

Feline Hyperthyroidism FAQs

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 **Felanorm**
(methimazole)
Oral Solution

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Feline Hyperthyroidism

Hyperthyroidism is one of the most commonly diagnosed endocrine diseases in cats. While it is typically identified in older cats, it isn't limited to this group. Hyperthyroidism results from the overproduction of thyroid hormones by a functional tumor in one or both thyroid glands which are located in the neck, along the trachea (windpipe). The majority of these tumors are benign (adenomas), although malignant versions (adenocarcinomas) are reported in about 1 to 3% of diagnosed cases.^{1,2} Left untreated, hyperthyroidism can lead to life-threatening problems for the cat. If adequately treated and regularly monitored, however, most cats with hyperthyroidism can enjoy significantly improved quality of life and life expectancy.



1. What is the prevalence of feline hyperthyroidism?

Feline hyperthyroidism is generally believed to occur in about 10% of cats over ten years of age,³ although hyperthyroidism can be diagnosed in cats less than 10 years old as well.

2. What are the common signs of hyperthyroidism?

Weight loss
Increased appetite
Increased drinking and urination
Poor haircoat (e.g., unkempt)
Behavioral changes such as hyperactivity, irritability, aggression or increased vocalization
Vomiting and/or diarrhea

Less obvious findings:

Hypertension (high blood pressure)
Newly-identified heart murmur
Decreased kidney function
Enlarged thyroid gland(s) - (palpable in many cases)

3. What testing is needed to diagnose hyperthyroidism?

Hyperthyroidism is diagnosed based on the clinical signs that a cat demonstrates along with a physical examination and blood tests. The blood tests generally include a “blood chemistry panel,” a total T4 (TT4 – thyroid hormone) level, a complete blood count (CBC) and a urinalysis. The attending veterinarian may recommend additional tests such as a blood pressure measurement and a cardiac ultrasound or a cardiac function blood test. These tests will determine if a cat’s thyroid level is elevated and will evaluate the cat’s organ function and overall health.

4. Are there different categories of hyperthyroidism cases?

The American Association of Feline Practitioners (AAFP) has created a categorical approach to diagnosis and treatment of feline hyperthyroidism based on the cat’s health status and blood test results.⁴ **See Table 1.**

5. What treatment options are available for managing hyperthyroidism in cats?

There are four treatment options for feline hyperthyroidism: radioactive iodine therapy, thyroidectomy (surgical removal of the thyroid gland[s]), medical management and restricted iodine diet therapy. **See Table 2** for the pros and cons of each option.

6. What options are available for medical management?

The drug most commonly used to manage this disease in the U.S. is methimazole. It is currently available as a human generic tablet, a veterinary-approved tablet (Felimazole[®] Coated Tablets [methimazole tablets]), compounded oral and transdermal gel formulations and now the first FDA-approved oral solution, Felanorm[®] (methimazole) Oral Solution.

7. What is Felanorm[®] (methimazole) Oral Solution? †

Felanorm is the first FDA-approved oral solution that is indicated for the medical management of cats with hyperthyroidism. Because it is a honey-flavored oral liquid that is easy to give, it eliminates the struggle associated with trying to “pill” cats. The oral solution also avoids some of the increased health and safety hazards that are associated with exposure to transdermal gels for cat owners and other pets in the household.

† Please refer to Felanorm product insert for complete prescribing and safety information.

8. How is Felanorm dosed?

Felanorm, like other formulations of methimazole, is usually administered twice daily. The recommended starting dose of Felanorm is 2.5 mg administered every 12 hours.* Dividing the daily dose into two doses (generally morning and evening) has been shown to reduce the likelihood of side effects.^{5,6} Research also suggests that twice-daily administration of methimazole increases efficacy when compared to once-daily administration.⁷

Please refer to the Client Information Sheet and Product Insert for complete dosing instructions.

*Individual dosing recommendations may vary based on the results of physical exam and blood chemistry findings as well as the presence of any concurrent disease processes, and should be determined by the attending veterinarian. Felanorm's included syringe allows for fine titration of the methimazole dose.

9. How do I switch from oral methimazole tablets to Felanorm?

Oral methimazole tablets or compounded oral methimazole formulations:

No "washout" period (during which no medication is administered) is necessary when switching from oral formulations to Felanorm.

If the cat is **well managed** on its current oral formulation, it would be appropriate to discontinue the current product, start treatment with Felanorm **using the current dosing regimen** and re-check the TT4 in 3 weeks.

If the cat is **not well managed** on its current regimen, it would be appropriate to discontinue the current product, start Felanorm **at the label-recommended dose** and re-check the TT4 in 3 weeks.

10. How do I switch from transdermal methimazole gel to Felanorm?

Transdermal methimazole formulations:

Because transdermal gels often have variable absorption and frequently require elevated dosing compared to oral formulations, a "washout" period (no medication is administered) is recommended for 24 to 48 hours to ensure that any residual methimazole is metabolized prior to starting Felanorm. The Felanorm dose will be dependent on whether the owner was compliant in administration and whether the cat's thyroid level was controlled in the normal range.

If the cat is euthyroid:

After the washout period, it would be reasonable to start the cat's daily dose for the Felanorm oral solution at **half** of the previous daily transdermal dose. The resulting daily dose should be divided and administered twice daily as recommended and the TT4 level evaluated in 3 weeks (sooner if clinical signs warrant) to determine if dose adjustments are indicated.

If the cat's thyroid status is unknown or if the owners were not compliant with dosing:

After the washout period, suggest starting cat as if newly diagnosed by establishing a baseline TT4 level and beginning at label recommended dose and frequency. Recheck TT4 level in 3 weeks to determine whether cat is maintained in the middle of the normal range or if dose adjustment is indicated.

11. What monitoring is recommended for patients receiving medical management?

A CBC, blood chemistry panel and total TT4 should be evaluated **prior to initiating treatment** and monitored **after 3 weeks and 6 weeks of treatment.** The goal is to maintain the cat's TT4 levels in the middle of the normal range. The recheck TT4 level can be drawn at any time during the day.

Following 3 and 6 weeks of treatment, the Felanorm dose should be titrated to effect based on individual serum total TT4 levels and clinical response. The syringe included in the Felanorm package allows for fine titration of the methimazole dose.

Thereafter, unless clinical signs dictate, bloodwork should be monitored **every 3 months** and the dose adjusted as indicated.

Cats receiving doses greater than 10 mg per day should be monitored more frequently. For cases requiring doses of 10 mg/day (or higher), the client should be carefully questioned about compliance and the ability to administer the prescribed dose, and the presence of thyroid adenocarcinoma should be considered.

Cats with other underlying diseases should also be tested more frequently.

12. What is the recommended protocol for pre-treating cats prior to thyroidectomy?

Because of the increased anesthetic risk associated with hyperthyroidism, many surgeons prefer that hyperthyroid cats be stabilized with a TT4 level within the reference range prior to thyroidectomy. With the surgeon's consent, Felanorm can be administered prior to thyroidectomy. The patient's TT4 level would typically be within the normal range within 3 to 4 weeks of starting Felanorm. Cat owners should defer to the recommendations of the attending surgeon.

13. How do I manage cats that are diabetic and have hyperthyroidism?

Diabetes is not a contraindication for the treatment of hyperthyroidism in cats. Both diseases should be managed. Because protein turnover is increased in feline hyperthyroidism, the half-life of fructosamine may be reduced.⁸ As a result, fructosamine levels should not be relied on to assess glucose control until the cat's thyroid and protein levels are stabilized in the normal range. These cases will require very close monitoring and adjustment of treatments for each condition.

14. How do I manage cats with chronic kidney disease (CKD) and hyperthyroidism?

While the labeling of all currently FDA-approved methimazole products states that use in cats with renal disease is contraindicated, treatment of hyperthyroid cats is widely recommended by most experts regardless of the presence of concurrent disease (including pre-existing CKD). The AAFP Guidelines for the Management of Feline Hyperthyroidism² provides detailed guidance for managing these co-morbidities. It is critical to carefully monitor these patients to maintain thyroid levels in the middle of the normal range and to avoid both hypothyroidism and hyperthyroidism.³ Both conditions will need to be monitored and managed carefully as each influences treatment of the other.

15. What do I do if a patient develops renal disease after starting methimazole?

Cats with untreated hyperthyroidism typically have an elevated glomerular filtration rate (GFR), which is damaging to kidney function. Initiating therapy for hyperthyroidism can reduce GFR and "unmask" pre-existing chronic kidney disease (CKD). Previous concerns that treating hyperthyroid cats may cause renal disease are unfounded, and treatment of hyperthyroid cats is recommended even if they develop azotemia after medical management has been initiated.⁴ It is critical to carefully monitor these patients in order to maintain TT4 levels in the middle of the normal range and to avoid both hypothyroidism and hyperthyroidism.⁹ The AAFP Guidelines provide guidance for managing patients with hyperthyroidism and CKD. Both conditions will need to be monitored and managed carefully as each influences treatment of the other.

16. What are the potential side effects of methimazole?

As with all drugs, side effects may occur. The most commonly reported side effects are anorexia, vomiting, head/facial pruritus or edema, depression/lethargy, weight loss, anemia, elevated liver enzymes, skin lesions, elevated BUN, diarrhea and thrombocytopenia. Felanorm® Oral Solution is not for use in pregnant or lactating queens, or cats with renal, hepatic or hematological disorders. In some reported cases, the patients recovered after adverse signs were recognized, the drug was withdrawn and veterinary care was applied. In some cases, death (or euthanasia) has been reported as an outcome of the adverse reactions listed above. Methimazole has anti-vitamin K activity and may induce bleeding diathesis without evidence of thrombocytopenia. Please refer to the product insert for a complete list of warnings, potential side effects and prescribing information associated with Felanorm. To report suspected adverse drug events, for technical assistance or to obtain a copy of the Safety Data Sheet (SDS), contact Norbrook at 1-866-591-5777.

For additional information about adverse drug experience reporting for animal drugs, contact the FDA at 1-888-FDA-VETS or <http://www.fda.gov/reportanimalae>.

17. Is there a concern for the thyroid level dropping too low?

Yes! It is critical to avoid the TT4 level falling below the normal range because iatrogenic hypothyroidism has been associated with increased risk of renal compromise and decreased survival times.¹⁰ The goal of therapy is to maintain the cat's TT4 level in the middle of the normal reference range.

18. Are there any medications to be careful with when using methimazole?

Anticoagulants may be potentiated by the anti-vitamin K activity of Felanorm. Concurrent use of phenobarbital may reduce the clinical effectiveness of Felanorm. A reduction in dose of certain drugs (β -adrenergic blocking agents, digitalis glycosides and theophylline) may be needed when the patient becomes euthyroid.

Methimazole is known to reduce the hepatic oxidation of benzimidazole anthelmintics (e.g., fenbendazole), leading to increased plasma concentration of these anthelmintics when administered concurrently.

19. Are there human health risks with methimazole?

This product is not for use in humans. Keep out of reach of children. For use in cats only. Wear protective single use, impermeable (e.g., latex or nitrile) gloves when administering the solution. Wash hands with soap and water after administration to avoid exposure to drug. Wear protective gloves to prevent direct contact with litter, feces, urine or vomit of treated cats, and the solution. Wash hands after contact with the litter of treated cats.

Methimazole is a human teratogen and crosses the placenta, concentrating in the fetal thyroid gland. There is also a high rate of transfer into breast milk. Pregnant women, or women who may become pregnant, and nursing mothers should wear gloves when handling the solution, litter or bodily fluids of treated cats. Individuals with an endocrine disorder that could be impacted by methimazole should use similar precautions. Methimazole may cause vomiting, gastric distress, headache, fever, arthralgia, pruritus and pancytopenia. In the event of accidental ingestion/overdose, seek medical advice immediately and show the product label to the physician. Avoid skin and oral exposure, including hand-to-mouth contact. Wash any spillages or splatter from the skin immediately. Do not eat, drink, smoke/vape or use smokeless tobacco while handling the product or used litter. Felanorm may cause skin or eye irritation. Avoid eye contact, including hand-to-eye contact. In case of accidental eye contact, rinse eyes immediately with clean running water. If irritation develops, seek medical advice. Please refer to the product insert for a complete list of warnings, potential side effects and prescribing information associated with Felanorm.

Table 1 - Summary of the Categorical Approach to Diagnosing Suspected Feline Hyperthyroidism

After evaluating signalment, history, physical exam and a minimum database, patients will present as:

CATEGORY	GROUP 1: Classic clinical disease	GROUP 2: Possible FHT with probable NTD	GROUP 3: Enlarged thyroid without clinical FHT	GROUP 4: Subclinical FHT	GROUP 5: Clinical FHT with confirmed NTD	GROUP 6: Clinically normal
CLINICAL PRESENTATION	<ul style="list-style-type: none"> Clinical FHT Elevated T4 	<ul style="list-style-type: none"> Clinical FHT Normal T4 	<ul style="list-style-type: none"> No clinical FHT Normal T4 Enlarged thyroid gland 	<ul style="list-style-type: none"> No overt clinical FHT but some PE findings suggestive of FHT Elevated T4 	<ul style="list-style-type: none"> Clinical FHT Elevated T4 One or more concurrent diseases 	<ul style="list-style-type: none"> No clinical FHT No palpable nodule Elevated T4
NEXT STEPS	<ul style="list-style-type: none"> Consider and recommend treatment options for FHT 	<ul style="list-style-type: none"> T4 with fT4ed assays 2-4 weeks after initial exam Evaluate for NTD Consider T3 suppression or thyroid scintigraphy 	<ul style="list-style-type: none"> Monitor clinical signs Repeat T4 assay in 6 months 	<ul style="list-style-type: none"> Repeat T4 assay in 2 weeks If elevated, treat for FHT If T4 is normal, re-evaluate in 6 months 	<ul style="list-style-type: none"> Treat for FHT Institute appropriate management of concurrent diseases 	<ul style="list-style-type: none"> Confirm T4 If normal, monitor clinical signs and repeat T4 in 6 months If elevated, treat for FHT

FHT = feline hyperthyroidism; NTD = non-thyroidal disease; T4 = total serum thyroxine concentration; fT4ed = free thyroxine measured by equilibrium dialysis; T3 = triiodothyronine; PE = physical exam
 Reprinted from 2016 AAFP Feline Hyperthyroidism Guidelines

Table 2 - Feline Hyperthyroidism Treatment Options

TREATMENT METHOD	PROS	CONS
Radioactive Iodine	<ul style="list-style-type: none"> 95% cure rate Single dose therapy Kills abnormal thyroid tissue anywhere in body No lifelong medication in most cases Serious adverse events rare Minimal follow-up after successful treatment 	<ul style="list-style-type: none"> High initial expense 3-day to 4-week hospitalization Limited or no-contact confinement for 2 weeks once home Owner must carefully collect and dispose of litter for 2 weeks Irreversible Potential permanent hypothyroidism Limited availability in some geographies
Thyroidectomy (surgical removal of thyroid gland[s])	<ul style="list-style-type: none"> Relatively simple procedure > 90% cure rate if bilateral gland removal 35%-60% if unilateral removal Response within 24-48 hours 	<ul style="list-style-type: none"> Anesthesia risk to potentially compromised patient High initial expense May damage parathyroid glands Risk of hypothyroidism Irreversible Requires hospitalization Can alter "voice" due to nerve damage
Medical Management (Oral and transdermal)	<ul style="list-style-type: none"> Response rate >95% while on meds No hospitalization No risk of permanent hypothyroidism Reversible Cost same but "distributed" over time 	<ul style="list-style-type: none"> Once or twice daily medication for life Frequent testing/adjustment required Increased risk of adenocarcinoma with time Adverse effects in up to 25% of cats Elevated risk of human exposure with transdermal medication 100% relapse rate if discontinued
Dietary Therapy Restricted Iodine (y/d - Hills Pet Nutrition)	<ul style="list-style-type: none"> Response rate ~83% if diet exclusive Easy (feed the cat) No drugs, no surgery 	<ul style="list-style-type: none"> Some palatability issues Must avoid most other foods and treats 100% relapse rate if discontinued Increased risk of adenocarcinoma with time Difficult in multi-pet households



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References:

¹Feldman EC, Nelson RW. Feline hyperthyroidism (thyrotoxicosis), in *Canine and Feline Endocrinology and Reproduction*, 3rd ed. St. Louis: Elsevier Science; 2004; p. 152–218.

²Naan EC, Kirpensteijn J, Kooistra HS, Peters ME. Results of thyroidectomy in 101 cats with hyperthyroidism. *Vet Surg*. 2006;35(3):287–293.

³Peterson ME. Hyperthyroidism in cats: what's causing this epidemic of thyroid disease and can we prevent it? *J Feline Med Surg* 2012;14:804–818.

⁴AAFP Guidelines for the Management of Feline Hyperthyroidism. 2016.

⁵Trepanier LA, Peterson ME, Aucoin DP. Pharmacokinetics of methimazole in normal cats and cats with hyperthyroidism. *Res Vet Sci*. 1991;50(1):69–74. doi: 10.1016/0034-5288(91)90055-s. PMID: 2047595.

⁶Trepanier LA, Peterson ME, Aucoin DP. Pharmacokinetics of intravenous and oral methimazole following single- and multiple-dose administration in normal cats. *J Vet Pharmacol Ther*. 1991;14(4):367–373. doi: 10.1111/j.1365-2885.1991.tb00850.x. PMID: 1774813.

⁷Trepanier LA, Hoffman SB, et al. Efficacy and safety of once versus twice daily administration of methimazole in cats with hyperthyroidism. *JAVMA*. 2003; 222(7):954–958.

⁸Reusch CE, Tomsa K. Serum fructosamine concentration in cats with overt hyperthyroidism. *J Am Vet Med Assoc*. 1999;215(9):1297–1300. PMID: 10553441.

⁹Vaske HH, Schermerhorn T, Grauer GF. Effects of feline hyperthyroidism on kidney function: a review. *J Feline Med Surg*. 2016;18(2):55–59. doi: 10.1177/1098612X15575385. Epub 2015 Mar 6. PMID: 25749888.

¹⁰Williams TL, Elliott J, Syme HM. Association of iatrogenic hypothyroidism with azotemia and reduced survival time in cats treated for hyperthyroidism. *J Vet Intern Med*. 2010;24(5):1086–1092. doi: 10.1111/j.1939-1676.2010.0566.x. Epub 2010 Jul 28. PMID: 20695989.

IMPORTANT SAFETY INFORMATION

CAUTION: As with all drugs, side effects may occur. The most commonly reported side effects are anorexia, vomiting, head/facial pruritus or edema, depression/lethargy, weight loss, anemia, elevated liver enzymes, skin lesions, elevated BUN, diarrhea, and thrombocytopenia. Felanorm® Oral Solution is not for use in pregnant or lactating queens, or cats with renal, hepatic, or hematological disorders. In some reported cases, the patients recovered after adverse signs were recognized, the drug was withdrawn, and veterinary care was applied. In some cases, death (or euthanasia) has been reported as an outcome of the adverse reactions listed above. Methimazole has anti-vitamin K activity and may induce bleeding diathesis without evidence of thrombocytopenia. Refer to the prescribing information for complete details or visit www.norbrook.com.

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