

Radioactive Iodine Treatment

An In-depth Look



Feline Hyperthyroid Disease

- Feline hyperthyroidism is a disorder resulting from excessive thyroid hormone circulating in the blood stream.
- Feline hyperthyroidism is the most commonly seen endocrine disorder in cats.
- The disease occurs in middle to older age cats with no breed or sex predilection.
- The actual cause of this disease is unknown.
- The disease usually results from adenomatous hyperplasia or adenoma (*a benign or non-cancerous tumor*) of the thyroid gland.
- Carcinoma (cancer) is a very rare cause of hyperthyroidism.



Diagnosis of Hyperthyroidism

- Fortunately, hyperthyroidism is fairly easy to diagnose.
- On physical exam- veterinarians commonly will describe: underweight body condition score, rapid heart rate (sometimes with an abnormal heart rhythm), unkempt appearance, and a palpable thyroid gland.
- To definitively diagnose feline hyperthyroidism- blood work must be done. Typically a comprehensive panel is sent to a reference lab including:
 - CBC (Complete Blood Count)
 - Chemistries (Measuring liver values, kidney values, electrolytes)
 - T4- which measures the amount of thyroid hormone.



Sample Patient Blood Work

- Here is a sample of a 12 year old female/spayed feline patient diagnosed with hyperthyroidism.

GLU	102 mg/dL
BUN	27 mg/dL
CREA	1.2 mg/dL
BUN/CREA	23
PHOS	5.3 mg/dL
CA	9.0 mg/dL
TP	7.4 g/dL
ALB	3.1 g/dL
GLOB	4.3 g/dL
ALB/GLOB	0.7
ALT	56 U/L
ALKP	51 U/L
GGT	< 0 U/L
TBIL	0.3 mg/dL
CHOL	192 mg/dL
Na	160 mmol/L
K	3.7 mmol/L
Na/K	43
Cl	122 mmol/L
Osm Calc	320 mmol/kg

Chemistries were within normal range as was the CBC (not pictured)

Test Requested	Results
TOTAL T4	
T4	4.1 (HIGH)

For feline patients over the age of 10, the T4 level should be under 2.5. This patient's T4 is 4.1. This patient has been diagnosed with hyperthyroidism



Treatment Options for Hyperthyroid Cats

- Can be separated into two categories:
Management and Cure

Medical Management

- Anti-thyroid Drug Therapy
- Iodine-Restricted Diet

Treating or Curing the Disease

- I-131 or Radioactive Iodine Treatment
- Surgical Removal of Thyroid Glands



Choosing a Treatment

- It is important to know that left untreated, the diseased thyroid gland(s) will continue to produce high levels of the thyroid hormone. This leads to an increase in metabolic rate which can lead to further organ damage.
- Progressive and untreated hyperthyroidism can lead to:
 - Deterious effects on many internal organs and severe metabolic dysfunction can develop ultimately leading to death.
 - Overall increase in blood pressure which can cause damage to kidneys and lead to retinal detachment of the eye.
 - Further weight loss and muscle wasting.
 - Increased heart rate which can lead to heart disease.
 - General organ failure and a decline in quality of life.

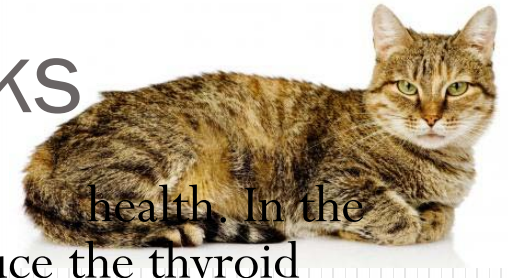


I-131 or Radioactive Iodine Treatment

- This is the preferred treatment for feline hyperthyroidism.
- There is a 98% success rate of CURING your cat of hyperthyroidism with ONE treatment of I-131.
- I-131 or Radioactive Iodine treatment is an oral dose given by trained veterinary personnel in a treatment center hospital.
- This treatment avoids surgery, anesthesia, and the administration of anti-thyroid drugs.



How Radioactive Iodine Works



- Iodine is an element required for normal health. In the body, it is used primarily by the thyroid gland to produce the thyroid hormone.
- Radio Iodine is a form of stable iodine that has been made radioactive.
- When taken into the body of the cat, a large percentage of radio iodine accumulates in the thyroid gland. Once the radio iodine is taken up by the thyroid gland the radiation destroys the diseased thyroid tissue thus treating the hyperthyroid condition.
- Normal thyroid cells as well as other body tissue cells do not concentrate any of the radio iodine leaving most cats with some normal residual tissue.
 - Normal thyroid cells will “reactivate” and make normal amounts of thyroid hormone



Is Radioactive Iodine safe?

- It is normal for owners to feel anxious about a radioactive treatment.
- Though the Radioactive Iodine treatment is radioactive- it is still considered to be the safest and most effective treatment for hyperthyroid patients.
- Radioactive Iodine is a radioactive material, but each treatment site has educated and trained veterinary professionals. Radio Iodine staff take special precautions to be safe and are well trained to provide safety tips to owners for at-home care.
- Cats will be at their highest level of radiation while in our treatment facilities.

In their home isolation period, your cat will be at an extremely low radiation. This amount is roughly equal to a round trip in an airplane across the entire country.



Advantages of Radioactive Iodine Treatment

- 98% success rate.
- No need for anesthesia.
- No risk of post operative hypocalcemia as seen in many surgical cases.
- No daily medication needed to control the thyroid.
- One time dose given at the treatment facility.
- Can be done at any age.
- Since the radioactive iodine is specific in its site of action- there is no hair loss or increase in skin pigmentation like other forms of radiation therapy.



Considerations and Side Effects of Radioactive Iodine Treatment

Overall, significant side effects are extremely rare.

- Cats must stay on average 4 days in a treatment facility and must be in an isolated room at home for 1-2 weeks after treatment. *isolation periods discussed on another slide.
- Some cats may experience mild discomfort of the thyroid region the first day or two after treatment
- On rare instances, a cat will develop HYPOthyroidism (under-active thyroid gland). Cats typically tolerate this well without any need for supplementation.



Cure Rate of Radioactive Iodine Treatment



- After treatment, residual (normal) thyroid tissue will “reactivate” and resume full function within 1-3 months.
- Our studies have shown that a single dose of radioactive iodine is effective in CURING hyperthyroidism in over 98% of cats that are treated.
- Even the 2% of the cats that are not completely cured after one treatment do show some lowering in their circulating thyroid hormone concentrations and improve significantly clinically.
- If hyperthyroidism persists after treatment for longer than three to six months, retreatment with radio iodine is generally recommended to cure the disorder.



Can Hyperthyroidism Reoccur AFTER a Successful Treatment?

- Yes, although it is very uncommon and occurs in less than 3% of cats treated.
- In addition, such reoccurrences usually develop three years or longer after the radio iodine treatment. Such relapses may indicate the development of a NEW thyroid tumor causing the hyperthyroidism rather than a relapse from the first tumor that was treated with radio iodine.



Is My Cat a Candidate for Radioactive Iodine Treatment?

- Hyperthyroid cats of ANY age can be successfully treated as long as there are no other life threatening medical conditions.
- Before pursuing treatment, your veterinarian will need to perform:
 - Full physical exam
 - Blood work to a reference lab including a T4 level
 - Urinalysis
 - Two chest radiographs.

**Testing must be within 30 days of anticipated radioactive iodine treatment*

- Your veterinarian will then decide based on these results if your cat is a candidate for treatment. The veterinarians at our treatment facilities are always available for consultations.



Scheduling an Appointment for Radioactive Iodine Treatment

- By appointment only
- Four convenient treatment facility locations:

Serving Greater Detroit Area:

Cats Veterinary
43727 Gratiot
Clinton Twp, MI 48036

(586) 463-9550

Serving Northern Suburbs of Detroit:

Exclusively Cats
6650 Highland Rd Ste 116
Waterford, MI 48327

(248) 666-5287

Serving Southern Michigan/Northern
Ohio/Downriver:

Downriver Veterinary Associates
3909 Fort St.
Lincoln Park, MI 48146

(313) 389-2222

Serving Grand Rapids Area:

Kentwood Cat Clinic
3215 Breton Rd. SE
Kentwood, MI 49512

(616) 241- 6369

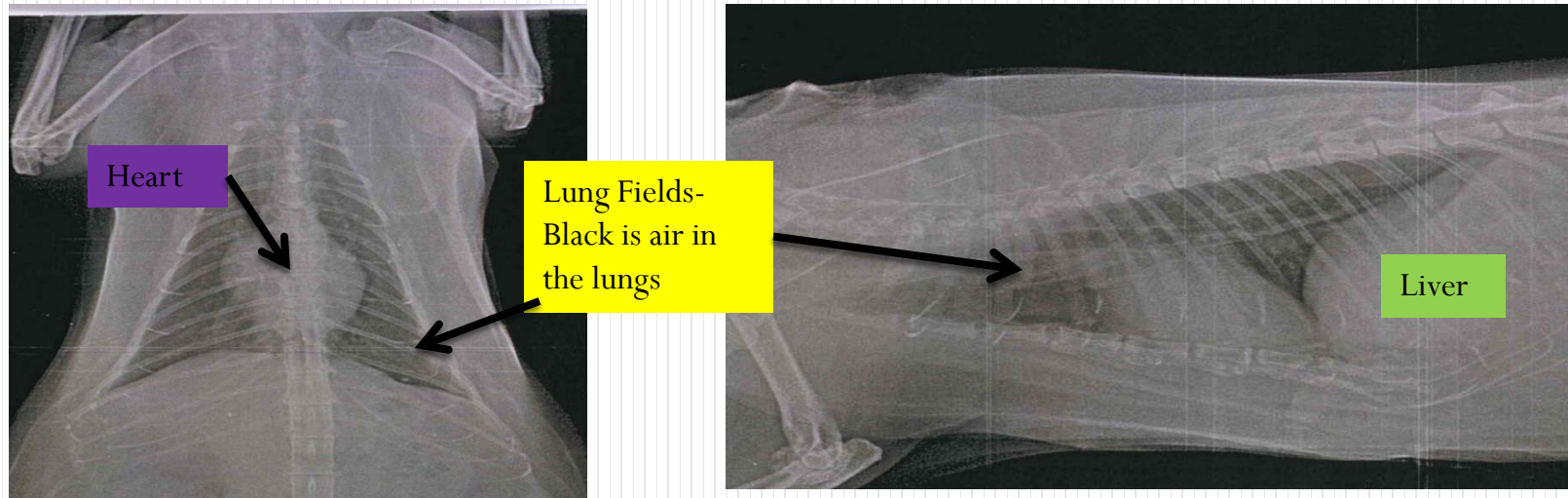


Pre- Radioactive Iodine Chest Radiographs

Chest radiographs are performed to screen for any masses in the lungs.

Hyperthyroidism is caused by a tumor of the thyroid gland and although the majority of cats have a benign or non-cancerous tumor- masses may be present in the lungs if the thyroid tumor is malignant. Remember a malignant tumor of the thyroid gland only occurs in 1-2% of feline patients.

Sample Chest Radiographs of our 12 year old female/spayed feline patient diagnosed with hyperthyroidism.



This patient has normal lungs with no evidence of soft tissue masses.



Pre- Radioactive Iodine Urinalysis

SG	1.000	1.005	1.010	1.015	1.020	1.025	1.030	1.040	Off Scale
Blood:	Neg	5-10	50	250 ery/ul					
Urobili:	Neg	25	75	500					
Billi:	Neg	+	++	+++					
Protein:	Neg	+ / 30		++ / 100	+++ / 500 MG/DL				
Ketones:	Neg	+ / small		++	+++				
Glucose:	Neg	50	150	500	> 1000				
PH:	5	6	7	8	9				

estimate 1.034

RBC: 0-5 WBC: — SQ Cell: —
 Trans: — Caudate: — Renal: —
 Bacteria: — Crystals: — Casts: —

Apperance: Clear Hazy Cloudy Turbid
 Color: Colorless Yellow Amber Other _____

Culture ☒ initials JV Cysto ☒ Catheter

culture negative for infection x

While veterinarians are interested in the urinalysis results in its' entirety- The Specific Gravity (or how concentrated the urine is) will greatly assist the doctors in ordering the appropriate Radioactive Iodine dose specifically for your cat.

A Specific Gravity under 1.020 can be indicative of Kidney Disease and will change the dose of Radio-Iodine your cat will receive.

Sample Urinalysis of our 12 year old female/spayed feline patient diagnosed with hyperthyroidism.

This patient has a normal specific gravity and normal urinalysis.



What is the Cost of Treatment with Radioactive Iodine Therapy?

- The pre-treatment workup cost will vary based on clinic prices.
- Cost for treatment in one of our treatment facilities is \$1,200 (for the typical uncomplicated patient) and includes:
 - Owner consultation and safety training by a nuclear trained veterinary staff member.
 - 1 hour appointment with the treating veterinarian in which they will describe in detail the treatment and aftercare.
 - Full physical examination by the treating veterinarian.
 - Radioactive Iodine dose ordered specifically to the needs of your cat. The dose arrives at our facility the day of your cat's treatment and cannot be used for any other patient.
 - Administration of the radioactive iodine dose by veterinary professionals.
 - 4 days of in hospital care and monitoring.
 - Close monitoring of patients currently in the nuclear treatment rooms by both treating veterinarians and trained licensed veterinary technicians.
 - Daily safety checks of the nuclear portion of the hospital.
 - In depth patient discharge by a licensed veterinary technician.
 - Shared medical chart with referring veterinarians.

There is a cancellation fee of \$250.00 for appointments cancelled less than 72 business hours before the appointment time.



In Hospital Stay

- An in hospital stay is required by NRC (Nuclear Regulatory Commission) laws and regulations.
- Owners can feel confident that their cat will be cared for and monitored by trained veterinary professionals.
- The in hospital stay for the typical patient is 4 days (example: admit on Monday, discharge on Friday).
- Patients will be placed in our specially constructed radio iodine treatment centers of the veterinary hospital.
- Patients are housed in individual large rooms with no other cats- there will not be any other cats of the hospital.
- Patients are allowed to exercise in the treatment room while veterinary professionals attend to them.
- Patients are constantly monitored by closed-circuit TV monitors.



I-131 patient "Moozie" enjoying some exercise time in a treatment facility



Admission/Treatment Day Check List

Please bring these items with you to your scheduled appointment:

- Radiographs (unless already emailed to the treatment center).
- Your cat in a plastic carrier- the carrier will be stored in our facility.
- Food (canned and/or dry), and treats that you would like us to give your cat. Please bring enough for appx 1 week as we tend to “spoil” our radioactive iodine patients with a little extra.
- Any necessary medications with instructions.
- SMALL toy is allowed but CANNOT be returned to you.
- Please do not feed your cat 1 hour prior to travel- this limits any car sickness before the treatment.



What to Expect on Admission Day

- Please arrive 10-15 minutes prior to the appointment time as there will be a few forms to fill out.
- Your cat will be housed in a comfortable housing unit during your consultation with the veterinarian.
- One hour appointment with the treating veterinarian. During this consultation, the veterinarian will describe how the treatment works and safety precautions.
- A physical examination by the treating veterinarian.
- Tour of the treatment facility.
- Your cat will then be admitted into the radio iodine portion of the treating veterinary hospital to receive its oral I-131 (radio active iodine) dose.

**May vary pending the treatment location*

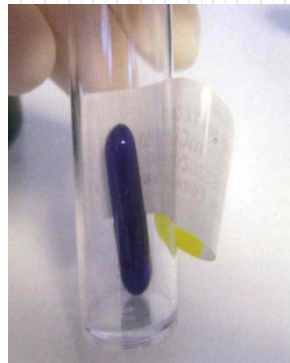


Dr. Sadek from Kentwood Cat Clinic
examining a radio iodine patient



Administration of Radioactive Iodine Dose

- The dose is calculated based on your cat's T4 level.
- The dose cannot be used for any other patient and is prescribed specially to the needs of your cat.
- Our trained veterinary professionals will administer the dose inside the treatment room.
- The pill is no larger than a typical capsule dispensed to feline patients.



The dose arrives the morning of treatment in a special lead-lined box. After the consultation and examination, the patient is given the capsule orally and then closely monitored.



What Happens to my Cat During its Stay at a Radio Iodine Treatment Facility

- We expect our patients to eat, sleep and play while the radiation is taken up by the thyroid gland and begins to dissipate to safe levels for patient discharge.
- Our veterinary staff will “spoil” our patients with plenty of food options and will frequently monitor their overall comfort and medical needs.
- The treating veterinarians will also frequently check on radio iodine patients.



Visitation and Radioactive Iodine Patients

- Due to NRC (Nuclear Regulatory Commission) laws and regulations, visitation with your cat while in the treatment facility is not permitted.
- We encourage owners to call as often and desired for patient updates.
- Our veterinary staff will always call owners immediately if there is any urgent concern.



Discharge From a Radioactive Iodine Treatment Center

- Typically happens 4 days after admission to treatment facility.
- Scheduled with a trained licensed veterinary technician.
- Will take approximately 15 minutes.
- Radiation safety precautions and isolation period will again be discussed.
- An audio demonstration with a Geiger Counter.
- Do NOT bring any children or those that are pregnant to pick up your cat from the treatment facility. Remember: your cat will be minimally radioactive.



Patient Home Care and Isolation After Radioactive Iodine Treatment (1 of 2)

- Patient will be minimally radioactive. All patient's are measured to verify they are at a safe level for discharge.
- Still exercise safety precautions as discussed.
- Isolation room should be a secluded room (typically a bathroom or spare bedroom is used).
- Limit time with patient to under 30 minutes a day
- Can comfort cat as needed at arm length distance (appx 3 feet).
- No sleeping with the cat while in isolation.
- **Isolation period is 1 week for those that do not live in a household with children under 18 or pregnant- isolation period is 2 weeks for those that live in a household with children or with pregnant individual(s).**



Patient Home Care and Isolation After Radioactive Iodine Treatment (2 of 2)

- No bleach or oxy products when cleaning any accidents. No bleach tabs in the toilet bowl. Clean any accidents (urine or stool) with water, toilet paper, dish soap and flush everything down the toilet.
- Wear latex gloves when going into isolation room. Use new gloves each time you enter. Wash any fecal or urine off gloves if needed before throwing away.
- If your cat does soil on any thing that can be washed in a laundry machine- wash two cycles through (make sure no bleach/oxy in detergent) and then run a rinse cycle before using the washing machine for other clothing.
- If your cat soils something that is not washable (carpet)- this must be stored in a garbage bag for 81 days away from the family setting, and then put into the garbage.
- Use a flushable litter and dispose of urine and stool. Scoop and flush soiled litter twice a day.
- After isolation period- dispose of all unused litter in the toilet and wash litter box out with warm water and soap. Refill with normal litter and use as usual.



Isolation Room Checklist

- Separate room away from family activities (spare bathroom or bedroom).
- Scoop able and FLUSHABLE litter.
- Litter box with liner and scooper.
- Food and water bowls.
- Latex Gloves.



Any Precautions With Other Pets While My Cat is in Isolation Period?

- The amount of radiation other pets will receive by contact with other cat or by accidentally using the isolation litter box is negligible.



Is Additional Boarding an Option?

- We can provide boarding for your cat during its isolation period inside our treatment facility.
- Boarding needs to be scheduled at the time of the appointment as space is limited.



Aftercare of the Radioactive Iodine Patient

- Recheck visit with your normal veterinarian 2 weeks after discharge from a treatment facility.
 - Blood work profile with T4 level- please have this faxed to the treatment facility.
- It is normal for behavior to *seem* to change after treatment. Often times hyperthyroid patients are very active and eat ravenously. You may notice after discharge your cat's activity and appetite is normalizing to their age group.
- If any concerns while in the isolation period please call the treatment facility right away.



Get Connected With Cats Radio Iodine

- “Like” us on Facebook: “Cats Radio Iodine”
- Visit our website at www.catsradioiodine.com



Cats Radio-Iodine Treatment Centers
www.catsradioiodine.com

Also view the “Follow Moozie though her I-131 treatment slide show to get another perspective on the treatment!

