
University of Pennsylvania School of Medicine
Policy and Procedure Manual

Procedures for Management of Pinworms in SOM Rodent Facilities

RESEARCH ADMINISTRATION

Policy Number: RA-ANML-005

Date Approved: October 26, 2006

I. PURPOSE

To communicate actions to be taken when pinworms are identified in a room/suite/facility. This SOP applies to all ULAR staff (Diagnostic Services, husbandry management and staff, and veterinary technicians) and investigators and their staff.

II. POLICY STATEMENT

This policy serves as the official School of Medicine position for communications regarding diagnosis and treatment of pinworms in a rodent room/suite/facility. A policy for the communication and treatment is critical to decreasing the risk of pinworm transmission in the School of Medicine rodent housing facilities.

III. WHO SHOULD KNOW THIS POLICY?

- Dean
- Executive Vice Dean and Chief Scientific Officer
- School of Medicine Animal Research Committee (SOM-ARC)
- Faculty and lab personnel engaged in animal research
- University Laboratory Animal Research (ULAR) Staff
- IACUC Chair

IV. POLICY AND PROCEDURES

Diagnosis and Interpretation:

Sentinel mice and rats are screened for *Syphacia obvelata* and *Aspicularis tetraptera* (and *S. muris* in rats) at quarterly intervals. Methods include tape tests of the peri-anal area, microscopic examination of fecal and colon contents and/or fecal flotation. Pinworms are not easily transmitted to soiled bedding sentinels, so a pinworm-positive sentinel generally suggests a very heavy infestation among resident animals. Rooms/suites/facilities that have been identified as pinworm-positive will be placed under quarantine and the following procedures will be required.

Procedures:

1. **PPE:** Prior to entering a quarantined rodent room, all personnel must don two pairs of surgical gloves, two layers of shoe covers, and two disposable gowns, plus hairnet and face mask. Prior to leaving the room, the outer gown, shoe covers, followed by the exterior gloves, should be removed and placed in a closed plastic-lined container next to the door. The remaining PPE should be removed after exiting the door to the infested room. The cycle begins anew if the individual enters another room that is being operated under quarantine conditions for the same infestation.
2. **Treatment:** The treatment strategy depends, in part, on the nature of the facility: barrier (TRL, BRB, part of CRB), conventional (Stemmler, part of CRB). Stemmler presents a challenge because of the trafficking of mice to laboratories and core labs, then back to the facility.
 - a. The most common treatment is the provision of Fenbendazole-containing food. The medicated food is made to order so treatment may be delayed by 2-3 weeks after the diagnosis is made. In the case of BRB, its barrier status dictates that sterile food must be provided to the mice. Obtaining irradiated food that contains Fenbendazole takes even longer, usually about 5 weeks. Fenbendazole-containing feed cannot be autoclaved because the medication breaks down. Rodents are fed the medicated diet for nine weeks. At the end of the first week of treatment, cages are completely “changed out,” all room surfaces sanitized and racks are sent through the cage wash. The sanitization is repeated after weeks 2 and 4. The animals are re-tested 2-3 weeks after the last treatment.
 - b. For rodents on high fat or other special diets, Ivermectin (a 1:10 dilution of a 10% solution) may be topically applied on a weekly basis using the same 9 week schedule. Sanitization is performed as described above. A subset of animals should be pre-treated because Ivermectin is very toxic to rodents with defects in the blood-brain barrier [such as CF1 mice] and such animals may die within minutes after treatment. Neonates (mice without a full pelage) should not be exposed to Ivermectin. The best way to use this agent topically in actively breeding mice is to move neonatal mice or rats to a fresh cage, then spray the adults as they are moved into the clean cage.
 - c. **Keep in mind that pinworm eggs are very stable in the environment, remaining infective for months outside the host. They are resistant to disinfectants used in animal facilities (e.g., Clidox) and are best removed from surfaces by mechanical means (wiping, scrubbing and/or high heat).**

- d. Investigators will be given enough notice prior to treatment for them to request regimens that would, for instance, not kill parasites that they may be studying.
3. **Husbandry:** Bedding changes should occur within a biological safety cabinet or change station whenever possible. If this requires moving cages from the source housing room to a procedure room, the cage set-ups should remain intact until the mice have been removed from the housing area. Work surfaces should be cleaned before and after use.
 4. ***Under no circumstances should anyone (ULAR staff or investigator staff) move from a quarantined rodent room to a “clean” rodent room or to the clean cage wash area.*** If clean cages are needed, they should be requested from someone who has not entered a quarantined room within the prior 24 hours.
 5. Ideally, no animals should leave or enter the quarantined room/suite/facility. If newly arrived rodents are to be housed in a pinworm-positive room, it is best to have the room under treatment for 2-3 weeks before adding the new animals. **Cages containing rodents from a pinworm-positive area MUST NOT be removed from the facility as they are very high risk for transmission of pinworm eggs to non-contaminated areas.** If the investigator or the investigator’s staff must remove animals for terminal procedures, they should be placed in Chinese food containers (mice) or ice cream containers (rats) that are wiped and then placed within two plastic bags that are loosely tied and wiped. Animals euthanized within the facility or rodent tissues removed from the housing space may be transported to the lab either in bags or in screw-cap vessels that are then placed in plastic bags and thoroughly wiped. If mice are removed from the facility for anything but a terminal procedure, this should be discussed with ULAR Diagnostic Services (Abigail Smith, 215-898-4008; or Anthony Carty, 215-898-2350) who will coordinate with the facility manager.
 6. **Laboratory Cleaning - .** It is **essential** that work surfaces in laboratories that have come in contact with pinworm-infested animals or materials must be carefully wiped after use. If this is not done, pinworm eggs may be re-introduced to the facility following treatment. This is a particular issue for laboratories that have contained Stemmler-housed animals. Work surfaces, such as lab benches, should be thoroughly wiped with a cloth or sponge. For areas that cannot be easily wiped, a HEPA-filtered vacuum cleaner can be used. To insure proper disposal of vacuum bag contents, ULAR Diagnostic Services should be contacted to perform this task. It is the responsibility of laboratory personnel to do the cleaning. ULAR Diagnostic Services will follow up to see that eggs are not present within laboratories.
 7. **Disposal of Carcasses –** Tissues or animals to be discarded should be placed in double layers of red infectious waste bags that are wiped (not sprayed) with Clidox. For these materials from mice housed in conventional space, the materials should be returned to the dead animal storage area for the facility from which the animals were taken.

However, bags containing animal carcasses or animal by-products from a barrier facility (such as TRL, BRB or the barrier portion of CRB) **MUST NOT be returned to the**

barrier animal facility for disposal. Such carcasses or animal by-products should be **double bagged** in red infectious waste bags with the outer bag wiped with a disinfectant such as Clidox and placed in the walk-in freezer on the Richards C-tower loading dock.

- 8. Under no circumstances may anyone who has been in a rodent room quarantined for pinworms, fur mites or viral infection enter a rodent room that is believed to be free of infestation with mites and/or pinworms or virus infections. Similarly, rodents housed in known positive rooms may not be re-located to any other room/suite/facility.**

V. CONTACTS

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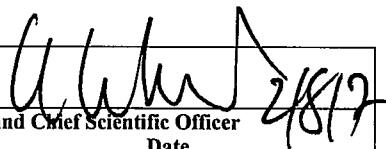
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Supersedes:	APPROVED:  Executive Vice Dean and Chief Scientific Officer School of Medicine Date 2/18/17
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