



## RADIOACTIVE IODINE THERAPY FOR HYPERTHYROID CATS – CLIENT INFORMATION

Hyperthyroidism is currently one of the most common diseases of older cats. The cause of this disease is still unknown but is believed to be multifactorial with possible genetic, nutritional (iodine) and environmental (eg toxic goitrogens) components.

Thyroid hormone is used by the body to regulate many metabolic processes such as metabolism and heart rate. The clinical signs that you and your veterinarian might recognise, however, are due to an overproduction of thyroid hormone from hyperplastic or adenomatous (benign) thyroid tissue. In rare cases these can become malignant.

Some of the classic clinical signs seen are:

- Weight loss
- Ravenous appetite
- Vomiting
- Diarrhoea
- Agitated or grumpier than normal
- Vocalising
- Fast or pounding heart rate
- Have a heart murmur on examination
- Have poor hair coat and poor body condition
- Muscle wasting
- A palpable goitre in the neck

Fortunately, in most cases we are able to control or treat the disease with relative safe treatments. Your veterinarian will perform blood and urine tests, possibly radiography of the chest and blood pressure measurements, to definitively diagnose your cat's condition.

Treatment generally involves one of 4 options.

1. Oral or transdermal preparations of anti-thyroid hormone medications, methimazole or carbimazole,
2. Nutritional control with low iodine diets (Hills y/d),
3. Surgical thyroidectomy or
4. Radioactive iodine treatment (RAIT).

The latter two options are permanent treatments, (although do not exclude the possibility of another adenoma forming later), whereas the medications and diet are required lifelong.

Radioactive iodine treatment is widely considered the treatment of choice for hyperthyroid cats, although there are always circumstances that may exclude your decision to use it.

Concerns from clients include cost, inability to access the treatment, radiation safety and the fact the cat must board at the facility for 7-10 days.

1. **Cost** - If you add up the cost of other treatments and monitoring over the course of the cat's life, they are comparable. However, with RAIT, the cost is an upfront lump sum payment, rather than spread over years.

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2. ***Reduced access to treatment facilities*** – There are limited places to access this treatment as there are special licensing requirements by the person who treats the cat and for the facility where treated cats are housed. Due to the radiation emitted from the cat after treatment, there are requirements for radiation shielding to make the area safe for staff.
3. ***Radiation safety*** – The radiation emitted from the cat is a combination of beta and gamma radiation. The strongest emissions are from the beta rays, which travel a maximum distance of 2mm. This allows them to target the overactive thyroid tissue specifically. It is also why, there are safety measure in place for 3 weeks post treatment for staff and then owners not to be too close to the cat for long periods of time. The radiation degrades over time, so by 3 weeks post treatment the radiation levels are negligible. In the first week they are the strongest, which is why we hospitalise the cat in a special shielded environment.
4. ***Boarding the cat after treatment*** – Owners often feel it is stressful for the cat to board for 7-10 days post treatment. However, due to legal requirements for the radiation safety just discussed, it is essential for the health and wellbeing of the owners not to have the cat around them at this time. The cat is no more stressed here than in a boarding cattery if you went on holidays, and often stress levels are lower as there are fewer cats around them. Once treated, we do not need to fuss with them, except to feed them, clean their cages and chat to them twice daily.

### **Is my cat a suitable candidate?**

Your veterinarian will discuss the positive and negative consequences of each form of treatment so you can make an informed choice of what would best suit your situation and your cat. (See Attachment.)

The suitability of RAIT will be dependent on your cat's current health, their age, how long the cat has had the disease and any co-morbidities (other existing diseases) your cat may have.

Your veterinarian will send all your cats test results and history to our clinic, so we can also assess their suitability and we can discuss them with you.

### **The risks and possible sequelae of RAIT**

RAIT is deemed the treatment of choice because of its low risk and high success rate of 90-95%.

#### ***1. Concurrent Chronic Kidney Disease (CKD)***

RAIT is a permanent treatment, and one of the main risks once treated is "unmasking" underlying kidney disease. The presence of CKD does not exclude treating the hyperthyroidism, as leaving it unchecked will lead to worsening of the CKD more rapidly, due to higher blood pressures that damage the kidney. We can use oral or transdermal medication as a pre-treatment for a month and then retest the cat looking for signs of CKD, so we can be aware of its presence and discuss long term prognosis before a permanent treatment is instituted

This will

- a. Allow us to give you a more accurate prognosis for longevity that may alter your decision as to whether to treat your cat's hyperthyroidism with a treatment that has more upfront costs and
- b. So, we can monitor the cats CKD more closely and institute treatments that maybe helpful in prolonging good quality of life, such as special kidney diets and blood pressure medications if required.

Studies have indicated that the survival time of cats where mild to moderate (IRIS stage 1-2) kidney disease is unmasked after hyperthyroid treatment and cats whose kidney function appears to be normal after treatment, do not differ. This is a different scenario for cats with advanced kidney disease (IRIS stage 3-4). So, it is important to discuss your cats' condition with your regular vet.

## **2. Second Dose Required**

There is always a possible risk of the cat requiring a second dose. In most cases, a single dose is all that is required. This risk is minimised by treating early in the course of the disease. Cats that have had hyperthyroidism for a long time, even if controlled by oral or transdermal medication, are more at risk of requiring a second dose.

Malignant thyroid tumours are rare, but if poor response to initial treatment leads us to suspect that your cat has a malignancy, thyroid cytology and scintigraphy (a specialist diagnostic procedure) can help to differentiate these cases. Unfortunately, there is currently no facility in Melbourne providing this service, but there is a clinic in Sydney.

## **3. Iatrogenic Hypothyroidism**

There is a small risk of the cat becoming hypothyroid after treatment. This can sometimes be seen at 1 month post treatment when a follow up thyroid level is taken. It is often transitory but should be monitored carefully with further testing at 3 months post treatment and even 6 and 12 months with further blood tests. If your cat is found to have hypothyroidism from 3 months post RAIT, then replacement hormone therapy with thyroxine should be started. Low levels of thyroid hormone, seen in hypothyroidism, can worsen or potentiate CKD. Survival times for such cases are increased when treated with thyroxine.

## **The Treatment**

The treatment is given as a single, calibrated oral capsule of radioactive iodine isotope (I131). The calibration is calculated for your cat only. Half the treatment cost is required at time of ordering the capsule and is **non-refundable**. The balance is due on discharge of the cat.

You will be asked to bring your cat in to the clinic on the day prior to treatment to allow him/her to settle and not be too stressed from the move and new environment. The cat is given a small amount of food the morning of treatment and given an anti-nausea injection in the morning or the night before, to minimise the chance of vomiting the capsule once administered. The cat may also require a mild sedative to minimise the risk of the cat biting the capsule. Both these instances are classified as a "radioactive spills" which requires careful and thorough cleaning procedures and obviously wastes the capsule.

Once treated, the cat is boarded in an isolated but otherwise comfortable area that has protective shielding and they are then fed and cleaned twice daily. The cat's health and wellbeing are monitored carefully and noted over this time.

At the end of the boarding time, which will be determined (usually 7-9 days), a discharge appointment will be made with you with detailed instructions for handling the cat over the following 2 weeks to minimise any deleterious risks from radiation to you and your family.

You will be asked to revisit your regular veterinarian 4 weeks post treatment for a follow up thyroid level, to check efficacy of the treatment. I also recommend a 3-month and 6-month blood and urine test to check thyroid level, kidney function and any signs of hypothyroidism that may indicate they need replacement thyroxine.

For further information or questions, please call Dr Amanda Gross BVSc on 0452 532 287

# Advantages and Disadvantages of Feline Hyperthyroidism Treatments

TREATMENT	ADVANTAGES	DISADVANTAGES
<b>Radioactive Iodine</b>	<ul style="list-style-type: none"> <li>• Kills abnormal cells in any location</li> <li>• Cure rate <math>\geq 95\%</math>; most successful treatment for carcinoma</li> <li>• Relapse rate 5%</li> <li>• Simple treatment – one injection or oral capsule</li> <li>• Serious side effects are rare</li> <li>• Limited testing needed after successful treatment</li> <li>• Minimal risk of permanent hypothyroidism</li> <li>• Preferred treatment for humans</li> </ul>	<ul style="list-style-type: none"> <li>• Requires special license and facility</li> <li>• Hospitalization varies from 3 days to 4 weeks depending on dose cat receives and regional regulations</li> <li>• Owner cannot visit</li> <li>• Cat is under 'house arrest' for 2 weeks after discharge</li> <li>• Owner must collect wastes for 2 weeks after discharge</li> <li>• Owner cannot cuddle cat for long intervals for 2 weeks after discharge</li> <li>• Not reversible</li> </ul>
<b>Oral or Transdermal Medication</b>	<ul style="list-style-type: none"> <li>• Response rate <math>\geq 95\%</math> while on medication</li> <li>• Small pills, liquid or topical gel</li> <li>• Requires no hospitalization</li> <li>• No risk of permanent hypothyroidism</li> <li>• Reversible if kidney function declines</li> </ul>	<ul style="list-style-type: none"> <li>• Relapse rate 100% when off medication</li> <li>• Daily medication (usually twice daily) for the rest of the cat's life</li> <li>• Frequent lab tests to monitor effectiveness and safety</li> <li>• Drug reactions occur in up to 25% of cats; facial itching, vomiting, liver failure, abnormal blood cell levels and bleeding episodes may occur</li> <li>• Tumor continues to grow and may become malignant</li> </ul>
<b>Surgical Thyroidectomy</b>	<ul style="list-style-type: none"> <li>• <math>\geq 90\%</math> cure rate if both glands are removed</li> <li>• 35–60% cure rate if one gland is removed</li> <li>• Cures disease within 1–2 days</li> <li>• Relapse rate 5% if bilateral procedure; <math>\leq 30\%</math> if unilateral</li> <li>• Requires no special equipment</li> <li>• Most general surgeons can perform</li> </ul>	<ul style="list-style-type: none"> <li>• General anesthesia in a cat with a compromised cardiovascular system is risky</li> <li>• May damage parathyroid gland and cause a transient or permanent calcium crisis</li> <li>• Requires hospitalization</li> <li>• Not reversible</li> <li>• Most cats require stabilization first with medication</li> <li>• Voice or purr may change</li> </ul>
<b>Dietary Therapy</b>	<ul style="list-style-type: none"> <li>• Only a change in diet is required</li> <li>• Response rate <math>\geq 82\%</math> while on diet</li> <li>• Safe in cats with renal insufficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Absolutely the only food the cat can eat for the rest of its life</li> <li>• Only low-iodine treats and water can be used</li> <li>• Relapse rate 100% when off diet</li> </ul>

For more information  
[www.catvets.com/fht](http://www.catvets.com/fht)

