss, surgery for this disease is generally not recommended if ¹³¹I is available.

Radioiodine therapy

¹³¹I is the safest and most effective therapy available. Because parathyroid and normal thyroid tissue is spared, cats do not have calcium and phosphorus regulation problems, nor do they typically require thyroid hormone supplementation. General anesthesia is not required for ¹³¹I therapy hence eliminating a major risk factor for the geriatric cat.

Since starting Feline Hyperthyroid Treatment Center, P.S. in 1993, I have achieved a 95% "cure" after a single injection and a 100% "cure" after a second injection. Cats requiring a second injection were retreated at no charge unless a carcinoma existed. Less than 0.25% of the cats treated required supplementation for hypothyroidism. Most cats stay in the hospital just 3 days and 2 nights before returning home.

We rarely see any side effects. Some cats will be somewhat lethargic, sleep more and eat less. A rare cat may have a sore throat 3 - 5 days after treatment. These cats often act interested in food, yet won't eat it. A short acting anti-inflammatory usually resolves this in a day or so. I've seen a few cats over the years that have exhibited a voice change (meow). This can be transient or permanent. In people, they see something called "thyroid storm." It involves a massive release of T4, which results in a very rapid heart rate, rapid respiration rate, and a significant fever.

Significant side effects in cats are so rare that I always look for something else as a cause if cats are ill after treatment. We must remember we are dealing with a geriatric population that may have any number of potential underlying problems. So, if your cat is ill (excluding mild lethargy and a mild decrease in appetite) after returning home, do not consider this normal. Always see your veterinarian and tell them to look for something else. If nothing else can be found, then we can consider an unusual reaction to ¹³¹I. My concern/frustration is when owners assume their cat is reacting normally if they're not eating etc and don't see their veterinarian. Many of these old cats are too fragile to not eat or drink for a couple days.

How does the treatment work?

The doses of ^{131}I are supplied in .5 ml quantity. This small volume typically will not even cause any sensation upon injection. The ^{131}I is typically injected subcutaneously over the shoulders where vaccines are typically given. The ^{131}I is immediately absorbed into the blood stream, which takes it throughout the body. Since no other tissue utilizes ^{131}I , it will be taken up exclusively by thyroid tissue, even thyroid tissue in surgically inaccessible locations. Within the hyperthyroid thyroid, there are two types of cells, the overactive hyperthyroid cells and the normal thyroid cells, which are inactive. The normal inactive thyroid cells have shrunk and are not producing T₄; therefore do not need any iodine. The overactive (hyperthyroid) cells need increased amounts of iodine to supply their increased production of thyroid hormone. The radioiodine that is going to bind in the thyroid binds within the first 24 hours. 90% of the unbound iodine will be excreted in the urine within the first 36 hours, hence remains in our waste storage facility.

The radiation within the abnormal cells kills those cells generally sparing normal tissue and adjacent parathyroid tissue. This decreases the serum thyroid hormone levels. Once the T₄ levels drop below the normal range, the remaining normal thyroid cells are stimulated to become active again and they take over normal production. Very rarely we need to supplement the cats after ^{131}I .

How quickly will this treatment cure my cat's hyperthyroidism?

75% of cats have normal serum T₄ (thyroid hormone) levels within 7 days of ^{131}I . 90% have normal T₄ levels by 1 month, approximately 95% have returned to normal by three months. (5 - 10% will have levels below normal (hypothyroid) but only about 0.25% will require oral thyroid hormone replacement medication) Approximately 5% will remain somewhat hyperthyroid after their initial dose. Cats with persistent hyperthyroidism can be re-treated 3 months after their initial therapy. Recent information suggests waiting 6 months if the cat is not showing hyperthyroid related problems; some of these cats will become euthyroid during this time. Reasons for failure to respond to the initial treatment may include prior treatment with methimazole (Tapazole), or PTU, a very large thyroid mass, poor uptake of ^{131}I by some cats, certain drugs or chemicals, or a malignant thyroid tumor rather than a benign tumor. Nearly all cats will be cured by a second treatment. At 1 and 3 months after the treatment, a blood test for thyroid and kidney function should be done by your veterinarian. The 1-month level thyroid may be slightly high, low or normal. During this first month your cat generally shows no side effects as it returns to its original prehyperthyroid status, a very rare cat may be mildly sluggish, sleep more and eat less. Excessive shedding may also occur (rarely). These signs are all related to correction of the thyroid hormone imbalance. The 3-month T₄ test should no longer be elevated. Any signs persisting after the T₄ is normal are most likely due to other medical problems that need to be identified and treated by your veterinarian. Relapse following successful radioactive iodine therapy is very rare but occurs in approximately 1 in 200 cats 2-5 years after ^{131}I .

Is it possible that my cat is not a good candidate for radioiodine treatment?

To be candidates for radioactive iodine therapy, I request that all cats have screening laboratory work (CBC, Chemistry profile and urinalysis) and a blood pressure when possible performed by the referring veterinarian within one month of the treatment date. Cats with questionable kidney function may need testing within 1 week of the procedure. Cats with significant heart disease should be accompanied by the appropriate diagnostics. It is important for me to get copies of this lab work before your cat comes for treatment. Please have your veterinarian fax or mail them.

If your cat has significant kidney failure, advanced heart failure or a malignant cancer, we can resolve the hyperthyroidism, but may be unable to make your cat better by treating the hyperthyroidism alone and you may not want to treat your due to the poor prognosis of the other disease processes.

Age is not a determining factor. I've treated 3 cats that were 21 years old. They were in good physical shape, and did very well.

What arrangements will I need to make?

Please call our clinic to make your appointment with Dr. Wackerbarth. A thorough examination will be given; laboratory tests will be reviewed and repeated if necessary. This will assist in determining the dose of ^{131}I to be given.

If your cat is arriving by air, we will want him/her to arrive no later than the morning of the treatment day so we can obtain the above information. We will give you the phone number of a courier service which you can call and make arrangements to transport your cat to and from the airport. An additional fee will be charged by the courier company.

Should my cat be tranquilized for travel?

Some extremely nervous cats should be sedated prior to a plane ride or a long car ride. This should be decided on an individual basis by you and your veterinarian. The drugs, which we use most often for this, are diazepam and acepromazine.

Do I need to stop the antithyroid medications (Tapazole or PTU) prior to ¹³¹I treatment?

Yes. They should be discontinued approximately 1 week before treatment. Exceptions can be made if your cat has serious cardiac disease. Cats with significant cardiac disease, which cannot be easily controlled even with cardiac drugs, may need to remain on Tapazole until 48 hours prior to ¹³¹I. If this is a factor, you will be instructed by your veterinarian or by me. If your cat can tolerate being without these medications for longer, then discontinue them even sooner. The antithyroid medications may decrease ¹³¹I uptake by the abnormal thyroid tissue, and therefore will decrease its effectiveness. So, the longer they can be off these medications without compromising their health the better--but 1 week seems to be fine.

Are there any medications or supplements I should avoid prior to ¹³¹I therapy?

As previously mentioned, Tapazole and PTU should be stopped 2-7 days prior to ¹³¹I.

Any supplements containing iodine, kelp (high in iodine), or are high in calcium or magnesium should be discontinued one week prior to ¹³¹I therapy.

I've had some treatment failures in cats on holistic/herbal nutritional supplements, therefore I ask that supplements and additives not be given for 1 week prior to, and after ¹³¹I. Continue all prescriptions i.e. antibiotics, heart medication and/or flea products as directed by your veterinarian. You do not need to withhold them the day of treatment, nor do you need to withhold food or water at any time. If you have concerns about this, please contact me.

What does treatment involve?

There are virtually no side effects, and there is no pain associated with ¹³¹I treatment. The delivery of iodine is targeted to the overactive thyroid gland(s), the cat does not experience any radiation side effects at the normal therapy doses used to treat hyperthyroidism. Treatment is usually done the day the cat is admitted to the hospital. During their hospitalization, cats are housed in individual enclosures (30" x 30" x 24") in an isolation room in the clinic. All units have individually exhausted air, so there is not cross contamination between cats. Fresh food and water are available at all times. Please inform us of any likes or dislikes or special dietary needs that your cat may have, so we can make their stay as comfortable as possible.

How long will my cat be in the hospital?

Most cats are in the hospital 3 days and 2 nights depending on the dose of ¹³¹I administered and the excretion rate of the iodine. Cats having high thyroid levels or very large thyroid tumors usually require larger iodine doses and may have to stay in the hospital longer usually no longer than 5 days, including the day of admission and the day of discharge. Once admitted for therapy, your cat cannot be discharged until its radiation exposure rate is at or below the level determined by the state.

May I visit my cat while it's in the hospital?

No; unfortunately, state regulations do not permit clients in the radiation ward. Toys or blankets from home are also not permitted because they would become contaminated and create more radioactive waste to be disposed of. However, you may send your cat's favorite food or snacks, especially if he/she is a fussy eater.

How will I find out about my cat's condition while it's in the hospital?

The day following admission and treatment you can call after 10AM. Of course we will call you to discuss any problems or complications, should they occur.

When my cat is ready to come home, what do I have to do?

Dr. Wackerbarth will advise you when the anticipated discharge date will be, typically they stay 2 nights and are discharged on the third day. Please call after 9 A.M. on the anticipated day of discharge to confirm that your cat has reached the discharge level. If you are driving, we will set up a date and approximate discharge time. Always transport your cat home in a carrier in case he/she chooses not to urinate that morning, we don't want a radioactive puddle of urine in your car. If your cat will be traveling by plane, Dr. Wackerbarth will inform you at the initial exam when the anticipated discharge day will be. You will need to arrange the courier and the return flight. Charges for airfare and courier service will be taken care of by you.

What precautions must I take when my cat comes home?

For the first two weeks upon returning home.

1. Keep your cat indoors or under direct supervision or a leash if outside. The concern is that you not allow your cat to expose other people if they roam. They will not contaminate the earth with radioactive waste nor are their immune systems compromised.
2. We advise close contact (closer than 1 foot) should be limited to one hour per day. The dose you are exposed to is extremely low and will have no medical consequences. We are attempting to minimize your lifetime cumulative exposure.
3. Use a clumpable and flushable litter, scoop the waste from the box 1-2 times per day and flush the waste down the toilet. If you are on a septic system you may not want to flush the sand type (non-biodegradable) litter down your septic system. Place waste in a plastic bag (bread or vegetable bag) then place the bag of waste into a container (5 gallon paint bucket) with a lid and store it out of the way (garage, shop etc.) for 80 days, then discard into regular trash. Do not put the litter into the trash prior to 80 days as it may set off radiation detectors, which would result in a significant fine to you. **Sand like clumpable litters are mandatory.** Clumpable litters clump up and allow complete removal of urine thus eliminating the chance of self-contamination with ^{131}I in the litter box. If you cannot find clumpable flushable litter in your area, we have them available.
4. Wash your hands carefully after handling your cat, its food dishes or litter pan.
5. Do not allow children or pregnant women to have contact with your cat.
6. We advise you against sleeping with your cat, again our intent is to minimize your lifetime cumulative exposure.

These precautions seem like my cat is hazardous to me. How dangerous is it?

The amount of radiation remaining in your cat is extremely low. In fact, if your cat were a person it would receive up to 33 mCi of ^{131}I and would have gone home the same day treatment was given with none of the restrictions your cat has. The amount of radiation you might receive from exposure to your cat after you have been treated would be equivalent to the radiation received when you fly round trip across the country.

What precautions do I need to take for my other pets?

The amount of ^{131}I that your other pets will receive by contact with your cat or by using its litter pan is negligible; you don't need to quarantine your cat from other pets. The difference between limiting your exposure and not limiting your other animals' exposure is based on a shorter lifespan of an animal thus not having decades of cumulative exposure. Also their opportunity for exposure is minimal. They do not fly (less atmospheric filtration) nor do they have routine x-rays or have occupational exposure as humans do.

How much will this treatment cost?

Treatment with ^{131}I , including hospitalization, nursing care, radioiodine treatment and radioactive waste disposal costs \$850.00. This does not include the higher doses of radioiodine used for malignant thyroid tumors (less than 1%) or additional care and/or medications your cat may require for preexisting problems. The \$850.00 treatment fee will need to be paid when your cat is left for treatment.

I will need to examine the cat on or before the day of scheduled therapy. At that time, I will review their laboratory results (Chemistry screen, CBC, T4 and complete urinalysis within one month of ^{131}I therapy). Your veterinarian will provide these some time prior to your initial exam. If they appear to be a good candidate for ^{131}I , their dose

will be determined and ordered for delivery on their scheduled treatment day. This initial pretreatment examination will be \$75.00.

Follow-up typically involves returning your cat to your primary care veterinarian at 1 and 3 months after treatment for a physical examination and follow-up blood tests to determine if the thyroid has returned to normal. The fees for this will be based on what is done and are separate from the ¹³¹I therapy. A form will be completed by your primary care veterinarian and mailed to me.

If I see areas on concern I will call your veterinarian and you. Typically, no call is necessary as the results are what we want to see. However, should you have questions during the following 3 months that you think are thyroid related and your primary care veterinarian can't answer them, then please feel free to call me.

Where is the location?

Shoreline

The Feline Hyperthyroid Treatment Center, P.S. shares the facilities with Cats Exclusive Veterinary Center, P.S., which is located at 19203 Aurora Avenue North, Shoreline, WA 98133. Parking is on the front, side and rear of the building. Enter the front door (Cats Exclusive) and we will take care of the rest.

From I-5:

North or South, take the 175th Street exit (#176). At the exit stoplight turn west on 175th (right if exiting from I-5 South, left if exiting from I-5 North). Go approximately 1/2 mile to Aurora Avenue North, and turn right (north) at the light. We are 1 mile north on the left (west) side of Aurora Avenue North (Highway 99) directly past the Park and Ride. There is a light at 192nd and Aurora Avenue, get in the left hand turn lane and turn left then into our driveway on the right hand side.

From Highway 99:

North from Seattle to 192nd on the left side, just beyond the Shoreline Park and Ride (the next intersection past Sky Nursery).

South from Everett past the Snohomish-King County line (near Costco) about 12 blocks down to 192nd (at the bottom of a slight dip) and turn right into our parking lot (we are on the right side or west side of the street).

From the Edmonds-Kingston Ferry:

Exit the ferry and cross the railroad tracks and take a right on Edmonds Way (first light). Follow Edmonds Way up the hill approximately 2.5 miles until you come to the Highway 99 South exit. Go right onto the exit to the stop sign then go right again onto Highway 99 (going south). We are 12 blocks south on Highway 99 on your right side (west).

Tacoma

The Feline Hyperthyroid Treatment Center, P.S. (Tacoma) is located at 5506 Pacific Avenue, Tacoma, WA 98408. Parking is on the street in front, on the side, and behind the building.

From I-5: Take the 56th Street Exit (#130) and follow 56th Street eastbound approximately 1.2 miles, turn left on Pacific Avenue. We are located 1 block north on the left hand side of Pacific Avenue.

From Highway 16:

Go south on I-5, take the 56th Street Exit (#130) and follow 56th Street eastbound approximately 1.2 miles, turn left on Pacific Avenue. We are located 1 block north on the left hand side of Pacific Avenue.