

# Hyperthyroidism in Cats – Causes, Symptoms & Treatment

[www.cat-world.com.au/feline-hyperthyroidism.html](http://www.cat-world.com.au/feline-hyperthyroidism.html)

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## Feline hyperthyroidism at a glance:

- Feline hyperthyroidism is a common disease caused by a benign hormone-secreting tumour of the thyroid gland.
- Symptoms include weight loss despite an increased appetite, diarrhea, vomiting, rapid heart rate, poor coat condition.
- There are several treatment options including surgery to remove the tumour, radioactive iodine treatment to destroy the tumour, prescription diet or medications to control it.
- Hyperthyroidism is the most common endocrine disorder in cats.



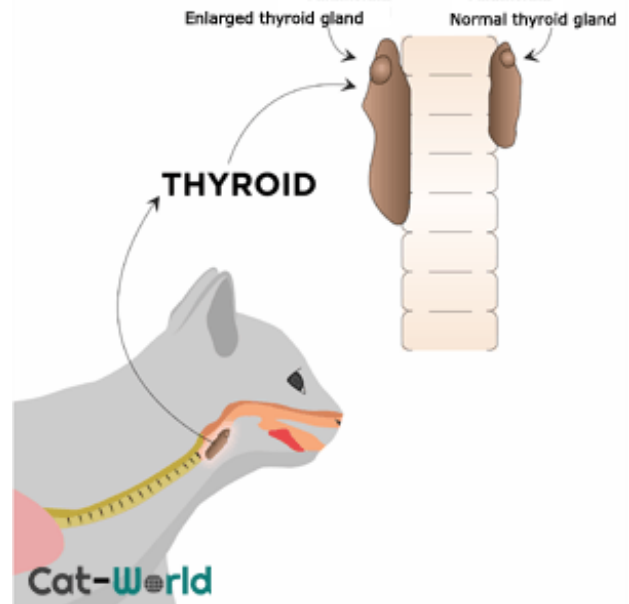
## What is hyperthyroidism?

Also known as **thyrotoxicosis**, hyperthyroidism (FHT) is an endocrine (hormonal) disorder that is caused by the overactivity of the thyroid gland due to a benign tumour which speeds up your cat's metabolism.

Located in the neck on either side of the windpipe, the thyroid gland produces two hormones, *T3 triiodothyronine* and *T4 thyroxine*, both of which control metabolism. Feline hyperthyroidism is the most common disease of the endocrine system and according to the AAFC (American Association of Feline Practitioners, between 1.5 – 11.4% of cats globally have hyperthyroidism. One insurance company, Nationwide Insurance, listed hyperthyroidism as the fifth most common medical condition in 2015.

The most common cause is a benign tumour (adenoma) on one or both of the thyroid glands. It affects both lobes in 70% of cases.

Other less common causes of feline hyperthyroidism include over administration of thyroid hormones when treating hypothyroidism (underactive thyroid gland) or a cancerous tumour, (known as a *thyroid adenocarcinoma*) of the thyroid gland. Less than 2% of cats with hyperthyroidism have a cancerous tumour.



## Symptoms:



Many cat owners first notice their cat is losing weight despite a usual or in many cases an increased appetite. In fact, over 95% of cats with hyperthyroidism have weight loss.

Other common symptoms of hyperthyroidism include:

- **Weight loss**
- **Increased appetite**
- **Palpable thyroid gland**
- **Diarrhea**

- **Vomiting**
- **Increased thirst and urination**
- **Behavioural changes** such as nervous/jittery behaviour, aggression, over-grooming and or bald patches, hyperactivity and increased vocalisation
- **Rapid heartbeat** (tachycardia)
- **Rapid, shallow breathing** (tachypnea)
- **Poor coat condition**, see photos
- **Thickening of the claws**
- **Hypertension**

### Less common symptoms:

- **Weakness**
- **Decreased appetite**

### Diagnosis:

Your veterinarian will observe your cat's clinical signs, palpitate the thyroid gland, other diseases such as renal failure and feline diabetes have similar symptoms.

- Tests your veterinarian will carry out will include a biochemical profile to determine the overall health of your cat. Cats with hyperthyroidism may also have elevated liver enzymes.
- Specific blood tests to detect elevated levels of the hormones T3 and T4. Some cats with hyperthyroidism may show normal levels of these hormones in their blood test. If this is the case your veterinarian will recommend a T3 suppression test. This involves a blood test to check the levels of T3 and T4, followed by administration of oral doses of the thyroid hormone T3 followed by a second blood test. In a normal cat, the level of T4 will drop, in a cat with hyperthyroidism the T4 levels will stay the same or increase slightly.
- Thyroid imaging to evaluate the shape and size of the thyroid gland.



### Classification of hyperthyroidism:

In 2016, the AAFP issued updated guidelines for classifying hyperthyroidism in cats as follows.

1. **Classic clinical disease** – The cat has clinical signs of the disease along with an elevated serum total thyroxine concentration.
2. **Possible hyperthyroidism with possible nonthyroidal disease** – The cat has clinical signs of the disease but a normal serum total thyroxine concentration.
3. **Enlarged thyroid without clinical hyperthyroidism** – The thyroid is enlarged but there are no clinical signs and a normal serum total thyroxine concentration.
4. **Subclinical hyperthyroidism** – The cat has no clinical signs of disease but has an elevated serum total



thyroxine concentration.

5. **Clinical hyperthyroidism with confirmed nonthyroidal disease** – The cat has clinical signs of the disease along with an elevated serum total thyroxine concentration AND confirmed concurrent disease(s).
6. **Clinically normal** – The cat has no clinical signs of the disease or enlarged thyroid but has an elevated serum total thyroxine concentration.

## What effect does hyperthyroidism have on the cat?

An increase in levels of thyroid hormones speed up the cat's metabolism (called a **hypermetabolic state**). This leads to a hyperdynamic cardiovascular state in which the heart beats faster which eventually causes [congestive heart failure](#) and secondary [hypertrophic cardiomyopathy](#).

High blood pressure (hypertension) is another common side effect of hyperthyroidism in cats. Hypertension has a serious effect on several organ functions. Swelling and bleeding into the eyes can lead to blindness, hardening of the arteries, a hardening of the heart muscle, which over time can cause congestive heart failure and increased risk of stroke.

## Treatment:

There are four options to treat hyperthyroidism in cats, and each treatment has its pros and cons. Treatment will depend on other medical conditions your cat may have as well as availability of a nuclear medicine facility and cost.

## Diet:

In 2012, Hills launched a prescription diet called **Hills y/d** to manage hyperthyroidism. This food is low in iodine, which is required by the thyroid gland to produce its hormones, low iodine=reduced hormone production. It may take a few weeks for this food to take effect. Advantages of this treatment are that it is easy for the pet guardian to manage the disease and cheaper than surgery. Disadvantages are that it is not curative, it only manages the condition. Some cats may be reluctant to eat the diet or may go off their food when unwell, resulting in hyperthyroidism becoming worse again. Also, the thyroid tumour is still in the cat and may potentially turn cancerous in the future.

## Drugs (Methimazole/Tapazole):

The use of medication doesn't cure hyperthyroidism, only controls it. Medication is administered daily for the rest of your cat's life. There may be side effects from the use of drugs including vomiting and lethargy. Short term this is the cheapest option, but in the long run, it can prove costly having to pay for daily medication for your cat. Methimazole can be given either in oral or transdermal (applied to the skin inside the ear) form. Advantages of medication are that treatment is reversible if side effects occur (see precaution at the end of this article). Other side effects may include anorexia and vomiting.

## Surgery:

Removal of the enlarged thyroid lobe(s), known as thyroidectomy. Pros of this option are that it is a permanent cure. Cons include an increased anaesthetic and surgical risks due to the effect the disease may have had on the cat's heart and kidneys. If both glands are removed, there is increased risk of accidentally removing the small parathyroid glands, (which among other things regulates the calcium supply in the body), which can cause hypocalcemia (low blood calcium). If both lobes are removed you will have to give your cat a daily thyroid supplementation.

## Radioactive Iodine Treatment:

A single injection of radioactive iodine (radioiodine I-131) which concentrates in and destroys the diseased



thyroid tissue while leaving the normal thyroid tissue intact. Pros of this option are that the cat doesn't require anaesthesia, there is no need to give your cat medication for the rest of his life and in the majority of cases, it is a permanent cure. Some cats will need repeat treatment. Pros are that it is permanent and the parathyroid glands will not be damaged. Cons are that it is expensive in the short term, and can only be performed at a specialist veterinary centre.

After treatment, your cat will be slightly radioactive and will have to stay at your veterinarian's until the radioactive levels drop.

## **Hyperthyroidism and chronic kidney disease:**

In some cats, hyperthyroidism and kidney disease run concurrently. Hyperthyroidism can act to protect the kidneys because it produces a hyperdynamic cardiac state (increased blood flow). This increases glomerular blood flow (GBF) and glomerular filtration rate (GFR), which improves renal function.

Kidney failure can become worse once treatment begins and your veterinarian will recommend drugs to control hyperthyroidism if your cat has concurrent kidney disease and closely monitor kidney function. That way, if the kidneys do begin to deteriorate your veterinarian can re-evaluate or stop the medication immediately, opposed to surgery or radioactive iodine treatment which is permanent.

## **Why is feline hyperthyroidism on the increase?**

First noted in 1979, hyperthyroidism has become the most common endocrine disorder in cats. So why has this happened?

No specific breeds are prone to feline hyperthyroidism, although one research paper noted that Siamese and Himalayan cats are at a slightly lower risk of developing the disease (Kass, P.H. et al, 1999) . It affects older cats 8-10 years plus most often with up to 10% of senior cats will develop hyperthyroidism. There is no sex predilection.

## **Canned cat food:**

There has been research which points towards a link between the **consumption of canned food** and hyperthyroidism in cats, **especially fish or liver flavoured varieties** . (Martin, K.M et al, 2000). BPA (bisphenol A) is a chemical used to line pet food cans to stop erosion and is a known endocrine disrupter, meaning it interferes with hormone systems. A large number of plastic products also contain BPA.

## **Polybrominated diphenyl ethers (PBDE's)**

PBDE's are flame retardants which are known endocrine disrupter, which are found in many household products including furniture and electronic goods as well as in large fish.

Exposure occurs through inhalation of dust containing traces of PBDE's as well as ingestion during grooming or consuming certain food. Several studies have found high levels of PBDE's in cats, however, no conclusive evidence shows a direct link between PBDE's and hyperthyroidism in cats. Certainly, there is a growing body of evidence towards the health risks of PBDE's.

## **Other:**

Lack of iodine supplementation in certain brands of cat food, but different reports suggest over-supplementation of iodine is the cause, exposure to well water, exposure to gas fireplaces, cat litter and frequent carpet cleaning. (Edinboro C.H. et al, 2004 and 2010). In fact, the general opinion is that it is likely a number of contributing factors that lead to hyperthyroidism.

**Update December 2016.** A study in American Chemical Society's *Environmental Science and Technology* journal points fish flavoured food being responsible for exposing cats to PBDE's and PCB's. You can read more

about this [here](#).

## Prevention:

There is a foolproof way to prevent hyperthyroidism, certainly, exposure to tinned cat food, especially fish (which can contain high levels of iodine and PBDE's), and those with pop tops seem to pose a greater risk to cats. Small cans are less likely to be lined with BPA.

- Use a natural cat litter with no scent
- Avoid plastic food bowls and storage containers for pet food and water.
- Limit chemicals in the household environment, switch to natural cleaning products as much as possible.
- Install a water filter if possible to remove chemicals.
- Only heat up food in glass or ceramic containers, not plastic.
- Routinely test all cats over the age of nine for hyperthyroidism during their annual exam.

Research references:

Martin, K.M. *et al* (2000) Evaluation of dietary and environmental risk factors for hyperthyroidism in cats.

Kass, P.H. *et al* (1999) Evaluation of environmental, nutritional, and host factors in cats with hyperthyroidism. *J. Vet. Intern.* 1999.

Edinboro, C.H. *et al* (2004) Epidemiologic study of relationships between consumption of commercial canned food and risk of hyperthyroidism in cats. *JAVMA* 224 (6):879-886.

Edinboro, C.H. *et al* (2010) Feline hyperthyroidism: potential relationship with iodine supplement requirements of commercial cat foods. *J Feline Med Surg* 12(9):672-679

[Images courtesy of Nottingham Vet School](#)