

## RADIOACTIVE IODINE TREATMENT FOR CATS WITH HYPERTHYROIDISM

### Information and Instructions for Owners

What is hyperthyroidism?

Hyperthyroidism is the condition resulting from secretion of excess thyroid hormone. In cats, this usually results from adenomatous hyperplasia or adenoma (benign tumor) of the thyroid gland. Carcinoma (cancer) is a very rare cause of hyperthyroidism in cats.

How can hyperthyroidism be treated?

Hyperthyroidism can be treated medically, surgically, or with radioiodine. Medical treatment consists of administration of methimazole (Tapazole) two times daily. Methimazole treatment will usually control hyperthyroidism, but is not a cure. (i.e. The drug will block thyroid hormone secretion but will not remove the thyroid tumor). Also, the drug must be given for the rest of the cat's life, and has the possibility of serious side effects. Surgery will cure the hyperthyroid condition and consists of the removal of part or all of the thyroid gland (the feline thyroid gland consists of two separate lobes). Radio iodine (radioactive iodine) will also cure the hyperthyroid condition. The procedure for this treatment is relatively simple, consisting of a single oral dose.

Why would radio iodine be used instead of medicine or surgery?

Medical therapy will work for some cats, but there can be several reasons it may not be the best choice. First, some cats are difficult or impossible to pill. Second, mild reactions (e.g. loss of appetite, vomiting) are common, whereas a few cats develop serious adverse reactions to the medication (blood or liver problems). Because of these side effects, periodic blood tests to monitor the cat's condition are necessary. Finally, some owners may not want to have to medicate their relatively young cat for the rest of its life.

Surgery is generally an effective treatment for hyperthyroidism but may have disadvantages in some cats. Many cats with hyperthyroidism have heart problems and are higher anesthetic risks. There is also a risk that there will be temporary damage to the adjacent parathyroid glands during thyroid surgery resulting in hypocalcemia (low blood calcium). This complication can be life threatening and result in extra hospitalization and

cost. Finally, there is a small risk that the hyperthyroidism will not be cured with surgery or the condition will reoccur.

Radio iodine therapy has some distinct advantages over use of medical or surgical treatment. With radio iodine, the need for anesthesia and the risk of hypocalcemia (the major disadvantages with surgery) are eliminated. Tapazole treatment is not needed; in fact, drug treatment must be discontinued for at least two weeks before radioactive iodine is given. The major drawback is that after administration of radioiodine, the cat must be kept hospitalized for a period to allow radiation levels to decrease.

How does radioiodine therapy work?

Iodine is an element required for normal health. In the body, it is used primarily by the thyroid gland (located in the neck) to produce the thyroid hormones (T4 and T3 are the two major thyroid hormones).

Radioiodine I131 is a form of iodine that has been made radioactive. In its radioactive state, it undergoes a natural process (decay) in which it gives off radiation. The radiation given off consists of three types: alpha, beta and gamma. The half-life of I131 is eight days; in other words, one-half of the radioiodine goes through this process every 8 days.

When taken into the body, a large percentage of radioiodine accumulates in the thyroid gland. The remainder of the I131 is excreted in the urine and feces. Once the radioiodine is taken up by the thyroid gland (or thyroid tumor in a hyperthyroid cat), the gamma rays and beta particles are released. The beta particles are particularly lethal to the thyroid cells. The beta particles travel a maximum of 2-5 mm in tissue; therefore beta particles are locally destructive but spare adjacent hypoplastic thyroid tissue, parathyroid glands, and other cervical structures. The radiation destroys the thyroid tumor cells and thus treats the hyperthyroid condition.

How is therapy given?

The radioiodine is given as a single dose on the first hospital day. After the treatment is administered, your cat is placed in isolation. In this case, isolation means keeping your cat in a separate "facility", away from other animals not receiving this treatment.

How long is the hospitalization period?

The half-life of the iodine used is eight days. The iodine is excreted primarily in the cat's urine. The usual hospitalization period is 4 days.

How do I check on my cat's condition during treatment? Is visiting allowed?

Due to the nature of the treatment, visitation is not permitted. The cats are fed and monitored 2-3 times daily by a full time veterinary technician and Dr. Bailey during their stay. If you wish, you can call us to check on the status of your cat. Of course, we will contact you right away if there are any concerns.

Are there any side effects or risks resulting from therapy?

Since the iodine is specific in its site of action, there is no hair loss or increase in skin pigmentation, as may be seen with other forms of radiation therapy (cobalt radiation).

Occasionally, a cat will develop hypothyroidism (under active thyroid gland) after treatment with radioiodine. This is easily controlled with supplementation and may not be permanent. Overall, side effects are extremely rare.

What happens after isolation is over?

Upon discharge, your cat will still be minimally radioactive. Even though the level of radioactivity is very low (much lower than the level at which human patients are discharged from the hospital), you should still exercise caution during this period.

All of the remaining radioactivity in your cat will gradually disappear over the next 2 to 4 weeks (through radioactive decay and excretion into the urine). Until this is complete, your cat will emit low levels of radiation. Because of this, we require that you also isolate your cat at home for one week further, two weeks if children are living in the household. Any spare room in the household can be used for isolation.

Much of the residual radioactivity will be eliminated through your cat's urine and feces. Therefore, we recommend that your cat be provided with a litter box that has a liner and that you use a flushable litter for 1 week. You should wear disposable gloves while cleaning the litter pan, and afterward, your hands should be washed thoroughly.

What aftercare will my cat need?

The vast majority of cats require no specific aftercare. Your veterinarian should perform a complete blood analysis no earlier than 2 weeks post-discharge, and then monitor the thyroid function 2-3 months after, and then on a six month basis as a part of their on-going health care plan for your cat.

Does the radioiodine treatment always work to cure the hyperthyroidism?

Our studies have shown that a single dose of radioiodine is effective in curing hyperthyroidism in 97% of cats that are treated. Even those cats that are not completely cured after one treatment show some lowering in their circulation thyroid hormone concentrations and improve clinically.

If hyperthyroidism persists for longer than 3-6 months after treatment, re-treatment with radioiodine is generally recommended to cure the disorder. Virtually all cats that remain hyperthyroid after the first treatment are cured by the second treatment.

Can the hyperthyroidism ever reoccur?

Yes, although it is very uncommon (less than 3% of cats treated), hyperthyroidism can reoccur. In addition, such reoccurrences usually develop 3 years or longer after the hyperthyroidism was first treated. Therefore, such relapses may indicate the development of a new thyroid tumor causing hyperthyroidism, rather than a relapse from the first tumor that was treated with radioiodine.

What should I do on the day of treatment?

Please bring your cat to the hospital at the scheduled time. You should feed your cat on the day of admission to the hospital (fasting is not necessary).

Should I bring anything for my cat?

If your cat eats a particular kind of food, we suggest that you bring it so that we know exactly what you want your cat to eat during the time of hospitalization. Personal items (blankets, toys or any items from home) are not allowed due to contamination. Please leave a carrier with us, so that it is here for the ride home. Your cat must be in a carrier on the ride home. Also, please bring the x-rays taken of your cat.

What happens on the day of admission?

The doctor will give you a full explanation of hyperthyroidism and I-131 treatment, and will answer any remaining questions you may have. The appointment will be approximately 1 hour long.

Is radioiodine therapy expensive?

The cost of any treatment for feline hyperthyroidism is significant. The cost for radio iodine therapy is generally a total fee of \$1100. This includes the radio iodine itself, the cost of hospitalization, food, litter, and monitoring. This is comparable to the cost of surgical removal. The cost of medication would average \$400 to \$500 per year plus the cost of repeated blood tests. Please note, because we must order the dose of radio iodine before the treatment is administered, cancellation of a scheduled appointment less than 3 business days before the appointment will result in a charge of \$300.

How do I pay for radioiodine therapy?

Payment is made at time of service (when your cat is brought in for treatment). Method of payment may include cash, check or charge cards (Visa, Master Card, Discover, or American Express).