

Radioactive iodine at the Feline Centre, Langford Veterinary Services

The Feline Centre is one of only 16 clinics in the UK that is able to treat cats with radioactive iodine. We have over 15 years of experience of treating hyperthyroid cats with radioactive iodine and strive to provide a pleasant, comfortable and stress-free experience for your cat during their stay with us at the hospital. We are a **ISFM gold standard Cat Friendly Clinic** and have cattery style accommodation in our radioiodine ward, which we feel helps our patients settle in well. Our service is run by RCVS Recognised Specialists in Feline Medicine. This information provides details about the management of hyperthyroidism and how the radioactive iodine service works.

My cat has been diagnosed with hyperthyroidism-what does this mean?

Hyperthyroidism is the most common hormonal disease seen in older cats. The disease is most commonly caused by a tumour in the thyroid gland(s). In 97-99% of cases the tumour is benign (an adenoma or hyperplasia) and rarely is caused by a malignant tumour (carcinoma). The signs seen in hyperthyroid cats are due to high levels of thyroid hormone released by the tumour. Common signs include weight loss, excessive hunger and thirst, vomiting, diarrhoea, agitation and vocalisation. Rarely cats have a form of the disease called 'apathetic hyperthyroidism' where they may be lethargic and inappetent, as opposed to showing the more typical signs. In most cats an enlarged thyroid gland(s) can be felt within the neck, however between 5 to 20% of cats may also have ectopic tissue within the chest.

How is hyperthyroidism treated?

There are four ways that hyperthyroidism can be managed, each with associated pros and cons

Treatment	Pros	Cons
Medical Treatment	<ul style="list-style-type: none"> • No requirement for anaesthesia. • Most cats can be stabilised within 2-4weeks. • Dose can be titrated to effect. • Reversible. • No requirement for hospitalisation. • Lower upfront cost compared to surgery or radioiodine. 	<ul style="list-style-type: none"> • Long term requirement for daily or twice daily pill/liquid administration or application of transdermal cream. • Regular blood tests required for monitoring for complications. • Possible side effects include skin irritation and lesions, liver damage, development of abnormalities in white blood cells, red blood cells or platelets (clotting cells). • Does not cure the tumour, only blocks the effect of excess secreted hormone, so the tumour will continue to grow. • Increasing doses of the drug may be required with long term treatment, and in some cases chronic long-standing hyperthyroidism becomes resistant to medication.

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		<ul style="list-style-type: none"> • Treatment for 2-3years may be cost equivalent to surgery or radioiodine (practice/drug dependent).
Dietary therapy iodine restricted diet	<ul style="list-style-type: none"> • Reversible. • No requirement for hospitalisation. • Not known to be associated with adverse effects and appears to be well tolerated. • No requirement for anaesthesia. • Lower upfront cost compared to surgery or radioiodine. 	<ul style="list-style-type: none"> • Long term requirement for the cat to eat the diet only. • May be more difficult to follow in a multi-cat household, if the cat hunts and eats prey or requires medication containing iodine. • The cat may only temporarily like the diet. • Does not cure the tumour, only blocks the effect of excess secreted hormone, so the tumour will continue to grow. • Efficacy in long-term hyperthyroidism is unknown. • May not be suitable if the cat requires other specific dietary management of other disease e.g. diabetes.
Surgery	<ul style="list-style-type: none"> • Reduced hospitalisation period required. • Technique usually available in first opinion practice. • Curative if all hyperactive tissue is accessible to surgeon (i.e. if there is no ectopic tissue within the chest). • Rapidly effective if all hyperactive tissue can be removed. 	<ul style="list-style-type: none"> • Period of stabilisation ideally required pre-surgery • Anaesthetic required • Risk of parathyroid gland damage if both glands removed and development of low calcium levels, which may require short-longer term medication • Rarely there can be damage to nerves in the neck leading to Horner's syndrome +/- laryngeal dysfunction • Only suitable if all of the tissue is within the neck region (up to 20% of cats have additional tissue that is inaccessible) • Disease involves both thyroid glands in 75% cats, hence if unilateral surgery initially performed (i.e. 1 gland is removed), cat may develop hyperthyroidism again at a later date (months-years) and require a second surgery.

		<ul style="list-style-type: none"> • Irreversible treatment-may unmask kidney disease if previously unstable, period of stabilisation with medicine pre-operatively can be predictive of this; some cats may need thyroid hormone supplementation, if levels drop low post surgery, to support kidney function. • Rarely curative for thyroid carcinoma due to infiltration of local tissue by tumour.
Radioactive Iodine	<ul style="list-style-type: none"> • No anaesthetic required - treatment given as a single injection under the skin with light sedation. • Treats all hyperactive tissue regardless of location. • High success rate (95%+). • Very few side-effects, well tolerated. • No risk of damage to parathyroid glands. • Suitable for carcinoma treatment (requires 10x higher dose). • Can be repeated if recurrence at later date or partial drop in hormone level. 	<ul style="list-style-type: none"> • Limited availability-around 16 centres in the UK. • Requires period of hospitalisation (10days for standard treatment, 10-14days for intermediate dose treatment and 4-7 weeks for carcinoma treated cats at Langford). • Effective usually within 2-6weeks, in some cats full effect takes up to 6months. • A very small proportion of cats require a second treatment. • Irreversible treatment-may unmask kidney disease if previously unstable and some cats may need thyroid hormone supplementation, if levels drop low post radioiodine, to support kidney function.

How do I get my cat treated with radioactive iodine?

You need to initially discuss this with your own local vet, who will then be able to refer you to the Feline Centre; as we are a referral hospital we cannot accept requests directly from owners. Initially cats come for an assessment appointment (usually over two days), to determine if they are suitable to receive radioactive iodine. With the current COVID-19 pandemic, the referral will begin with a teleconsultation, either by Zoom or telephone, when we will arrange the suitability assessment appointment.

Why does my cat have to be assessed if I know I want my cat to be treated with radioactive iodine?

As most of the cats with hyperthyroidism are senior or geriatric, it is very common for them to have concurrent disease, which may not be visible from the outside. For this reason your cat will be carefully assessed at the Feline Centre to see if there are any other major problems, which could change your or our minds as to whether your cat is suitable to receive radioactive iodine. Secondly once a cat receives radioactive iodine,

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he/she will be hospitalised in a special ward. If problems arise the cat cannot be brought back to the main hospital, due to health and safety rules and we can only perform nursing treatment. For this reason we do a 'geriatric MOT' to minimise the risks as much as possible.

What does the assessment appointment involve?

This is a complete check-up. We like to review blood tests (if not performed in the last few weeks by your own vet), analyse urine and measure your cat's blood pressure. We then perform imaging of the chest, abdomen and heart. We are particularly looking for complications of hyperthyroidism (e.g. high blood pressure and heart disease), as well as concurrent diseases. Secondly if possible we try to assess your cat's kidney function whilst the hyperthyroidism is well stabilised; 30-50% of hyperthyroid cats also have concurrent kidney disease, which may be hidden when the hyperthyroidism is uncontrolled. It is not unusual to unmask kidney disease by treating the hyperthyroidism but fortunately in most cases this is mild kidney disease that can be treated medically. It is however important to treat the hyperthyroidism appropriately in this situation, to avoid further damage to the kidney.

We usually perform the radioiodine assessment 4-6 weeks in advance of a provisional treatment date, as things can change quite quickly in older cats and to allow time for certain problems to be addressed for example hypertension.

Can my own vet do this assessment?

We prefer to do the assessment at the Feline Centre if possible, to develop a good understanding of your cat and see how he/she settles in our hospital. We are however happy to work with your vet for some of the assessment to be done locally, but we do ask for a specialist imager to perform the heart and abdominal scan. Please bear in mind that the assessment we perform is part of a package price for assessment, treatment and follow-up. The price would obviously be adjusted if some of the tests are carried out locally by your own vet, and we would need to liaise closely with your vet over the tests required.

I live a long distance from the Feline Centre, can I avoid several trips?

In exceptional circumstances, we may be able to arrange for an assessment appointment close to a treatment slot, this will involve boarding your cat for 7-9 days after the assessment, whilst we await the iodine order (which comes from overseas). Please ask your vet to discuss this with the Feline Centre staff.

What happens when my cat comes in for treatment?

Your cat will be admitted 24-72 hours in advance of the planned treatment date, to allow him or her time to settle in and get over the car journey. We obtain a baseline thyroid hormone (T4) measurement and recheck blood pressure; all thyroid medication will usually have been stopped one week in advance as we need to establish exactly how high your cat's T4 is off of tablets (we will advise regarding discontinuation of dietary therapy and transdermal medication on an individual basis).

The radioactive iodine injection is usually given on a Thursday or Friday, under a light sedation. Following this your cat is hospitalised in a special radioiodine ward, and looked after by the medicine team nurses, with visits from the primary vet in charge of your cat's care as required. The ward is similar to a cattery, with large pens,

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containing shelves at different levels. We provide various beds (including a cat fort), a radio and cat nip toys. We even have a cat TV in one ward, with a special cat DVD to entertain the patients! We can feed whatever diet your cat prefers or requires if he/she is receiving a special prescription diet. We have webcams to be able to check your cat from within the main hospital too (unfortunately this is not accessible externally). We are unfortunately currently unable to accept bedding or toys from home due to COVID-19, but we have various beds and bedding types here, so just let us know if your cat has specific preferences. If you have a particularly special food that you like to feed your cat, please bring that along, we are able to accept food (as long as containers and packets can be safely disinfected, as required for COVID-19 precautions).

Can I visit my cat in the radioiodine ward?

Unfortunately this is not possible, due to health and safety regulations. We are however happy to provide updates on a regular basis, we can text messages to you which many clients like. In our experience it is extremely rare for cats not to settle in the radioiodine ward, once the injection has been given the stay is really no different to a routine cattery stay; it sometimes seems that this period is harder for owners waiting at home than the patients!

When can my cat come home?

The hospitalisation period for cats treated with standard and intermediate doses currently is 10 days (we determine the dose required based on your cat's thyroid hormone level, severity of disease and thyroid tumour size); it is longer for cats being treated for thyroid carcinoma (4-7 weeks in total). For the standard and intermediate treatment, cats can leave our hospital after 10 days respectively, provided the following restrictions can be observed (exact timings will be discussed by your clinician):

- maintain your cat indoors for approximately 2 extra weeks
- avoid contact with young children or pregnant and breast-feeding ladies for approximately 2 extra weeks
- avoid prolonged periods of direct contact with your cat for approximately 2 extra weeks (e.g. keep out of occupied bedrooms at night)
- handle waste with rubber gloves and double bag any waste before disposing of in general rubbish for approximately 3 extra weeks.

Why is the hospitalisation time shorter in other hospitals?

Our restrictions are set by a Radiation Protection Officer, according to interpretation of Environmental Agency and local radiation regulations. Unfortunately, there is no accepted UK consensus as to when it is safe for a cat to return home and different hospitals may use different doses of radioiodine for treatment.

Will my cat be cured?

A minimum of 80% of cats have a completely normal thyroid level (T4) after 2 weeks, in others the T4 continues to drop over weeks-6 months. Around 5% of cats with benign disease do need a second treatment of radioactive iodine. This is certainly more likely in cats with extremely high T4 levels and chronic hyperthyroidism, where there may be a much larger volume of thyroid tissue (more likely if they have been hyperthyroid for a long time), which is why we advocate treating with radioiodine earlier in the disease. This

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may also be the case in cats with thyroid carcinoma, which need to be treated with substantially higher doses (up to 10 x higher); this dose is only given after a biopsy confirms that the disease is due to a thyroid carcinoma, or a cat fails a standard dose. It is important to know also, that if a younger cat is treated, there is the possibility that a new tumour could develop some time later e.g. after 2-3years; this is because we use a dose of radioiodine that preserves the normal non-tumour thyroid tissue, if we used an 'ablative dose' to destroy all of the thyroid tissue all cats would need to receive thyroid supplementation afterwards.

My cat has a high T4 post treatment, has the treatment failed?

Not necessarily, we would usually wait and monitor the cat's T4 in this situation over weeks-months as the full effect of radioiodine may be delayed. We may suggest that your cat goes back onto thyroid medication (if it can be tolerated) in the interim to prevent adverse effects of uncontrolled hyperthyroidism. If it appears that a second dose is required, we will perform this at a reduced cost for you.

My cat has a low T4 post treatment; do we need to give thyroid supplements?

Many of the cats will leave the hospital with a low T4 level but it is rare for permanent hypothyroidism (inadequate levels of thyroid hormone) to develop post radioactive iodine, and usually the T4 levels increase to normal after a few weeks-months. We use the lowest effective dose of radioactive iodine to try to prevent this happening, particularly as we know that any concurrent kidney disease could be affected by a hypothyroid state. There are two situations where we will recommend thyroid hormone supplementation:

- 1) If your cat's kidney blood tests have significantly deteriorated compared to pre-treatment
- 2) If a very low T4 persists after several months; we will discuss some extra tests with your local vet to confirm hypothyroidism and look for symptoms (lethargy, weight gain, greasy coat).

Supplementation is easy and well tolerated (there are liquid and tablet forms available and it is not associated with side-effects like the anti-thyroid drugs), although our aim is to obviously have a successful result without the requirement for your cat to need any medication in the longer term. This is an easier situation however to manage than severe chronic hyperthyroidism and important to remember that your cat's tumour has been effectively treated.

What happens after my cat is discharged from the Feline Centre?

We usually recommend a check-up with your local vet 3, 6 and 12 months after radioiodine, to review bloods, urine and blood pressure. The purpose of these visit to your vet is to monitor initially for unmasking of kidney disease and high blood pressure, which could be a consequence of fully controlling the thyroid level. Thereafter senior checks are recommended to monitor kidney function and for hypothyroidism (low thyroid levels).

We currently have a study where we can enrol your cat for long term follow up of their kidney, heart and thyroid function after radioiodine treatment, this involves a free 6 and 12month check up with our specialists and discounted blood tests; cats that are happy to travel and can cope with a heart scan and blood tests without sedation are suitable to enrol, we will discuss this with you at your assessment visit.