Radioactive iodine at the Feline Centre, Langford Veterinary Services.

The Feline Centre is one of only 10 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 gold standard Cat Friendly Clinic and have cattery style accommodation in our radioiodine ward, which we feel helps our patients settle in well. 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 geriatric 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.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Pros</th>
<th>Cons</th>
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| Medical treatment | • No requirement for anaesthesia  
• Most cats can be stabilised within 2-4 weeks  
• Dose can be titrated to effect  
• Reversible  
• No requirement for hospitalisation | • Long term requirement for daily or twice daily pill 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 |
| Dietary therapy iodine restricted diet | • Reversible  
• No requirement for hospitalisation  
• Not known to be associated with adverse effects and appears to be well tolerated  
• No requirement for anaesthesia | • 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. |
<table>
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<tr>
<th>Surgery</th>
<th>Radioactive iodine</th>
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<tbody>
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<td>• Reduced hospitalisation period required</td>
<td>• Limited availability- around 9 centres in the UK</td>
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<td>• Technique usually available in first opinion practice</td>
<td>• Requires period of hospitalisation (10 days for standard treatment, 14 days for intermediate dose treatment and 7 weeks for carcinoma treated cats at Langford)</td>
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<td>• Curative if all hyperactive tissue is accessible to surgeon (i.e. if there is no ectopic tissue within the chest)</td>
<td>• Effective usually within 2-6 weeks, in some cats full effect takes up to 6 months</td>
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<td>• Rapidly effective if all hyperactive tissue can be removed</td>
<td>• A small proportion of cats require a second treatment</td>
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<td>• Period of stabilisation ideally required pre-surgery</td>
<td>• Irreversible treatment-may unmask kidney disease if previously unstable, some cats may need thyroid supplementation, if levels drop low post surgery, to support renal function.</td>
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<tr>
<td>• Anaesthetic required</td>
<td>• Can be repeated if recurrence at later date or partial drop in hormone level</td>
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<td>• Risk of parathyroid gland damage if both glands removed and development of low calcium levels, which may require short-longer term medication</td>
<td>• Irreversible treatment-may unmask kidney disease if previously unstable, some cats may need thyroid supplementation, if levels drop low post radioiodine, to support renal function.</td>
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<td>• Rarely there can be damage to nerves in the neck leading to Horner's syndrome +/- laryngeal dysfunction</td>
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<td>• Only suitable if all of the tissue is within the neck region (up to 20% of cats have additional tissue that is inaccessible)</td>
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<tr>
<td>• 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</td>
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<tr>
<td>• 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 supplementation, if levels drop low post surgery, to support renal function.</td>
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<td>• Only suitable if all of the tissue is within the neck region (up to 20% of cats have additional tissue that is inaccessible)</td>
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<tr>
<td>• Rarely curative for thyroid carcinoma due to infiltration of local tissue by tumour</td>
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**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.

**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 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, 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 urinary tract infections.

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. We are however happy to work with your vet for some of the assessment to be done locally, but do ask for a specialist imager to perform a heart and abdominal scan, ideally at the Feline Centre. 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, however 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 24-48 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, containing shelves at different levels. We provide various beds (including a cosy cat cabin), scratching posts, 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). If you wish to provide something from home that you feel will help your cat settle in, we are happy to put that in the pen too, however please be prepared that if there is any contamination we may not be able to allow this to leave the hospital afterwards. Equally if you have a particularly special food that you like to feed your cat, please bring that along too.

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 doses currently is 10 days, and for cats treated with intermediate doses 14 days (we determine the dose required based on your cats thyroid hormone level, severity of disease and thyroid tumour size); it is longer for cats being treated for thyroid carcinoma (7 weeks in total). For the standard and intermediate treatment, cats can leave our hospital after 10 and 14 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 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, 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 radiiodine earlier in the disease. This 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. 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 2-3 years; this is because we use a dose of radiiodine 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 radiiodine 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 extremely 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 a low 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.

What happens after my cat is discharged from the Feline Centre?
We usually recommend a check-up with your local vet after 4-6 weeks, to review bloods, urine and blood pressure. In most cases this is the final check that is required, if your cat has a normal T4 level at discharge. The purpose of this visit to your vet is to monitor for unmasking of kidney disease and high blood pressure, which could be a consequence of fully controlling the thyroid level. If no problems are identified at this final check, then we then simply recommend routine senior/geriatric three to six-monthly appointments with your vet.