

Cats home  
from 4 days



# Hyperthyroidism in cats

Information for Clients



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## Hyperthyroidism in cats

Hyperthyroidism (over-production of thyroid hormone) is the most common endocrine condition of older cats, and only rarely occurs in young cats. This booklet will help you to understand the symptoms and treatments available for your cat.

The symptoms that may be exhibited by your cat include weight loss, an abnormally fast heart rate, overeating, goitre (enlarged thyroid gland), and a deteriorating coat condition. The thyroid glands are located on either side of the neck, but

can also sometimes be located within the chest. A blood test to measure the quantity of thyroid hormone is taken to confirm the diagnosis. Excessive thyroid hormone is produced by a tumour; in most cases the tumour is benign, and only very occasionally is it malignant. If a cat with this condition is left untreated, severe weight loss despite over-eating is very likely, as is the risk of developing serious heart problems, or other life-threatening complications.

## About the Hyperthyroid Cat Centre



The Hyperthyroid Cat Centre was founded in 2013 by Andrew Bodey, the Clinical Director. He has been treating hyperthyroid cats with radio-iodine since 2008 and has managed in excess of 3,000 cases. He has published in veterinary journals a combination of review articles and original research and has presented lectures for the BSAVA, the BVNA, Webinar Vet, London Vet Show, International Cat Care and many individual veterinary practices. He shares the clinical work with very capable colleagues and patients on site are cared for by a team of enthusiastic veterinary nurses and animal care

assistants. Non-clinical staff perform many roles including dealing with general enquiries and administrative support including insurance.

Our premises are purpose-designed based on more than a decade of experience, providing comfortable spacious cattery-style accommodation, complete with natural daylight. The Hyperthyroid Cat Centre is the first in the UK to be authorised to allow cats home from 4 days after treatment.

Our Centre is 100% dog free!

There is ample free parking at the Centre, and easy access from across the region just off the A1M at Wetherby.

# Treatment options

## Advantages and Drawbacks

There are four main treatments available, each with its own advantages and drawbacks. Each case has to be considered individually so that the most suitable treatment can be recommended. The following four treatments are the options currently available.



## Dietary Control

In the UK in 2012 Hill's® launched a Prescription Diet® they call y/d®, designed especially for the treatment of hyperthyroid cats. It is manufactured under very exacting conditions to enable the content of iodine to be kept extremely low.

Iodine is a component of thyroid hormone. Without iodine the thyroid glands cannot produce the hormone and thyroid tumours cannot over-produce it. Iodine is very widely available in most sources, which means that for this diet to work well your cat has to:

- eat the diet
- eat nothing else, at all, ever
- continue to eat the diet and nothing else for the remainder of his or her life.

In multi-cat households this can mean that if your hyperthyroid cat eats only small amounts of your other cats' food, this can provide enough iodine to allow the thyroid tumour to continue to over-produce thyroid hormone. Possible solutions to this problem include feeding all your cats on y/d (but then topping up your non-hyperthyroid cats with ordinary food when your hyperthyroid cat isn't able to have any), or feeding your hyperthyroid cat separately and never leaving ordinary cat food available unattended for the others.

### Advantages are

- You don't have to give any medication.
- Your cat doesn't need an anaesthetic or operation.
- Your cat doesn't have to be treated away from home.

### Drawbacks include

- If your cat won't eat the diet, or is able to eat other things as well, then it will not work and your cat will remain an uncontrolled hyperthyroid patient.
- It can take up to a couple of months for the diet to have its full effect, although many cases respond after a number of weeks.
- If in later years your cat becomes unwell and will no longer eat the diet, then in addition to being unwell they will become uncontrolled hyperthyroid again.
- With this approach the thyroid tumour is only prevented from producing thyroid hormone, and continues to grow in your cat. Recent research from the USA suggests that, when cats are not cured, the proportion of malignant thyroid tumours increases substantially over time.
- Your cat still needs periodic blood sampling to check how well the condition is controlled.
- It has been speculated by USA researchers that iodine may be an important component of a healthy immune system, and suggested that extremely low iodine diets may have an unintended consequence in some cases.

## Medication

Hyperthyroidism is not cured but can be kept under control by the administration of medication, typically once or twice a day for the duration of the patient's life. This approach works by preventing the over-production of thyroid hormone by the tumour.

Medication available in the UK includes Felimazole, Thiafeline, Vidalta, Neo-Mercazole (these are all tablets), Thyronorm and Thiamacare (these are liquids given by mouth), and Methimazole Transdermal Gel (applied to the ear). These all rely on the same active ingredient.

### Advantages are

- Your cat has no dietary restrictions, and this also means that cats that hunt can continue to catch and eat their prey.
- No operation or anaesthetic is needed.
- Your cat doesn't have to be treated away from home.

### Drawbacks include

- Administering tablets to some cats can be difficult, meaning that the condition in turn can be difficult to control. Cats that are difficult to tablet sometimes cope better with the liquid formulations or the transdermal gel. Careful handling of both the drug and the cat is important (especially immediately after application) to ensure only the cat receives the dose. The active ingredient is a potential teratogen (meaning that it might cause babies to develop abnormally). Women of child bearing potential should take care and use

precautions (such as gloves) when handling any of the formulations, and their cat's litter tray.

- Serious side effects may result from the use of this active ingredient, in whichever form it is given. Some side effects such as reduced appetite and vomiting can be temporary, resolving if the medication is introduced a second time starting at a lower dose. Other side effects include profound skin irritation, severe reduction in white blood cells, severe anaemia and liver changes. Medical management can't then be used in these cases and because the trade names listed above rely on the same active ingredient, changing from one to another can be expected to cause the same side effects. The transdermal gel seems to cause fewer of the side effects listed but can cause the ears to become sore where it is applied.
- The dosage of medication is likely to change over time because the tumour will continue to grow, and will often require more of the drug to stop thyroid hormone from being produced. This increase in dosage may cause side effects in cats that have not had any at lower dose levels.
- There is recent research from the USA showing that the proportion of malignant tumours increases over time when benign tumours are not cured, and only controlled using medication. Instead of malignant tumours accounting for less than 2% of all tumours, after 4 or more years of tablet control up to 20% of tumours were malignant.

## Surgery

Hyperthyroidism can be cured with surgery and, if successful, no further medication is required.

### Advantages are

- Your cat has no dietary restrictions, and this also means that cats that hunt can continue to catch and eat their prey.
- In most cases medication is not required after successful surgery.
- Success rates have been reported as between 57% and 94%.
- Cats are commonly monitored at the practice for the first few days after the operation, before returning home, because of the risk of damage to the parathyroid glands - see below.

### Drawbacks include

- As hyperthyroidism generally occurs in older cats, the anaesthetic risk is greater than would be the case for healthy young cats. A very fast heart rate is very common with hyperthyroidism, making this risk greater. Hence, it is usual to attempt to control the heart rate by controlling the thyroid level (as discussed earlier), and/or by using beta blockers or other drugs.
- There is a risk of damage to the parathyroid gland during surgery, because it is very closely associated with the thyroid gland. The parathyroid gland controls calcium metabolism, and if damaged calcium levels become very low and this can be fatal if undetected and

untreated. Calcium levels can be supplemented by injection or tablets, and usually this complication resolves after a period of days or perhaps weeks. Occasional cases may require long-term calcium supplementation.

- To avoid damaging both parathyroid glands during an operation it is often the case that only one thyroid gland is removed at a time. Because thyroid tumours affect both thyroid glands in approximately 75% of cases, it is likely that a second operation will be needed typically within 18 months of the first. Thyroid supplementation is not usually necessary when both glands have been removed.
- Thyroid tumours occur within the chest in some patients. These are extremely difficult for the surgeon to remove. To show where thyroid tumours are a specialised imaging technique (scintigraphy) is required. However, this is not widely available. It is often only after the patient has had two operations (but is still hyperthyroid) that it becomes clear that some thyroid tissue is still left, usually in the chest.
- Some cats may become hypothyroid after surgery, meaning they have insufficient thyroid hormone (the opposite of hyperthyroid, when they have an excess). This can usually be managed by supplementing with thyroxine, along with blood sample monitoring.



## Radio-iodine Treatment

Thyroid tissue, whether normal or tumour, requires iodine to produce thyroid hormone. Radio-iodine is usually given as a capsule by mouth or, when available, as an injection in the scruff, and is taken up by thyroid tumour tissue (and not usually normal thyroid tissue) wherever it is in the body.

The full effect of radio-iodine treatment can take up to 6 months, and it has a curative success rate of approximately 99%.

### Treatment outcomes

After radio-iodine treatment most patients respond rapidly (within weeks of treatment), although some will take up to 6 months to gain the full benefit. Once cured, only very occasionally does a cat become hyperthyroid again.

A small proportion of cats (approximately 0.5-1%) are still hyperthyroid 6 months after treatment, and we would routinely plan a second treatment with radio-iodine since most will then be cured. However, an extremely small proportion still do not respond, and a third treatment at the Centre would not usually be offered. These non-responding patients may have a malignant thyroid tumour, and although they are likely to respond to radio-iodine treatment they do require much higher doses than is routine.

A proportion of cats respond to radio-iodine sensitively, becoming hypothyroid (thyroid hormone levels below normal range - the opposite of hyperthyroidism). As healthy thyroid tissue starts to function again, over time thyroid levels often return to normal range, and these cats are then cured and healthy. However, some will remain hypothyroid even 6 months after treatment, although with no apparent ill-health.

A small proportion (approximately 3%) do develop clinical signs of hypothyroidism, which can include weight gain, coat changes, personality changes and perhaps excessive drinking, since kidney function may now be below normal. It is usually possible to supplement these patients with a thyroid hormone preparation (licensed for dogs), given as drops in the food. This carries none of the side effect risks that can occur when medicating a hyperthyroid cat as described on page 6.

In summary, most patients respond fully to a single treatment with radio-iodine, have no future recurrence of hyperthyroidism, and no need for ongoing medication. Although you need to be aware that these other outcomes are possible, they affect only occasional patients.

### Managing radiation

Immediately after radio-iodine treatment cats must stay in our specialist facility for at least 4 days, because they are too radioactive to be at home sooner than that.

There are no side effects from treatment. However, staff at the Centre have to keep their radiation exposure to the absolute minimum, and unfortunately this means that it is difficult to

“If your cat is in good health, with the exception of his or her hyperthyroidism, this treatment is definitely the best.”



provide routine medical care if a patient becomes unwell. Hence, we require clinical examinations and various tests to be undertaken, usually at your local practice, before we recommend radio-iodine. For newly diagnosed patients without apparent kidney problems radio-iodine can be offered without having to trial-medicate (as on page 6) first. Hyperthyroidism makes kidneys work more effectively as a result of increased blood flow. However hyperthyroidism is treated, kidney function always decreases when thyroid levels and blood flow return to normal. Trial medication has been relied upon to identify how healthy the kidneys are by allowing kidney function to be checked while thyroid levels are normal. It is now understood that in most cases this is no longer necessary because the degree of change in kidney function is usually only mild. Cats with borderline or below-normal kidney function still usually benefit from radio-iodine because hyperthyroidism accelerates kidney damage.

We ask that all your cat's blood and urine samples are sent to a laboratory called IDEXX in Wetherby. This helps to remove variations that can occur between laboratories and makes subtle changes much easier to detect.

Cats receiving radio-iodine in capsule form must be tolerant of being medicated by mouth; the treatment cannot be mixed with food. Sedation can be very helpful for anxious cats but aggressive cats are unlikely to be treatable.

Cats already on medication or Hill's y/d® can still receive radio-iodine. We usually treat cats when their hyperthyroidism is uncontrolled, because this helps protect normal thyroid tissue from the effects of radio-iodine. Cats treated when thyroid levels are in normal range are much more likely to have their normal thyroid tissue affected by radio-iodine, meaning that they will become hypothyroid and require life-long thyroxine supplementation. In people there is a well-recognised syndrome called thyroid storm when sudden profound changes in thyroid levels are associated with serious ill-health. In cats this is poorly recognised and although cats show signs typical of hyperthyroidism again when taken off medication (page 6) or Hill's y/d (page 5), more serious ill-health is observed only very rarely.

Serious ill-health includes disruptions to the heart rhythm, jaundice, sickness and diarrhoea, fever, convulsions and death. To reduce the likelihood of this it is sometimes helpful to reduce medication by degrees rather than stopping abruptly. In a small number of cases it may be recommended to keep medication going until radio-iodine is administered, for example to help safeguard a patient with profound heart disease.

Some cats may require additional tests, which we will discuss with you and your usual vet.

It is possible, even after all the preparatory tests are completed, that we may decide not to proceed with radio-iodine treatment at your admission appointment. This can occur for example if your cat becomes unwell just prior to your appointment, or if there is some other concern about your cat's health. We would not want to compromise your cat's health by proceeding with radio-iodine when routine medical care may be required.

### Follow-up after treatment

All patients, following radio-iodine treatment, will require some degree of monitoring at your local practice. This typically includes periodic clinical examinations, blood testing, urine testing and blood pressure estimation. Typically these are recommended 1.5, 3 and 6 months after radio-iodine treatment but can vary between individuals and are not compulsory. It is especially important to monitor hypothyroid patients regularly and to include kidney function as well as thyroid levels. Cats can become hypothyroid after medication, surgery or diet, and not just after radio-iodine, so monitoring is important in all cases.

It is well recognised that when kidney function and thyroid levels are both below normal, life expectancy can fall by as much as half. These patients will usually benefit from life-long thyroxine supplementation and early detection can be very worthwhile.

### Before your admission appointment

Using the information from the preparatory tests already detailed, your cat's suitability for radio-iodine treatment is assessed by us, and discussed with you and your usual vet. To improve radiation safety for staff, cats are usually sedated when treated with radio-iodine. For your cat to receive radio-iodine our consent form must be read and signed, including confirming that you are able to follow the recommendations for looking after your treated cat at home (details are on page 17).



## Alternative treatment options

### Homeopathy

Homeopathy has been advocated by some vets as an effective help in managing hyperthyroid cats. Andrew Bodey undertook a clinical trial of homeopathy in the treatment of hyperthyroid cats, working with colleagues at the University of Cambridge Veterinary School and with a qualified veterinary homeopath. Over a period of 3 weeks there was no difference between hyperthyroid cats receiving placebo or homeopathy. Although it is perhaps possible that homeopathic treatment may be effective when given over a longer period, leaving hyperthyroid cats wholly reliant on a treatment for which there is no evidence of benefit is not recommended.

These recommendations must be followed until 4 weeks after your cat's treatment; this is how long it takes for radioactivity to return to background levels. If you are unable to follow these guidelines it is still possible for your cat to be treated by us, although a longer hospitalisation period at the Centre will be required. We do not usually encourage visiting at the Centre but we do keep you in touch with how your cat is, very regularly.

A blood test for thyroid hormone is usually required in the week before your admission appointment, and together with other clinical factors, this result guides the dose of radio-iodine used. This helps us to use the minimum dose required, and in turn allow your treated cat home sooner. For this test to be informative cats need to be taken off medication, or returned to normal food, typically a week before the blood test.

“It is especially important to monitor hypothyroid patients regularly and to include kidney function as well as thyroid levels...”



## To make your cat's time with us easier and healthier, please be aware that the following can help:

Before you come, we recommend that your cat is fully vaccinated so that full protection is in place whilst at the Centre. Please also ensure that routine worm and flea treatment is given in the week or so before your admission appointment.

Before they travel many cats benefit from Feliway Transport, Pet Remedy or Zylkene. Feliway Transport is a pheromone that helps cats to cope with travel better, and is sprayed inside the carry-box 15 minutes before your cat is allowed in. Your local practice can supply this, and it comes with detailed instructions. Pet Remedy is based on calming essential oils and is usually sprayed around the basket immediately before travelling. Zylkene comes as capsules, and the powder is sprinkled onto food starting several days before your journey. This can be continued during their time with us, because it does help them to relax. Again, your local practice can advise and supply this.

Some cats find travel too challenging even with the support described above. For these, there are sedatives available which can be considered after discussion between us.

Unless we have made other arrangements with you, please remember to give no food to your cat from midnight the previous evening. There is no need to withhold water. This allows us to give the sedation required for the radio-iodine treatment.

While your cat is with us, if any medication or particular diet is required, please ensure that you bring sufficient for the whole time. You are also

welcome to bring comforts or distractions e.g. cat toys, scratching posts, or favourite bedding. However, these items are likely to become contaminated with radioactivity and if so will have to be left at the Centre.

For the homeward journey we routinely use Feliway Transport, Pet Remedy or sedatives ahead of your discharge appointment, and can starve your cat if this makes the journey easier. Please let us know. Please plan not to bring children with you to collect your cat, and if you are (or may be) pregnant, please arrange for someone else to come on your behalf.

Once at home, other pets can come into contact with your treated cat (but see guidelines on page 17), and moulting hair is not itself radioactive (unless also contaminated with urine or faeces).

### please remember to...

Be in touch promptly with us and your local vet if you think your cat may be unwell, either before or after treatment at the Centre.



## Costs

Our prices may have changed since this booklet was printed; please contact us to check. As a guide, in 2023 our fees are £3,000 including VAT. This includes assessing your cat's suitability and liaising with your usual vet, your detailed telephone consultation, your cat's admission appointment, sedation and radio-iodine treatment, confinement within our specialist wards for up to 14 days, blood testing prior to your discharge appointment, flushable cat litter to be used at home, and ongoing advice for up to 6 months after treatment as further laboratory results become available. For cats staying longer than 14 days, there will be an additional charge (£30 including VAT daily at 2023 prices). For cats returning home earlier than 14 days our fees remain £3,000 including VAT.

As mentioned earlier (see page 8) occasional patients are still hyperthyroid 6 months after radio-iodine treatment. When a patient remains hyperthyroid for the whole time since radio-iodine was first given, if we consider a second radio-iodine treatment to be appropriate then we do not charge for it. This includes up to 14 days in our specialist wards although laboratory fees and any additional treatment or hospitalisation is charged as usual. Please note that when patients have been cured (i.e. no longer hyperthyroid) and become hyperthyroid again in the future, fees are the same as for a new patient.

We have an account with IDEXX Laboratories, Wetherby, and where possible we encourage your usual vet to use it. This helps us compare results from samples on different dates, whether at your usual practice or at the Centre, and also helps us to build a database which we hope will be of research value to better understand feline

hyperthyroidism in the future. When our account is used in this way the laboratory fees are charged to you at cost. Your usual practice may still charge for your consultation, blood sampling, processing and so on.

Any additional investigation or treatment required during your cat's stay at the Centre may incur extra fees.

### Fees are payable in two parts:

#### Part 1

A payment of £300 (including VAT, at 2023 prices) as a non-returnable deposit, to confirm your cat's treatment appointment.

#### Part 2

The balance is payable at your cat's discharge appointment. If you have pet health insurance we recommend that you contact your insurers as soon as you can, and before you commit to radio-iodine treatment. We are happy to help with your claim on your behalf and are able to accept direct payments from some, but not all, insurers. Please contact us for details.

“The treatment cost and travel were so worth it.”





# After Radio-iodine Treatment

This section discusses radiation safety, cat behaviour and nutrition.



## Safety Guidelines following Radio-iodine Treatment

After radio-iodine treatment all cats will return to normal ('background radiation') by 28 days. Cats can be discharged from the Centre from 4 days after treatment, providing their radiation levels have met the required threshold. The time it takes an individual cat to reach this threshold depends on how much radio-iodine is given and how quickly radiation levels fall. The earliest time that a cat can be collected is based on direct measurement of radiation levels and cannot be reliably predicted. After this time the advice falls into two blocks:

### Up to 14 days after treatment it is important to do the following:

- Keep young children away from your cat at all times. Keep your cat in a room on their own the whole time, to which only designated carers should have access. Consider using door locks, if appropriate. If contact does occur to someone other than the carer, thoroughly clean for example the child's hands (or wherever contact occurred). If a child and the cat are to be in adjacent rooms, please discuss with us what the wall is made of, and how far apart they will be.
- Anyone of child-bearing age should have no contact with your cat or with your cat's litter tray. This ensures that anyone who is or may be pregnant is kept away from radioactivity.
- Do not spend more than a few minutes at a time in close proximity to your cat. It is safe to handle your cat but avoid close contact such as hugs or sitting on your lap. Your cat must not have access to your bedroom.
- Always wash your hands thoroughly after handling your cat and especially before you eat or drink.
- Avoid face to face contact; do not let your cat lick you.
- Prevent your cat from having access to kitchen surfaces or anywhere where food is stored or prepared. If this does happen, clean the surface carefully before using it again.
- Contact between your cat and other pets at home is not problematic to them, so long as it doesn't compromise your ability to control where your treated cat is.
- The cat must be kept indoors and the used cat litter must be disposed of carefully whilst wearing impervious gloves such as Marigolds. Any urine, faeces or vomit that missed the litter tray should be cleaned with paper roll/disinfectant, and disposed of. Disposal of cat waste can be done in either of two ways, described on page 18.

### Between 15 and 28 days:

- In most cases it is not necessary to keep your cat in a separate room. If you have children at home or visiting, your cat should be kept in a separate room to which children have no access. If children are inaccessible in your home (eg during school hours, or overnight), then your cat does not require to be kept in a separate room at these times.
- Your cat must not share bedrooms with people and should be kept off kitchen surfaces.
- As a guide, during days 15 - 21 your cat could spend an hour a day sitting on your lap, increasing to 2 hours a day during days 22 - 28.
- The cat must be kept indoors and the used cat litter must be disposed of carefully whilst wearing impervious gloves such as Marigolds. Any urine, faeces or vomit that missed the litter tray should be cleaned with paper roll/disinfectant, and disposed of. Disposal of cat waste can be done in either of two ways, described opposite.

### After 28 days:

- No restrictions apply and your cat can be treated and handled as usual.

### Disposal of cat waste can be done in either of two ways:

1. If your home is connected to the mains sewerage, use flushable cat litter. Flush away just the clumped part each time, not the whole litter tray contents.
2. If your home is not connected to mains sewerage do NOT flush any cat litter down the toilet. Instead, used cat litter must be stored until it can be disposed of from 6 weeks after your cat's treatment date via household waste. A suitable container is an old dustbin without holes, lined with 2 dustbin liners. A suitable location is for example a lockable garage or outbuilding away from where people spend prolonged periods, and away from where other people have access within 6 feet/ 2 metres.



“It's well worth the effort to have your cat free of all medications, and only needing occasional monitoring for his or her health in the future.”

### My cat is super-brave - do I still have to give a sedative for the journey?

Cats that are used to travelling are great! But on the day of the appointment he/she also has to cope with missing breakfast, being hyperthyroid, meeting new people in a new environment and doing new things. There are no prizes for being a brave cat - the prize is for your cat not realising there was anything to be brave about! That's why we recommend using gabapentin before you set off. It really does make all the difference and often means no extra sedative is needed for the treatment itself.

### Does it matter what carrier I bring my cat in?

- 🐾 Use a top-loading basket where the top half of the carrier is easy to remove. This makes examination much easier for everyone.
- 🐾 A carrier with a solid-sided base contains toileting indiscretions en route much better than a wicker basket or a wire basket with a tray in the bottom.
- 🐾 Pop a puppy training pad or similar in the bottom of the carrier to cope with any toileting en route.
- 🐾 Use a familiar towel/blanket/bed or similar in the carrier.
- 🐾 Leave your carrier visible at home for a number of days so your cat can become familiar with it. Feeding small amounts of food treats in it can create positive associations, but remember to keep your cat starved on the day you travel to us.

## Top Tips and FAQs

about cats having radio-iodine treatment



### Does it matter what carrier I collect my cat in?

Unless your cat is at background, when no radiation handling is involved, you will need to provide a solid-sided carrier so that any toileting indiscretions are adequately contained. Baskets such as wicker baskets or wire carriers (even those with plastic trays in the bottom) are not suitable.

### Any tips on the carrier in the car?

- 🐾 It's a good idea to position the carrier somewhere secure in the car to minimise movement, e.g. in the footwell, in the boot area or on a seat but held in place with a seatbelt.
- 🐾 Cover the carrier with a towel, sprayed with PetRemedy or Feliway and allow your cat 20 minutes or so before travelling to benefit from this.
- 🐾 On the homeward trip, unless we tell you otherwise expect your cat to travel in the boot area.



## Do I need any special items to look after my cat following radio-iodine treatment?

Here's a suggested shopping list that might give you some prompts:

- ✓ Marigold-type gloves (these are thicker, stronger and have longer cuffs than disposable latex gloves, which are better avoided).
- ✓ An old ice cream tub or other plastic container and scoop, to transfer the clumped litter to flush down the toilet (or store in a special place if you have a septic tank).
- ✓ Disposable plates or bowls for the remainder of your cat's radioactive period (if you prefer not to store and wash bowls).
- ✓ Puppy training pads (or similar) to place under the litter tray to catch scattered litter and badly-aimed toilet incidents, as well as drying your cat's feet before they reach the floor at large! Newspaper can be used if on top of a plastic sheet.
- ✓ A container such as a box, a bin or just a bin liner, clearly labelled 'Radioactive items not to be dealt with until (insert date from your discharge letter)'. This is useful for items that may be contaminated but are not for disposal via the toilet, such as feeding bowls or cat bedding that has become contaminated e.g. by vomit or urine. These items can either be re-cleaned and re-used after this date or disposed of via household waste.
- ✓ A scoop for the clean cat litter when topping up the tray - we will supply a bag of flushable cat litter.

## I've got more than one cat - will they still get on when I bring my treated cat home?

Cats are sensitive to unfamiliar smells and our Centre won't smell exactly the same as your home. Things that you can do to help include:

- 🐾 Leave with us a blanket or similar that smells of home (or bring another at collection time). This can help to transfer home scents to your treated cat on the homeward trip.
- 🐾 If your treated cat is spending time in your spare room, this provides an opportunity for foreign smells to be replaced with the familiar.
- 🐾 Even if your treated cat doesn't need time in your spare room, keeping him/her in a separate room for a day or two can help in the same way. The 'home' and 'away' cats can then be re-introduced by degrees, if necessary slowly enough that they can first only smell each other (by rotating them between each other's rooms), then smell and see each other, and finally physically meet.
- 🐾 Pet Remedy and Feliway can both be helpful in aiming to reduce anxiety for all cats.

## Can I handle my cat when they are at home?

**Yes you can!** Unless your cat has become obviously contaminated (after using the litter tray, for example) there is no need to use gloves - but remember to always wash your hands afterwards.

## At home

### After my cat has been staying in the spare room, will the room become radioactive?

No - you can use your spare room as normal, providing that your cat has not contaminated it with body products (pee, poo, sick, saliva). There is no need to empty wardrobes or cupboards before your cat uses the spare room. However, people often remove portable soft furnishings. Covering e.g. the spare bed or other furniture with a blanket or dust sheet can guard against toileting accidents.

### How long is ok for me to handle my cat in the spare room?

You can handle your cat for 5 minutes, half a dozen times a day no problem - that's a lot of cat strokes! But remember to keep your cat around arm's length - no laps and no hugs until after the spare room period is finished.

### My cat is in the spare room - what about toileting?

Please provide your cat with a litter tray with flushable litter - we'll provide you with a bag of suitable litter. Providing your plumbing is connected to mains sewerage you can flush the clumped litter down the toilet. Do not flush anything down your toilet if you are reliant on a septic tank or similar system.

### Can children help out in the spare room?

No they can't! It is important to keep them away from your cat - maybe put a suitable warning notice on the door or, if necessary, consider installing a suitable child lock to keep out the curious.

### Can my other cats/dogs help out in the spare room?

One of the reasons for keeping your cat in the spare room is to avoid contamination being walked around your home at large after your cat has used the litter tray. Although it wouldn't be a problem for your other pets to meet up with your radioactive cat in the spare room, it would give extra opportunity for the litter tray to be used and for contamination to be walked around your home. For this reason it's usually easiest to just wait until your cat is no longer restricted to the spare room.

### Can my pregnant/breastfeeding relatives/friends help out in the spare room?

No they can't! It is important to keep them away from your cat - maybe put a suitable warning notice on the door to remind any visitors to not go in the spare room.

## What if my cat makes a mess on bedding or a bowl?

Any contaminated item that can't be flushed down the toilet should be stored in a box/bin/bag labelled 'Radioactive items not to be dealt with until (insert date from discharge letter)'. These items can either be cleaned and re-used after this date or disposed of via household waste.

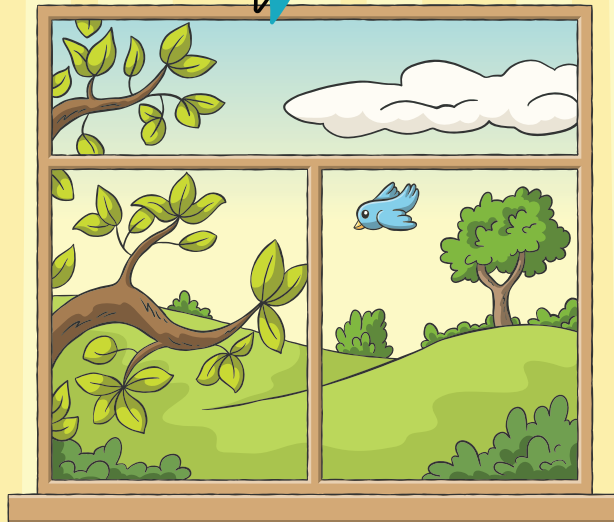
## After the spare room period is finished, can my cat go anywhere they want to?

Not quite! Please keep your cat out of occupied bedrooms and off food-preparing surfaces. Remember to keep your cat indoors until the background date in your discharge letter.

## My cat has just walked all over the kitchen table where I'm about to get cooking. What now?





Wipe the kitchen table/surface with an appropriate disinfectant wipe before creating your culinary masterpiece!

## Keeping your cat indoors



## Easier said than done - how do I keep my cat indoors?

Obvious things first:

-  lock the catflap,
-  try to keep 2 doors between where your cat spends most time and the big outdoors, to create an 'airlock' between the two spaces,
-  obviously keep doors closed,
-  less obviously, don't have windows open where your cat might manage a Houdini and escape.

## My dog(s) love cat poo. Can my dog help keep my cat's litter tray tidy?

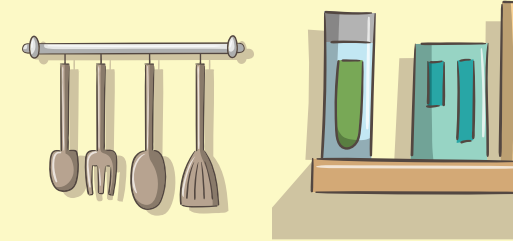
There is no accounting for taste, but that's dogs for you! If this might happen it's best to keep your dog away from your cat's litter tray, if necessary keeping your cat in a separate spare room until the background date in your collection letter.

## It's 2 weeks to go before background date. How long can I handle my cat for now?

In the last week before the background date you can allow your cat on your lap for up to 2 hours a day. The week before - the penultimate week - you can spend 1 hour. Most of the time aim to stay 3 feet (1 metre) - a chair's width - apart.

## When do I stop having to use gloves at all?

Once you get to the background date in your collection letter radiation safety is no longer a concern and you can handle cat litter etc as you would normally. Up to that point continue to use Marigold-type gloves when handling used cat litter.



## My question isn't here!

Please contact us by calling 0345 544 4300 or by email at [enquiries@hyperthyroidcatcentre.co.uk](mailto:enquiries@hyperthyroidcatcentre.co.uk) and we'll do our best to help.

## I've got lots of cats - how do I know which litter tray is whose?

You don't! So please dispose of all clumped litter as though radioactive.



## Ionising radiation and radioactivity - background information

Ionising radiation causes damage to living tissue by disrupting the DNA on which most cells depend. In healthy animals this can be one reason why tumours form while excessive doses can cause other health problems.

Ionising radiation comes from natural sources such as cosmic radiation, from machines such as x-ray generators and CT-scanners, and from radioactive compounds. This last group includes naturally-occurring compounds like radon gas as well as manufactured compounds. Iodine 131 is a manufactured radioactive compound and is used in radio-iodine treatment.

The potentially harmful effect of ionising radiation can be harnessed in a variety of ways so that, in a patient with a tumour, unwanted tumour tissue is affected whilst healthy tissue is spared as much as possible. Examples include radiotherapy whereby machines akin to modified x-ray units are used to point radiation at a tumour. Radio-iodine treatment is another, but very different, example.

Iodine 131 has a very specific function in the body and is used almost exclusively in the production of thyroid hormones. When a cat is hyperthyroid the thyroid tumour uses the iodine 131 to make thyroid hormones and in the process the cells of the tumour are destroyed, or damaged so that they are not replaced when they die. Other tissue in the cat's body is not affected because the main type of radiation produced by iodine 131 (beta particles) travels only 0.5mm or so. This is one reason why parathyroid tissue is not damaged

using radio-iodine (see the section Surgery on page 7 for comparison). However, iodine 131 also produces high-energy gamma rays and it is this which makes it necessary to follow the precautions discussed on page 17.

**Radioactivity** is something we all come across on a daily basis and comes from the following sources, both natural and artificial:

Natural sources (-84 % of total)	
	%
Radon gas from the ground	50
Gamma rays from rock and buildings	13
Cosmic rays	12
Food and drink	9.5
Artificial sources (-16 % of total)	
	%
Medical	15
Occupational	0.2
Nuclear fall-out	0.2
Nuclear discharges	0.1

Some radiation we can't avoid, such as radon gas and gamma rays. Other radiation we may willingly choose, such as medical investigations involving x-rays or CT-scans. Still others we are unaware of such as Brazil nuts and low-potassium salt, and the extra cosmic radiation we encounter when flying.



“It is always best practice to minimise the avoidable risk of radio-iodine as far as possible - it is important to follow our advice.”

Cats leaving our Centre after radio-iodine treatment, when transported as we recommend at the furthest distance from the driver in a typical hatch-back, achieve similar radiation levels as you would encounter on a flight of the same duration as your journey. In the same way that passengers or pilots don't become radioactive themselves when flying, if you keep a radioactive cat in your home (for example in the spare room when first returning home) then your home does not become radioactive. This is why it is not necessary to empty the spare room. The only special difference is that some radioactivity leaves treated cats in their urine and faeces but even if a treated cat misses their litter tray any radioactivity will disappear ('decay') typically within 6 weeks of the treatment date - see page 17 for further detail.

Radio-iodine treatment is used routinely by doctors for their patients. Usually, much higher doses are used than in our feline patients. Human patients typically return home the same day and after several days are no longer required to sleep in the spare room. Very often, they can return to work within a few days and within 2-3 weeks can go to the theatre or other venues where they could spend prolonged periods near other people.

Our patients receive the same radio-iodine (although at lower doses) and it behaves the same as in human patients. The recommendations we require you to follow ensure the best radiation safety at home even though, as the medical approach illustrates, the risk is negligible. This is why other animals can mix with a treated cat without risk to themselves. However, it is important to consider that multiple cats sharing the same litter tray could potentially spread radioactivity further between them and this should be avoided.



## Behavioural Advice for a Radioactive Cat

When your cat first returns home it is likely that a period of separation will be required. Although most cats are very content with their own company some find this disruption to their usual routines challenging! Cats can stay at our Centre until they are no longer radioactive and require no special handling, but for most cats, being home again sooner gets them nearer to familiar sounds, smells and people, even if not back to their usual routines straightaway.

In essence, the aims are to make your cat feel at home (even though their routine is disrupted), to keep your cat happily occupied, and to avoid drawing attention to the times of separation.

- Familiar beds, blankets or T-shirts etc can make your cat feel at home even if he or she doesn't normally spend time in the room chosen for isolation.
- Using familiar feeding bowls, scratching posts and toys also helps, in the same way.
- Try to encourage your cat to be contentedly occupied, for example by providing a scratching post, toys (such as balls, feather-chaser or string-chase games) or by setting up a food trail (hiding dry food in a plastic ball, for example, or inside cardboard boxes). A radio or TV can be helpful, and just having a window can be all that is needed to entertain.
- Cats love to be up off the floor, and really appreciate having something to be in e.g. a cardboard box. Radiator hammocks, or a box on a shelf or window sill, can also be very popular.
- Try to minimise other animals or people from being visible, audible (or smell-able!) to your cat; he or she is more likely to settle if they don't think they're missing a party next door!
- Try to keep the isolation room calm and quiet, at least to the level that would be familiar. Many cats are noise-sensitive and become anxious if unfamiliar sounds dominate.
- Try to avoid intense excitement at the anticipation of your next arrival, by varying the times you visit (in so far as other commitments allow).
- Don't hesitate to try 'comfort food' if your cat is reluctant to go along with the usual menu. A variation in the usual feeding bowls (choosing between plastic, metal, ceramic or glass) can also help.
- By the time your cat is at home there will have been plenty of chances to get used to the litter tray! If this is still not proving popular, you could consider changing its location and keeping it away from food bowls. Remember that the cat

litter we provide is flushable, and if you try a different litter it may not be! Do please check, and call to discuss further if a replacement you find isn't flushable. Sometimes covering the litter tray (with a box, or you can buy lids for litter trays, complete with doors) offers the privacy that a reluctant cat is reassured by.

- Do consider things that can be calming for cats. For example, Feliway or Pet Remedy diffusers plugged into a mains power socket and left on continuously can help cats to relax, and you could consider Zylkene (capsules that you sprinkle in the food daily) for anxious cats. You can ask your local practice for these or something similar.
- Do please remember that you can handle your cat, but don't have him or her on your lap or close to you for prolonged periods, and do check in the Radiation Safety Guidelines (page 17) for more information.

- Finally, your cat has been treated and should be experiencing the benefit of a fall in thyroid hormone levels making it much easier for him or her to relax normally again.

You know your cat best and these suggestions may not be needed. If you can suggest something not on this list please let us know; it may help someone else or their cat.



“The care and work of all at the Hyperthyroid Cat Centre has returned my cat to his good old self.”

## How should I feed my hyperthyroid cat?

Cats are different from both dogs and people in that they have to obtain most of their energy in the form of protein and not carbohydrates or fats - they are termed obligate carnivores. For a healthy cat 40-60% of their diet should be protein. Diets tend to change both the proportion of protein in the diet and also its quality. High quality protein is used more completely by cats whereas poorer quality protein results in more wastage, ultimately resulting in more work for the kidneys.



Hyperthyroid cats are not the same as healthy cats in their nutritional needs and careful thought should be given to your cat's diet. Every hyperthyroid cat is unique and this guidance cannot be specific; for individual advice please discuss nutrition with your local practice. As with people absolute weight is less important than the proportion of weight to the size of the individual. In people this is referred to as the body mass index (BMI) whereas in cats as the body condition score (BCS). Please use the scheme on page 27 to estimate your own cat's body condition score and then refer to the appropriate guidance. Your cat may also have kidney disease and this is also introduced below. There are many steps that can be taken to support a patient with kidney disease and it is important that you discuss these in detail with your local practice.

### Overweight (BCS 6-9)

Most hyperthyroid cats are substantially underweight by the time they are diagnosed and treated. However, cats are often diagnosed at a much earlier stage in their disease than used to be

the case and some hyperthyroid cats are in fact overweight. The focus of dietary advice is to moderate weight by reducing the amount and/or energy content of their diet. This is important because being overweight is a risk factor for a number of body systems, including the heart, joints, liver and kidneys, and is also a major risk factor for the development of diabetes.

### Normal weight (BCS 5)

A proportion of hyperthyroid cats can be fed as is usual for their age group. Diets designed for older cats (often called senior diets) tend to make mild changes in protein quality and proportions, recognising that in older cats kidney function often reduces. These diets tend to provide a little less protein and of a higher quality than cats in their youth. Interestingly, normal ageing (over 11 years) means that cats are less able to digest protein and also their needs for energy tend to increase. Older cats (like older people) also tend to lose muscle mass gradually.

### Underweight (BCS 1-4)

The majority of hyperthyroid cats are below their ideal body weight, often profoundly. Hyperthyroid cats are commonly older than 11 years of age and have a much higher energy demand because their metabolic rate is abnormally increased. This tends to enhance the muscle wastage that is normal in older cats. To better meet this need a diet with a higher proportion of high quality protein is helpful, such as a kitten food. This may be on a temporary basis until the BCS returns to normal (5). It is also recommended to keep carbohydrates at no more than 10% of the energy contribution in the diet as much higher proportions can predispose to diabetes.

“It was clear that all the staff love their work and caring for the cats.”

### Kidney disease - a special case

Kidneys are responsible for removing a by-product of protein metabolism (urea) from the body. As kidney function diminishes over time (and more rapidly with disease), reducing the amount of protein in the diet reduces the amount of urea the kidneys have to remove. In addition, excessive phosphorus is an important risk factor that encourages progression of kidney disease and is present in meat. Hence, feeding a low protein diet reduces a major risk factor for developing or worsening kidney disease, as well as reducing the amount of work the kidneys have to do. This is why specially-formulated diets (often called kidney or renal diets) are so effective at maintaining quality of life and also double the life expectancy for cats with kidney problems, compared with kidney patients on a standard diet. Modern formulations are also popular with cats.

### Hyperthyroid cats with kidney disease

Because both hyperthyroidism and kidney problems are common in older cats they often occur together. Meeting the needs of an underweight hyperthyroid cat (by using a higher protein diet) isn't always well tolerated by the kidneys. On the other hand, using a lower protein diet for the kidneys doesn't always overcome the weight loss of a hyperthyroid patient. Sometimes a compromise may be helpful and this might mean using a higher protein diet and adding medication to the food to bind the phosphorus, stopping the cat from being able to absorb it too much.



Before radio-iodine treatment



After radio-iodine treatment



What shape should my cat be?

Baby scales are available inexpensively via the internet and regular weight checks at home are invaluable. However, although they are very good at recording a precise number this offers no guidance on whether it is an appropriate weight for an individual. The BCS is a very good way to estimate whether a cat is of the right shape but offers no guidance to what the weight is. Using both measures together is the most helpful. Opposite is a Body Condition Score chart; numbers 2, 4, 6 and 8 are half-way points between the odd numbers.

Hyperthyroid cats tend to lose muscle mass before fat and in the early stages of their disease this may be the first change in body shape. A good place to feel for this is along the back between the pelvis and the last ribs; the bony prominences may feel unusually obvious even though the overall body shape suggests a higher BCS.

BCS Action Key:

- Urgent veterinary advice and treatment required.
- Adjust diet and monitor the response; seek veterinary advice.
- No change required but continue to monitor.

“The body condition score is a very good way to estimate whether a cat is of the right shape.”

# Body Condition Score



## 1. Very thin

It is as if every bone is clearly felt and on short-haired cats the ribs can be seen clearly. From the side the abdomen is severely 'tucked-in', whilst from above they have an hour-glass shape because the abdomen is so empty. The face appears gaunt and haggard.



## 3. Underweight

Bony prominences over the pelvis, and the ribs, are felt easily without requiring pressure because there is only a thin fat layer. The tucked-in abdomen and hourglass shape are still noticeable but less clearly than 1.



## 5. Normal

Bony prominences over the pelvis, and the ribs, are felt through a moderate layer of fat. There is still an abdominal tuck and from above there is still a clear waist behind the ribs. The face appears well-proportioned.



## 7. Overweight

Bony prominences over the pelvis, and the ribs, are difficult to feel through the fat layer without firm pressure being applied. An abdominal tuck is no longer visible because the abdomen and the fat pad beneath are starting to sag. From above the waist is obscured by a broadening behind the ribs.



## 9. Obese

Bony prominences over the pelvis, and the ribs, are hidden and almost impossible to feel through a thick layer of fat. Instead of an abdominal tuck a large pendulous abdomen with fat pad beneath it sags and from above the waist is replaced by a bulging profile. The face appears chubby.

# Preventing Feline Hyperthyroidism

Cat owners often have multiple cats and often ask whether they can prevent their other cats becoming hyperthyroid.

## Factors associated with hyperthyroidism

The cause of hyperthyroidism in cats is not fully understood. There is a body of knowledge that suggests that a number of factors have a role to play, and over a long period of time may act together to result in hyperthyroidism.

It is important to appreciate that these associations do not prove a direct link or cause, simply that an association between these factors and feline hyperthyroidism has been observed.

### Factors associated with hyperthyroidism:

- the amount of iodine in cat food
- the use of soy protein in cat food
- the container that cat food is packaged in
- fire retardants in the home
- herbicides
- pesticides (including cat flea control, both on cats and in the environment)
- cat litter
- trace elements in food.

To use this awareness in the hope of reducing the risk of hyperthyroidism developing means, where possible:

### Diet

- Avoid feeding soy protein (present in many cat foods).
- Minimise the feeding of fish.
- Avoid feeding food with giblet flavours.
- If feeding moist food, use pouches.
- If you prefer to use canned food rather than pouches, avoid using larger cat food cans such as 156g. Instead, plan to use smaller ones such as 85g.
- If you can, avoid extremes of iodine concentration in food, and avoid wide fluctuations in iodine concentrations between different diets. Some diets have high levels, others low. If possible aim to use a diet that contains the recommended amount, and avoid varying diets when very different iodine levels can be encountered. The recommended concentration is 0.5 - 2ppm.
- Ensure that the diet has a recommended balance of vitamins and minerals.
- Consider home cooking for your cat to avoid potential contaminants, but see a veterinary nutritionist to make sure your recipe will work.
- Avoid using plastic containers for feeding or storage or heating. Avoid using clingfilm over food. Instead use ceramic or glass containers.

### Drinking Water

- Consider using a quality filter on tap water to exclude contaminants.
- Avoid bottled or demineralised water.

### Cat Litter

- If using cat litter, choose natural biodegradable cat litters.
- Avoid cat litter that contains chemicals such as deodorisers.

### Packaging

- Be aware that fire retardants can become accessible to cats, for example when foam packing or mattresses become aged and the covering is damaged. Try to prevent access when you can.

- Consider, if you can, avoiding products that make use of bromine-based fire retardants.

### Environment

- Consider wiping your cat's coat daily, with a damp cloth.
- Consider bathing your cat monthly.
- Minimise house dust by vacuum-cleaning frequently, and use a cleaner with an HEPA filter.
- Consider using an HEPA air filter in your home.
- Use topical flea products on your cat sparingly (for example flea spot-on treatments).
- Use any chemicals in the home (where your cat has access) sparingly, for example environmental flea control.

### Please remember...

Even if you are able to follow all these recommendations there is no certainty that your cat will not still develop hyperthyroidism. Unfortunately many of the chemicals these measures aim to control are widely available to cats. Also, there may be other factors at play which we do not yet know of or understand fully.

However, following these recommendations is not expected to harm your cat; they are a guide to offer you some awareness where you may be able to positively influence your cat's health. Please discuss your cat's individual clinical requirements with your own veterinary surgeon before acting on these recommendations.

This advice on preventing feline hyperthyroidism is based on information published by Dr Mark Peterson.

### Further information and updates

Visit our website to find information updated since this booklet was printed, for links to other sites relating to feline hyperthyroidism, for webinars and for testimonials. Our website also contains training videos on how to deal with a radioactive cat at home and are available to carers of cats treated at the Centre.

Please contact us if you would like to be put in touch with someone from the HCC Community whose cat has been treated at the Hyperthyroid Cat Centre. They will happily discuss their own experience and answer your questions as best as they are able. Often they will have started with the same questions themselves, before having their own cat treated.



## Contact us

Please discuss your interest in radio-iodine treatment with your usual veterinary surgeon because they will need to refer you. Despite referral, you may not be offered radio-iodine treatment if this is not felt to be suitable for your cat.

Questions about radio-iodine are very welcome and should be addressed to:

The Hyperthyroid Cat Centre  
433 Birch Park  
Street 7  
Thorp Arch Estate  
Wetherby  
West Yorkshire  
LS23 7FG

Tel: 0345 544 4300

Fax: 0345 544 0300

enquiries@hyperthyroidcatcentre.co.uk

## How to find us

If using SatNav, our postcode is LS23 7FG.

### From the North

Leave the A1(M) at the Wetherby services using Junction 46; follow the B1224 towards Wetherby and then the A168 south beside the A1(M) until the second roundabout, signed Thorp Arch. This road crosses the A1(M) over a bridge.

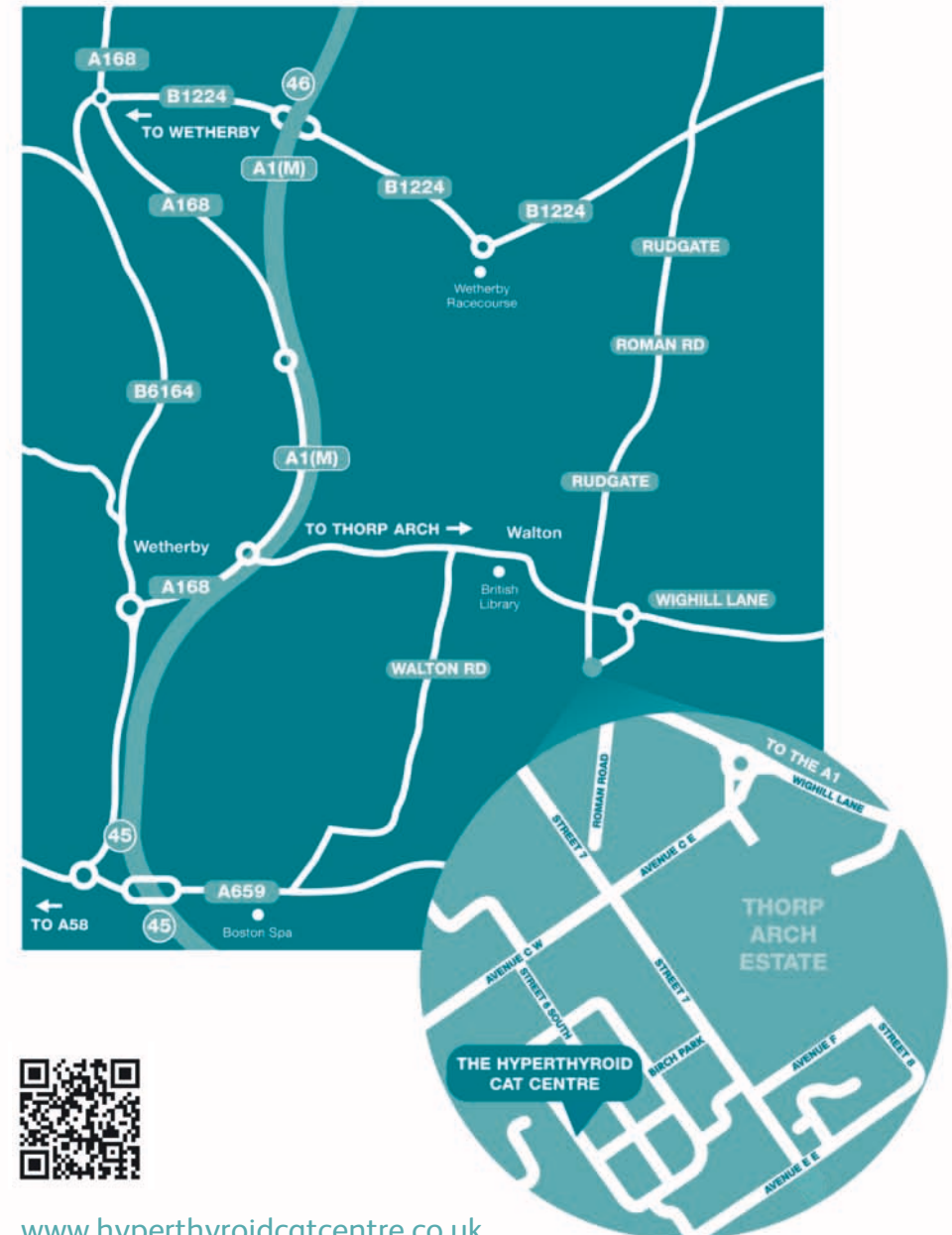
From the bridge follow this road for 2.9 miles, turning right at the roundabout signed Thorp Arch Estate and Retail Park. (Take care to avoid turning right too early, where it is signed British Library and Thorp Arch Estate, approximately 2.1 miles from the bridge over the A1(M)). At the crossroads turn left onto Street 7, take the next right into Birch Park, then follow the road clockwise to reach our Centre.

### From the South

Leave the A1(M) at Junction 45, stay on the A168 heading north beside the A1(M) until the second roundabout, signed Thorp Arch. This road crosses the A1(M) over a bridge.

From the bridge follow this road for 2.9 miles, turning right at the roundabout signed Thorp Arch Estate and Retail Park. (Take care to avoid turning right too early, where it is signed British Library and Thorp Arch Estate, approximately 2.1 miles from the bridge over the A1(M)). At the crossroads turn left onto Street 7, take the next right into Birch Park, then follow the road clockwise to reach our Centre.

There are a number of speed cameras between the A1(M) and our Centre even though it isn't a long road!



[www.hyperthyroidcatcentre.co.uk](http://www.hyperthyroidcatcentre.co.uk)

## Notes:

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### Special thanks..

All the cats photographed in this booklet have been cured of feline hyperthyroidism at the Hyperthyroid Cat Centre. Many thanks to their carers/owners for allowing us to use these photographs and for their quotes describing their perspectives and experiences of radio-iodine treatment.

## Notes:

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