



A Foster Parent's Guide to Ringworm

PAWS is committed to treating animals with ringworm, and kittens and cats with ringworm respond best to treatment in a home where they can be socialized, cared for, and monitored closely. A foster home provides a great environment for this type of care and monitoring.

Contrary to its name, "Ringworm" is not a worm at all but a fungus, properly called a "Dermatophyte," meaning "Plant that lives on the skin." The fungi live on the surface of the skin and in the skin follicles, feeding on dead skin tissue. In the past, the circular lesions made by the fungus were thought to be caused by a worm, hence the name Ringworm. While this is one form ringworm can take, this is not the only pattern. Crusts, scabs, and areas of hair loss that are not circular can also be caused by a dermatophyte. The most common species causing skin lesions in cats and dogs are *Microsporum canis*, *Microsporum gypseum*, and *Tricophyton mentagrophytes*.

What does Ringworm look like?



The usual appearance of Ringworm is a round, hairless lesion, often with a crust along the leading/outer edge. The characteristic "ring" that we see on humans does not always appear as a ring on animals. The lesion may grow in size and become irregular in shape. The fungi causes hair shafts to break, hence the patches of hair loss. Most often ringworm lesions are seen on the face, ears, tail, and paws or lower leg. The lesions are usually scaly, may or may not be itchy, and often the skin is red and inflamed.

How is Ringworm transmitted?

Transmission can happen by direct contact with another infected animal or person or contact with a infective spore in the environment. It can be passed from cats to dogs, from dogs to cats, from pets to humans, and from humans to pets. The fungal spores can live in the environment for a long time and can be found in carpets, bedding, grooming equipment, etc. and can infect an animal when it comes into contact with them. The incubation period is 7-21 days, meaning 7-21 days will pass before any lesions occur. In many cases ringworm can be spread by contact with infected soil. The fungus can live for

months in soil if the nutrients are right. Fleas can also spread ringworm, please keep current with flea treatments!

Can humans catch ringworm from animals?

Yes. Humans can contract ringworm by touching an animal with ringworm or coming into contact with spores in the environment. Ringworm can spread while petting or grooming cats or dogs with ringworm. You can also get ringworm from mice, rats, cows, goats, pigs and horses. Ringworm on humans tends to have the more circular ring pattern.



Are all cats or dogs susceptible to ringworm?

While all animals are susceptible to ringworm, healthy adult cats or dogs usually have a resistance to ringworm. Young kittens, puppies, and humans are more susceptible because their immune system has not fully developed. Similarly, older animals or animals that have a problem with their autoimmune system are more susceptible. Many cats and dogs are carriers of ringworm but show no symptoms. They can, however, infect other animals or humans.

Diagnosis of ringworm

A veterinarian will diagnose ringworm using a variety of tests. It is not possible to make a diagnosis just by looking at the skin. Typically, if ringworm is suspected based on the appearance of the skin, treatment is started immediately while testing is being completed.

A Wood's lamp is a light that is used to cause fluorescence (bright green illumination) of microbial byproducts on the skin or hair. It identified a chemical reaction that occurs as a result of the infection but does not identify spores or infective material. While it is a helpful tool to identify dermatophytoses, it does not identify all ringworm species and cannot be the only tool used to diagnose ringworm. It is NOT a blacklight, although it kind of looks like one.

A fungal culture is used to grow dermatophyte species that are present on the skin or fur. A brushing or scraping from the lesions is placed onto a culture plate that allows optimal growth conditions for fungus only. The resulting growth is then observed under a microscope and assessed for characteristics of ringworm, specifically fungal spores or "macroconidia." A positive result may be seen in as few as 4 days, but to be truly negative a culture must be monitored and produce no growth for 14 days.

Is there a way to treat ringworm?

Yes! While most untreated ringworm infections will resolve on their own in 2-4 months, treatment is recommended to reduce the amount of time an animal is contagious and spreading ringworm, as well as to make the animal more comfortable as soon as possible. Some animals will not resolve without treatment and will continue to get worse. PAWS requires treatment for all of our in-house and foster animals.

Ringworm Treatment

The best treatment for ringworm is a multi-pronged approach that involves treating the animal systemically, treating the animal topically, and ensuring a clean environment. At PAWS, we achieve this by giving an oral medication, a shampoo or dip, topical cream to put directly on visible lesions, and strict cleaning of the environment in which the animal lives.

Oral Antifungal Medication: The best oral medications for ringworm are Terbinafine (tablets) and Itraconazole (liquid). These medications are very important for treating the infection going on within the skin of the animal. If you are fostering kittens, weigh the kittens weekly to make sure you are giving the correct dose as the kitten grows.

Topical shampoo or Dips: Lime Sulfur dip is the best method for reducing the number of infective fungal spores that are shed into the environment. While smelly and annoying, these dips will dramatically reduce the amount of time an animal is infective to itself and other animals. Dips should be done twice a week with 8oz of solution diluted into 1 gallon of warm water. Dip the entire kitten or cat up to the shoulders and massage the solution into the fur, or using a spray bottle spray the solution onto the fur and massage the solution into the fur. Do NOT rinse the solution, let it air dry!

If you are unable to perform the lime sulfur dips at home, you can bring your foster animal in to the PAWS Grays Ferry facility on Mondays and Thursdays around 11am to be dipped, which are the days that PAWS dips the in-house animals. Please arrange this with your foster coordinator.

Topical antifungal creams: Topical miconazole or terbinafine (Lamasil) can be applied to the visible lesions daily or twice daily. Make sure you do not apply the cream before a Lime sulfur dip session! Creams can be purchased over-the-counter at most pharmacies and grocery stores. Be sure to use a product with Miconazole or Terbinafine as the active ingredient.

Environmental Decontamination: Environmental decontamination is crucial for an efficient and effective treatment of ringworm. Without environmental decontamination, spores shed by an animal may remain infective for months and prevent complete healing. That said, the best way to decontaminate the environment is to have a limited environment (small space) that is easy to clean (porcelain, tile, plastic, metal surfaces). We recommend keeping animals infected with ringworm confined to a bathroom or other room that has durable, easily cleanable surfaces.

The MOST important thing during environmental decontamination is to remove all infective hairs and organic matter from the environment. Regular vacuuming, sweeping, and mopping is important, along with using a detergent or soap to break down any material that may be harboring infective spores. Use bleach mixed at a 1:10 ratio (1 part bleach to 10 parts water) on any surface that allows bleach cleaning at least every other day. The bleach solution should be sprayed on and allowed to sit for a

minimum of 10 minutes before wiping off. Surfaces that may be able to be bleached include walls, floors, countertops, windowsills, carriers, toys, etc.

****Bleach is not effective at decontaminating spores within organic material, so it is very important to clean surfaces of organic debris and use a soap/detergent before using the bleach solution****

Regularly wash all bedding in very hot water with detergent and color-safe bleach. Avoid carpets and toys that cannot be cleaned.

After interacting with animals infected with ringworm immediately wash hands thoroughly and change clothing; it is a good idea to wash clothing that came into contact with ringworm infected animals in hot water with color-safe bleach. Disposable gloves and isolation gowns are available at PAWS to make this process easier.

Steam cleaning of carpets and furnishings will also kill a large number of spores, this is best done after the pets have left the home or have been cleared of ringworm.

Ringworm spores can live in environments for a long time; clean an infected environment extremely thoroughly after the animals are clear ringworm!

When is an animal cleared of ringworm?

After a positive ringworm culture, an animal must have two negative fungal cultures in a row to be considered clear of ringworm. Cultures take two weeks to be sure they are negative, but a positive result can be seen in as few as 4 days. Usually, it takes at least 6 dips in the lime sulfur solution (about 3 weeks) before a negative result is obtained. If an animal is identified as having lesions that look like ringworm, it will probably take between 21 and 60 days (1-2 months) until they are considered negative for ringworm.

How-To Guide for Lime Sulfur Treatment of Cats

1. Prepare yourself

- Remove all jewelry, lime sulfur will stain some metals
- Wear old clothing, lime sulfur will stain clothing
- Acquire a pair of heavy duty dishwashing gloves or other plastic gloves

2. Prepare the solution

- Use an old plastic bucket or container, DO NOT mix directly in your sink or tub! Lime Sulfur will stain things yellow!
- Dilute 8 ounces of Lime Sulfur dip in 1 gallon of warm water and mix well
- Place the dip into the bucket first, then fill to one gallon.
- If you have small kittens you can dilute 4 ounces of Lime Sulfur with a 1/2 gallon of warm water.

3. Spray the cat(s)

- Do not pre-wet the cat
- Do not use Miconazole cream 6 hours prior to the dip
- Massage solution into fur, ensuring all hairs are coated down to the skin
- Use cotton balls, a tooth brush, or a designated washcloth for the head, face, ears, and noses. These areas are important as they are the most often affected
- ****DO NOT ALLOW SOLUTION TO GET INTO EYES, EAR, NOSE, OR MOUTH****
- Allow the cat to air dry, do not rinse the solution off. Air dry in a warm area, either in a crate or cat carrier.

4. Dispose of excess dip down the drain and rinse thoroughly to avoid staining

- Repeat in 2-3 days.

Helpful Resources for lime sulfur treatments

<https://vcahospitals.com/know-your-pet/ringworm-in-cats>

<http://www.youtube.com/watch?v=35zau-JS5TE&feature=fvsr>

<http://www.youtube.com/watch?v=Xjxm01mlCcw&feature=related>

Cleaning up ringworm

While ringworm animals are in your home, it is VERY important to thoroughly clean the environment to prevent re-infection of the animals and infection of healthy animals and people in the home.

All non-porous surfaces should be cleaned with bleach diluted 1 part bleach to 10 parts water. This is a very strong concentration so make sure you have adequate ventilation. If you do not have great ventilation in the room where the ringworm animals are being housed, daily cleaning can be done with 1 part bleach to 32 parts water, and when they leave a thorough cleaning can be done with a stronger concentration. The bleach solution must sit for a minimum of 10 minutes before being wiped off to be effective.

Rugs, carpeting, drapes, and upholstery should be vacuumed at least once a day for one week. Change vacuum bags or clean vacuum canister with bleach solution every other day. Vacuum filters should also be replaced with special consideration to their disposal as ringworm spores can live in this environment indefinitely.

Bedding and any clothing that comes in contact with the cats should be washing in a washing machine on the hottest water setting with color safe bleach.

Scratching posts should not be used since they can harbor ringworm spores and are not easily cleaned.

Toys and bowls should be soaked at least 15 minutes in a bleach solution diluted 1 part bleach to 32 parts water every other day. They can be rinsed with hot water after they soak for 15 minutes.

Carriers should be cleaned with bleach diluted 1 part bleach to 32 parts water.

Change heating and air conditioning vents as recommended. A Swiffer can be used to wipe off vents, and areas that cannot be reached.

All cleaning with bleach on a daily basis can be done with a 1:32 ratio if 1:10 is too strong, but the final cleaning must be done with a 1:10 ratio.

Bleach deteriorates once exposed to light. When mixing bleach solutions you should either use a spray bottle that is NOT clear or mix small batches if using a clear bottle. If you are using a clear bottle you do not want to use the same bottle for more than one day.

Thank you so much for treating these cat(s). It seems overwhelming at first but once you get into a routine it should take you no longer than 30 minutes or so of extra time a day to treat and manage these patients!