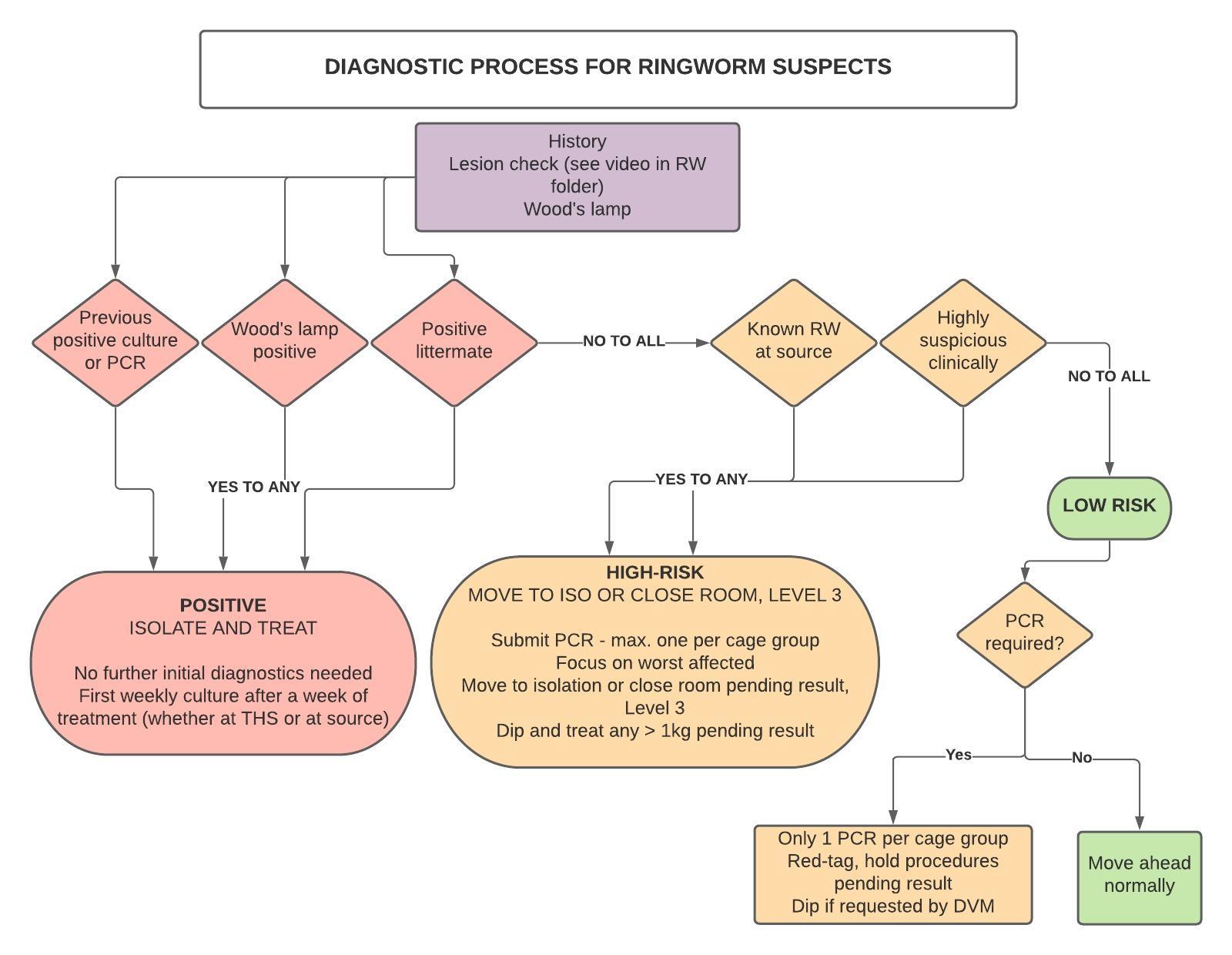
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| **Toronto Humane Society:**  **Ringworm Treatment Protocol for Individual Cases** | | |
| Developed by: Dr. Linda Jacobson, Lauren McIntyre RVT | | Effective date: June 13 2012 |
| Approved by: Dr. Linda Jacobson, Dr. Karen Ward | | Revision Date: Jan 30, 2018 [LJ]; Mar 28, 2019 (adjusted tx for kittens), LJ; Jan 7 2019 added shampoo option for treatment if no LS or imav avail; April 2021 added release at 1 negative culture for otherwise healthy animals LM, LJ |
| Main sources | 1. Koret Davis Shelter Medicine Program: <http://www.sheltermedicine.com/node/56> 2. Moriello 2014 Jnl Fe Med Surgery 16:419 (management) 3. Moriello 2013 Vet Derm 24:618 (terbinafine) 4. Moriello 2015 “Removing the muddle from misnomer – an overview of treatment of ringworm in cats” [includes 1:100 Imaverol] Int Soc Fel Med <http://www.vin.com/doc/?id=7582256> 5. Moriello 2017 Diagnosis and treatment of dermatophytosis in dogs and cats – Consensus Guidelines; Vet Derm 28:266-e68 6. Stuntebeck, Moriello 2019 One vs two negative fungal cultures to confirm mycological cure in shelter cats treated for *Microsporum canis* dermatophytosis: a retrospective study | |
| Associated Risks | Zoonotic Transmission | |
| Related protocols | Ringworm outbreak protocol  Ringworm treatment sheet | |

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**Sample collection technique for fungal culture and PCR:**

1. Wear gloves, change between cats. Ensure that hemostats are disinfected and stored in a sealed container.
2. Early infections are common on the face and the ears. The last non-lesional area sampled should be the face and inside of the bell of the ear. Early lesions in kittens are most common in and around the ears, on the muzzle, and paws. These areas should get extra attention during sampling.
3. If obvious lesions are present, sample the normal part of the body first and the lesion last. This minimizes the chance that brushing mechanically spreads spores over the body. Also, if cultured last, spores are present in the largest numbers on the tips of the bristles.
4. For PCR, you **MUST** submit a toothbrush culture AND generous hair plucks. **Brush close to the skin.**
5. TOOTHBRUSH: Starting with a sealed toothbrush, brush the entire hair coat thoroughly until the bristles are full of hair or the cat has been combed for at least 1 minute. Brush lesions last.
6. PLUCK: Using a hemostat, pluck hairs from a lesion and areas prone to infection (especially the head and ears).
7. Once the sample has been collected, place in the ringworm sampling envelope or in a bag and seal with tape if needed. Place inside a lab request bag. Keep toothbrush samples at room temperature and protect them from heat extremes, especially high temperatures.
8. A biopsy can be submitted of a suspect lesion (rarely needed).

**Treatment:**

* Request foster placement at the initiation of treatment
* Use orange ringworm treatment sheet
* For oral medication, round dose up for adults and down for kittens or small puppies (to nearest 5-10mg for itraconazole and nearest ¼ tab for terbinafine)

1. TERBINAFINE:
   1. **First choice**, much cheaper than itraconazole
   2. Only adult cats and puppies > 8 weeks (kittens are too small for accurate dosage)
   3. **Avoid in nursing animals**, concentrated in milk
   4. Give with food
   5. 20-30mg/kg (cats) to 30-40mg/kg (dogs) PO daily for 21 days, then every other week until cleared as negative

**- OR -**

1. ITRACONAZOLE:
   1. Use Sporanox® only, not generic
   2. More expensive, second choice if too small for Terbinafine or won’t tolerate Terbinafine
   3. Give with food
   4. Dosage and duration: CATS > 12 WKS - 5 mg/kg PO daily for 21 days then every other week until cleared as negative
   5. Maximum dose 40mg per cat
   6. Dogs 20kg and up: Use 100mg capsules, round up as needed. Dose of 5-10mg/kg safe and effective
   7. Kittens and puppies: Can use from 4 weeks of age
      1. KITTENS > 4 to 12 WKS: 5mg/kg PO daily for 7 days then repeat every other week. Continue until cleared as negative.
2. DURATION OF ORAL ANTIFUNGAL TREATMENT FOR KITTENS ON PULSE TREATMENT
   1. **PCR positive initially and at least one positive culture:** Give **at least 21 days of itraconazole in total**, even if culture-negative before the end of the treatment. If culture-negative before end of treatment, dispense to adopter with disclosure.
   2. **PCR positive initially, never had a positive culture:** Fomite carrier. Do not need to continue antifungal when cleared.

**- AND -**

1. Lime Sulfur dips twice weekly until cleared as negative.
   1. Use 1:16 dilution (250ml per 4L water or 60mL/L)
   2. **Soak the coat to the skin; use rag or sponge to wet the entire face including the area around the eyes**
   3. Lime sulfur can cause itching and hair loss in some cats
   4. If lime sulfur can’t be used or temporarily unavailable, can use Dechra Malaseb Shampoo twice a week. Not a good primary option, cure is slower.
   5. Kittens and puppies: OK from 2-3 weeks of age *but* ***ensure they are kept warm***

**Treatment for small mammals:**

In small mammals with ringworm, the diagnosis, treatment and isolation measures are generally the same as in cats and dogs. **The one notable exception is NOT to use dips.** Stress-induced deaths have been reported.

* + - 1. Oral therapy:

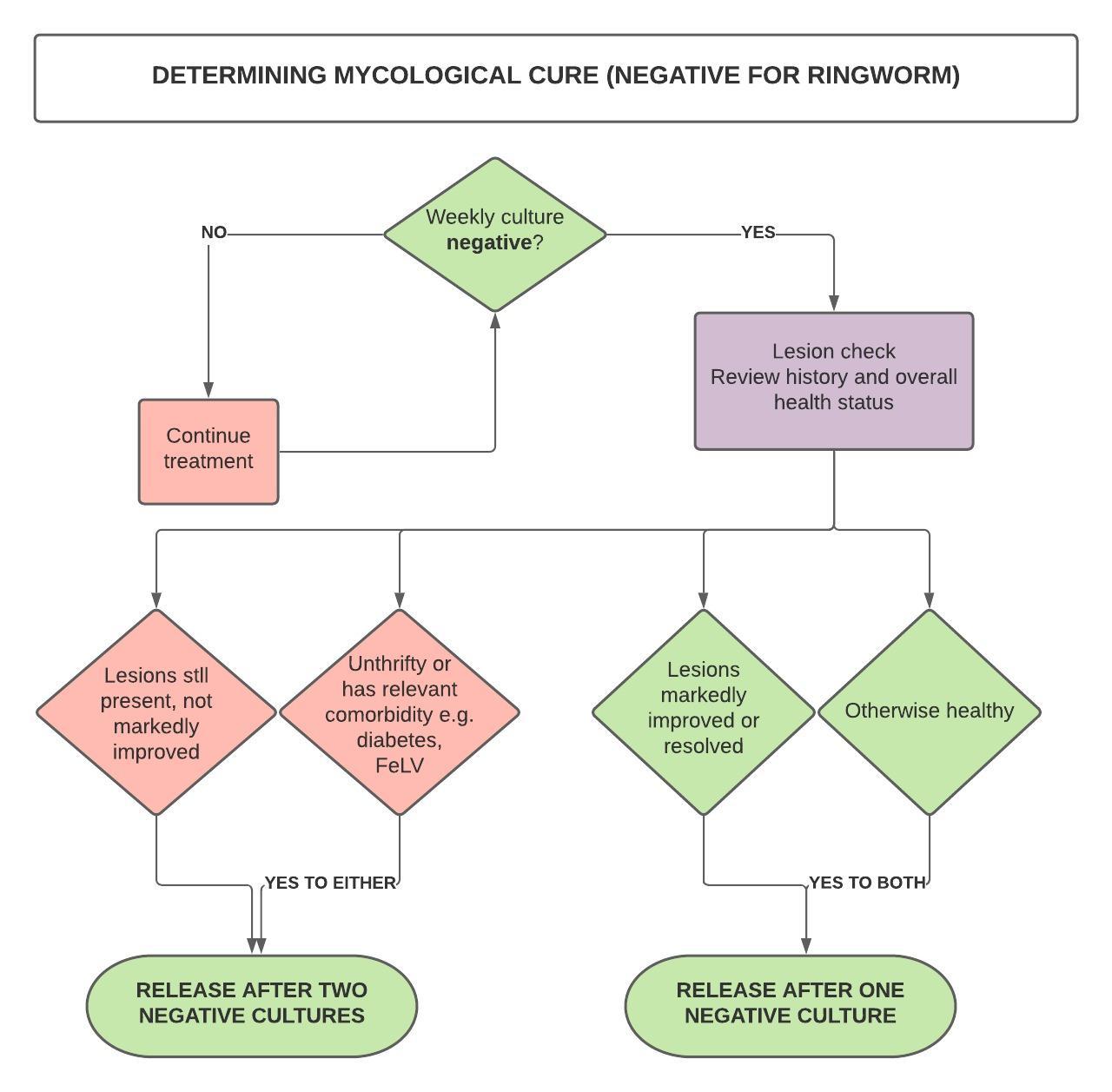
1. Itraconazole 5-10mg/kg PO SID for 21 days then every other week until cleared as negative
2. Dose guinea pigs at lower end of dose range 5mg/kg PO SID
3. If itraconazole is not tolerated, alternative treatment options are terbinafine or griseofulvin

**Isolation/Cleaning:**

1. Label the housing room appropriately
   1. Gowns, gloves, booties and hair covers required
2. Set up the isolation room as a self-contained treatment area. Nothing is to leave the room if it cannot be properly disinfected.
3. Cleaning to be performed in accordance with the level 3 cleaning protocol
4. After the first lime sulfur dip, dogs may be walked, exiting through outdoor wildlife and keeping separate from other dogs.

**Clearing from isolation (aka confirming mycological cure):**

1. Conduct weekly follow up cultures and identify species by sporulating macroconidia from the first positive culture.



Once the patient is cleared of ringworm they must have a final lime sulfur dip and be placed in a clean cage/module **(Dip ‘n Go)**. Can release if dipped within the past 24 hours.

**Follow up:**

Once the patient is cleared of ringworm they can be placed in adoption and in most cases made available without a disclosure, Disclosure is needed if being sent home with itraconazole or terbinafine (at DVM discretion).

**Positive culture after foster/adoption:**

1. 1 or 2 colonies per plate – consider a fomite culture, no action needed.
2. 3+ colonies per plate, contact foster parent or adopter, use callback script in SOP folder

**Fostering:**

See “Ringworm Treatment owned and foster animals” protocol.