



Dermatophytosis (Ringworm) Protocol for Foster-Based Programs

Purpose

Provide guidelines for the diagnosis and treatment of dermatophytosis (ringworm) in cats in a foster-based program.

Responsibilities

- All staff and volunteers are responsible for reporting clinical signs consistent with dermatophyte infection.
- All medical staff are responsible for screening cats for dermatophytosis at intake, performing diagnostic testing, and monitoring response to treatment.
- Staff veterinary technicians/nurses can make a preliminary diagnosis of dermatophytosis and initiate diagnostics and treatment per the directions in this protocol.
- Staff veterinarians are responsible for confirming the diagnosis of dermatophytosis, considering the overall clinical picture, and developing the appropriate plan in the context of the wellbeing of the individual animal and the shelter population.
- Staff veterinarians and program leadership are responsible for monitoring capacity for care regarding treatment of dermatophytosis and planning intake and individual case management accordingly.

Diagnosis/Screening

All medical staff will be trained in the appropriate diagnostic techniques to screen for and make a preliminary diagnosis of dermatophytosis. If you are uncertain of your diagnostic findings at any time, please contact a more senior staff member or a staff veterinarian.

Intake Screening

Physical examination

All incoming cats should receive a thorough intake examination, including noting any abnormalities to the skin or fur coat. Clinical signs that are highly suggestive of dermatophytosis include fur loss around the eyes, muzzle, ears, or paws.

Wood's lamp examination

All cats should receive a Wood's lamp examination at the time of their intake examination.

Wood's lamp positive cats

- When possible, confirm results with a staff veterinarian or veterinary technician/nurse.
- See below (candidacy for treatment) to determine whether intake is appropriate, where an intake decision is discretionary.
- If proceeding with intake:

- Complete the remainder of the intake protocol.
- Set the cat up either in a kennel or holding space designated for ringworm isolation until the cat can be moved to foster home.
- If they are not already informed, alert a staff veterinarian or veterinary technician/nurse of the positive Wood's lamp examination.
- Sanitize all areas the cat came in contact with. Any person who came in contact with the cat(s) should change any exposed clothing and thoroughly wash their hands prior to moving on to any other tasks.

Wood's lamp negative cats

- No clinical signs: proceed with intake as per normal.
- Clinical signs (not highly suggestive) AND no history of exposure: proceed with intake as per normal and notify the veterinary team of the concerns noted on the intake examination.
- Clinical signs (highly suggestive) OR known history of exposure: begin a DTM culture or submit a sample for PCR if in-house culture is not an option; ok to house in the general population with signage to utilize gloves and protective outerwear for handling.
- Littermate is Wood's lamp positive: begin a DTM culture or submit a sample for PCR if in-house culture is not an option and treat as though Wood's lamp positive pending further diagnostic results.

Clinical Signs Identified After Intake

Animals already set-up in foster care may have clinical signs consistent with dermatophytosis that were either missed at the intake examination or have developed after foster placement.

If suggestive clinical signs are observed by a foster caregiver, an appointment should be made with a staff veterinarian or veterinary technician/nurse. The foster caregiver should be advised that, pending the appointment, they should keep the cat in an easily disinfected area and wear gloves or wash hands thoroughly after handling the cat. Any exposed clothing should be changed after interaction with the animal.

Diagnosis

The four main diagnostic testing options for dermatophytosis are: Wood's lamp examination, DTM culture, PCR, and trichogram. Diagnostics should be performed on each individual cat in a litter or group.

- [Wood's lamp examination](#) – most cats with dermatophytosis can be identified based on a positive Wood's lamp examination.
- [Trichogram](#) – microscopic examination of plucked fluorescing hairs can identify dermatophytosis if the Wood's lamp examination is equivocal or if further confirmation of a positive Wood's lamp examination is desired.
- [DTM culture](#) – ideally, a DTM culture combined with microscopic identification should be performed in all cases undergoing treatment to confirm infection, identify the dermatophyte species, and monitor response to treatment.
 - Dermatophytosis is diagnosed when a DTM culture has a p-score of 2 or 3 and macroconidia are identified on microscopic identification. P-scoring:
 - Negative = no colonies
 - P1 = 1–4 colonies
 - P2 = 5–9 colonies
 - P3 = 10 or more colonies
 - DTM cultures should be held for at least 14 days. However, positive results are often present by day 5–7.

- Holding DTM cultures for 21 days is preferable if *M. gypseum* or *Trichophyton* is suspected.
- Ringworm PCR – PCR can be utilized as a tool for diagnosis in animals with a negative Wood’s lamp examination but highly suggestive clinical signs or when DTM culture is not feasible for a foster-based program. Because of the (typically) faster results relative to fungal culture, PCR is best utilized when highly suggestive clinical signs are present and an expedient answer regarding the animal’s ringworm status is necessary. PCR testing is not the ideal method to determine mycologic cure.

The recommendations from this point on are applicable to a diagnosis of *Microsporium canis*, the most common cause of dermatophytosis in cats. For cats diagnosed with other dermatophytes, such as *Microsporium gypseum*, treatment and management decisions should be made on a case-by-case basis based on the history and clinical signs.

Management and Husbandry

It is the responsibility of shelter leadership and the shelter veterinarians to continually assess the program’s capacity for care to determine a responsible plan for the management of dermatophytosis. While every effort will be made to provide treatment for medically and behaviorally appropriate candidates, it is our responsibility to ensure that appropriate housing and staffing resources are available for the animals in our care.

Candidacy for Treatment

Treatment for dermatophytosis, particularly for cats, requires prolonged confinement and frequent handling for topical and oral treatment. As such, proceeding with treatment is not a safe or humane choice for all animals. Because the capacity of the program to treat dermatophytosis is limited, thoughtful decisions must be made to select the appropriate candidates. Animals for whom a live outcome is not anticipated should not be treated for dermatophytosis unless treatment is necessary to reduce in-shelter transmission (e.g., for animals who cannot be euthanized due to legal holds.)

Husbandry

Animals should be housed in a manner that considers their individual socialization needs. Kittens nearly always benefit from co-housing and every effort should be made to pair or group singleton kittens in stable groupings for the duration of their ringworm treatment. All co-housing, aside from pre-existing groupings or litters, should be done after consultation with the staff veterinarian.

Foster caregivers should be informed of ringworm’s zoonotic potential.

All foster cats being treated for ringworm should be confined to an easily sanitized area such as a bathroom. Any area of the home exposed to the animal prior to diagnosis should be thoroughly cleaned using repeated mechanical cleaning and disinfection. Any exposed bedding should be laundered separately from other household laundry and any exposed toys or scratching surfaces that cannot be thoroughly cleaned (e.g., any cloth or feather toys) should be disposed of.

Treatment and Monitoring

The treatment plan for each animal is ultimately at the discretion of the staff veterinarian and may deviate from the guidelines below based on individual circumstances.

Treatment for Cats

Oral Treatment

- Daily therapy should be prescribed using oral Itrafungol solution once daily for a total of 21 days. If no cure after 21 days, medication can be pulsed weekly, alternating on and off weeks, until cure. Refer to program veterinarian for dosing. *Compounded itraconazole should not be used due to efficacy concerns.*

- Offer medications with a small meal of canned food to enhance absorption.
- Kittens should be weighed weekly to accurately adjust their Itrafungol dosage and to monitor for any potential side effects.
- Alternatively, programs may consider Terbinafine once daily for a total of 21 days. This medication may be easier to administer to larger cats and is very affordable. Refer to program veterinarian for dosing.

Topical Treatment

- Cats should be bathed with a miconazole/chlorhexidine shampoo for a 3–5-minute contact time (or apply a miconazole mousse if bathing is not tolerated) twice weekly until the cat is cleared.
- Although often less tolerated by foster parents, lime sulfur dips continue to be the best currently available topical treatment that ensures the quickest time to clearance. Foster programs should consider discussing this option with foster parents when foster capacity is low and an expedited treatment plan is needed.

Treatment Monitoring

Monitoring via DTM Culture

- All individual animals should have in-treatment DTM cultures started weekly. Sampling for the first in-treatment DTM should begin one week after the onset of treatment.
- Foster caregivers can be given new, sealed toothbrushes to utilize at home for sampling. Caregivers should place the used toothbrush in a sealed plastic bag, thoroughly wash their hands, and then place that bag in another sealed bag. This double-bagged toothbrush can then be brought into the shelter for culture.
- Any DTM plates with suggestive fungal growth should be assigned a p-score at the time that growth is first identified.
- Microscopic identification is not necessary for all treatment monitoring cultures. However, it can be a useful tool to identify dermatophyte growth versus contaminate growth.
- The cat should receive a recheck veterinary examination once two consecutive P1 or negative cultures are obtained. However, it may be appropriate in select cases or circumstances to discontinue treatment after just one negative culture (at which point most cats are mycologically cured).
- If no reason for concern is identified on the veterinary examination, the cat should receive a miconazole/chlorhexidine bath and then can be cleared and moved into the general population. Treatment can be discontinued.
- Littermates or co-housed cats are cleared as individuals.

Monitoring without DTM culture

While DTM culture is the preferred method for monitoring treatment progress, it is not always a feasible option for foster-based programs. An alternative monitoring option aids in determining when treatment is complete.

- All cats should receive the full 21-day course of oral medication.
- The cat should receive a recheck veterinary examination at the end of the course of oral medication. If not cleared, the cat should be treated as determined by the program veterinarian – typically this is pulse therapy with itrafungol and twice weekly topical treatments.
- The cat can be considered cleared when one of the following criteria are met:
 - Lesions have resolved and a negative Wood's lamp examination* OR
 - Lesions are resolving and a negative Wood's lamp examination*

*After successful treatment, there may still be residual fluorescence at the tips of individual hairs. As long as the full hair shaft is not fluorescing, the Wood's lamp can be considered negative.