

Attachments:

- I. Findings of the Semiannual Evaluation of the CDC-Atlanta Animal Care and Use Program and Inspection of Facilities
- II. Semiannual Program and Facilities Review Deficiencies List (including plan and schedule for correction of each deficiency)
- III. Commendable Areas
- IV. IACUC-Approved Departures from Animal Welfare Regulations (AWRs), PHS Policy, and the *Guide*

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Minor Deficiencies:

Roybal Building 18:

- There were no maintenance records for the eyewash station in room [redacted]

Roybal Building 23:

- Some inconsistencies with animal medical recordkeeping were found. A detailed list was provided to CMB for their Medical Records Clerk to correct.

- There were no records available for cleanliness/quality control (records of temperature/ATPase swabbing/testing) in the clean cage wash area.
- Techniplast exhaust filters in the rodent rooms have not been changed out as per schedule because their supply was depleted.

- The biosafety cabinet in room [redacted] had an absorbent pad obstructing air flow at the front edge of the BSC, interrupting the correct air flow and reducing BSC effectiveness.

- There were no maintenance records for the eyewash station for the small downdraft table in room [redacted]

- There was a large number of glove boxes past their expiration date in room [redacted]
- There were no weekly checks indicating completion of tasks completed on room sheet in room [redacted]

- Animal counts on cage cards were not being updated on all cards when animals were removed in room [redacted]

- Clinical records indicated infection or euthanasia, but details (e.g., agent, route, method, +/- anesthesia) were not often present in room [redacted]

- Paper sticky vermin traps were found in rooms [redacted] and [redacted] despite AAALAC recommendation to cease usage of sticky traps that mice can enter.

- There were expired Chlorhexidine scrubs and irrigation solution in room [redacted]
- Several deficiencies were noted in the incinerator room: (i) trash can with disposed PPE was missing biohazard sticker and double bags; (ii) dirty PAPR inside the file cabinet (repeat from several past inspections); (iii) large container full of autoclaved sharps containers had no label; (iv) cart was blocking a firehose door (hallway outside incinerator room).

- Trash can overflowing with trash was found in room [redacted]
- There was a bottle of Karo syrup expired on November 2018 in room [redacted]
- Drain cover (outside of [redacted]) was missing a screw and excessively bent, to the point that portions of it were projecting upwards and above the level of the floor in [redacted] corridor.

- Caulk has pulled out of a ceiling seam and was dangling from the ceiling (two feet long) in room [redacted]

- Wall paint was chipping in room [redacted]
- The electrical outlet cover in room [redacted] was broken and would not seal.

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- Bite/scratch kit in room [redacted] had two expired VTM packs.
- There were fresh vegetables stored in plastic containers but with no date of arrival or expiration in room [redacted]
- [redacted] was an entire box of expired single use radial jaw biopsy forceps in room [redacted]
- There was water line dripping and chipping paint on walls in room [redacted]
- Floor chipping was observed by the drain in the corner of room [redacted]
- There was one box of expired ECG electrodes and autoclaved dental surgical equipment expired on 02/20/19 in room [redacted]
- There was a container with Starswabs expired in January 2019 in room [redacted]

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Lawrenceville:

- The surface of "May" stand had rusty spots on it.
- Several injection fluid bags expired on 02/2019, and six Koppertox bottles expired on 01/2019.

The IACUC also noted commendable areas for each facility (Attachment III).

Item #	Facility	Bldg.	Floor	Room, Suite or Area	Cat.*	repeat s (*)	Deficiency Detail	Correction Plan Detail	Correction Target Date	Review Status Comment	Completion Date
19Q2-D1	Roybal	18	(b)(6)		M		Eyewash station was last checked on February 25.	The eyewash stations should be checked weekly.	25-May-19	New checklist to be placed. Clarification on procedure for checking will be processed.	01-May-19
19Q2-D2	Roybal	23			M		Chlorhexidine scrubs and irrigation solution expired.	All expired chemicals and supplies should be safely discarded and replaced.	25-May-19	Discarded and replaced.	09-Apr-19
19Q2-D3	Roybal	23			M		Trash can with disposed PPE missing biohazard sticker and double bags. Dirty PAPR inside the file cabinet- REPEAT from several past inspections. Large container full of autoclaved sharps containers had no label. Cart blocking a Firehose door (hallway outside incinerator room).	All potential biosafety hazards should be eliminated in accordance with CDC policies and safety standards.	25-May-19	PAPR removed and clean, upgraded model supplied. Rack moved from in front of fire hose. Autoclaved sharps were incinerated.	11-Apr-19
19Q2-D4	Roybal	23			M		Trash can overflowing with trash.	As per CMB SOPs, trash cans must be checked and emptied on a daily basis.	25-May-19	Trash can emptied the same day.	11-Apr-19
19Q2-D5	Roybal	23			M		Bottle of Karo syrup expired on November 2018.	Expired syrup should be discarded and replaced.	25-May-19	Discarded.	09-Apr-19
19Q2-D6	Roybal	23			M		Drain cover (outside of (b)(6)) was missing a screw and excessively bent, to the point that portions of it were projecting upwards and above the level of the floor.	The work order should be placed to perform the necessary repairs.	25-May-19	All floor drains to be replaced.	04-May-19
19Q2-D7	Roybal	23			M		Caulk has pulled out of a ceiling seam and is dangling from the ceiling (two feet long).	The work order should be placed to perform the necessary repairs.	25-May-19	"Dangling" portion removed. Repairs to be made when work order is serviced..	Open
19Q2-D8	Roybal	23			M		Wall paint chipping.	The work order should be placed to perform the necessary repairs.	25-May-19	Repairs to be made during normal room rotation.	Open
19Q2-D9	Roybal	23			M		The electrical outlet cover in the animal room was broken and would not seal.	The work order should be placed to perform the necessary repairs.	25-May-19	Work order place. Broken cover is at eye level and outlet not in use.	Open
19Q2-D10	Roybal	23			M		Prep room: bite/scratch kit had two expired VTM packs.	The expired packs should be discarded and replaced.	25-May-19	Packs removed. No replacement necessary due to change in SOP.	11-Apr-19
19Q2-D11	Roybal	23			M		There were fresh vegetables stored in plastic containers but with no date of arrival or expiration.	The relevant dates must be recorded upon placement of vegetables into cooler.	25-May-19	Technicians reminded of appropriate labeling requirements.	11-Apr-19
19Q2-D12	Roybal	23			M		An entire box of expired single use radial jaw biopsy forceps.	Expired supplies should be discarded and replaced.	25-May-19	Discarded.	01-May-19
19Q2-D13	Roybal	23			M		Water line dripping; chipping paint on walls.	The work order should be placed to perform the necessary repairs.	25-May-19	No animal welfare issue. Routine maintenance and repair.	Open
19Q2-D14	Roybal	23			M		Floor chipping by the drain in the corner.	The work order should be placed to perform the necessary repairs.	25-May-19	No animal welfare issue. Routine maintenance and repair.	Open
19Q2-D15	Roybal	23			M		One box of expired ECG electrodes (E). Autoclaved dental surgical equipment expired on 02/20/19 (G).	Expired supplies should be discarded and replaced.	25-May-19	Equipment clearly marked for "training purposes."	11-Apr-19
19Q2-D16	Roybal	23			M		Container with Starswabs expired in January.	Expired supplies should be discarded and replaced.	25-May-19	Discarded.	11-Apr-19
19Q2-D17	Roybal	23			M		No records available for cleanliness/quality control (records of temperature/ ATPase swabbing/testing)	The appropriate records have to be maintained.	25-May-19	Records were available but not asked for. Records are now on shelving unit in clean cagewash.	01-May-19
19Q2-D18	Roybal	23			M		Techniplast exhaust filters have not been changed out in the rodent rooms per schedule because there are none in stock. They have been ordered but have not come in.	These types of items should be ordered prior to being depleted. CMB should look at and update their inventory ordering mechanisms.	25-May-19	Items are on back order. Filters are still within recommended usage period. CMB changes them more frequently than actually suggested by the manufacturer. Will replace when back order is filled.	01-May-19
19Q2-D19	Roybal	23			M		The biosafety cabinet has an absorbent pad obstructing air flow at the front edge of the BSC, interrupting the correct air flow and reducing BSC effectiveness.	CMB and Program personnel operating BSCs must be retrained on proper use of these cabinets.	25-May-19	Pad removed. Reinforced adherence to SOP. Retraining applicable approach.	09-Apr-19
19Q2-D20	Roybal	23			M		No eyewash maintenance record seen for the "small downdraft table."	The eyewash stations should be checked weekly.		New sheet posted. Checked on 1 May 2019.	01-May-19
19Q2-D21	Roybal	23			M		Large number of glove boxes past expiration date	Expired supplies should be discarded.	25-May-19	Not for use on animals. Found in clin path lab. Literature indicates that latex and nitrile gloves stored under the conditions found in our lab are good up to 4 years. These gloves are within this window. Expiration dates are artificially shortened by the manufacturer to require replacement more often. These gloves will be replaced.	03-May-19
19Q2-D22	Roybal	23			M		Weekly checks not marked as completed on room sheet (1st week of March)	As per CMB SOPs, tasks performed on a weekly basis should be properly recorded.	25-May-19	Technicians to be trained on SOP requirements.	Open
19Q2-D23	Roybal	23			M		Animal counts on cage cards are not being updated on all cards when animals are removed (how is animal number confirmed?)	The animal counts should be maintained at all times.	25-May-19	Electronic records used to clarify animal cards. Corrections underway.	03-May-19

19Q2-D24	Roybal	23	(b)(6)	M	Clinical records indicate infection or euthanasia, but details (e.g., agent, route, method, +/- anesthesia) are not often present.	CMB and the Program should retrain individuals on proper animal record keeping.	25-May-19	Available on treatment sheet and in electronic form. No correctable action needed.	11-Apr-19
19Q2-D25	Roybal	23		M	Paper sticky vermin traps still in usage despite AAALAC recommendation to cease usage of sticky traps that mice can enter.	CMB should replace sticky vermin traps with traps recommended by AAALAC.	25-May-19	Removed.	17-Apr-19
19Q2-D26	Lawrenceville	B		M	The surface of "May" stand had rusty spots on it.	The stand should be cleaned to make it rust free or replaced with a new stand.	25-May-19	Discarded.	29-Apr-19
19Q2-D27	Lawrenceville	B		M	Injection fluid bags expired on 02/2019, six Koppertox bottles expired on 01/2019.	Expired supplies should be discarded.	25-May-19	Expired supplies discarded.	18-Apr-18
19Q2-D28	Roybal	23		M	Multiple problems noted with medical recordkeeping. See notes for list of problems.	CMB and the Program should retrain individuals on proper animal record keeping. The efforts towards implementation of electronic records should be continued.	25-May-19	Recordkeeping problem under control. Some vacancies due to interim system to facilitate electronic medical record conversion.	Open

Attachment III. Commendable Areas

During its semiannual evaluation of the animal care and use program and facilities, the CDC-Atlanta IACUC identified areas that were commendable and should be included in the report.

Roybal Building 17

- Botulism Lab is very well maintained and organized.

Roybal Building 18

- Clinical records sheets included copious detailed notes on clinical procedures and observations.
- Materials in procedure room spaces are very neat and well organized.

Roybal Building 23

- The Malaria Insectary is very clean and well organized.

Attachment IV. CDC-Atlanta IACUC-Approved Departures from AWRs, PHS Policy and the *Guide*

PHS Policy and Animal Welfare Act Regulations [9 CFR § 2.31(c)(3)] require that departures from the provisions of the AWRs, PHS Policy, and the *Guide* be included in this report. The following is a list of current CDC-Atlanta IACUC approved departures.

1. Two separate surgeries for macaque monkeys:
The CDC-Atlanta IACUC granted the exception for two separate surgeries in macaques. The first surgery is for insertion of an intrauterine device (IUD) for cases where cervical placement of the IUD failed. Successfully inserted IUDs will only be removed at time of euthanasia to avoid a second major survival surgery. The second surgery involves lymph node biopsies to study local immune responses.
2. Avertin (2, 2, 2 tribromoethanol) anesthesia: The CDC-Atlanta IACUC has approved a non-pharmaceutical grade compound, for use in mice under protocols 2814 (b)(6) MOUC, 2872 (b)(6) MOUC, 2930 (b)(6) MOUC, and 2931 (b)(6) MOUC with the following justification.

Influenza virus is a respiratory pathogen and replicates in the respiratory tract of hosts (in bronchial epithelium and lungs). Since Avertin is shown to induce good skeletal muscle relaxation and minimal respiratory depression, Avertin is the injectable anesthesia of choice for these experiments.

Anesthetics including ketamine/xylazine, chloral hydrate, pentobarbitol and urethane can significantly enhance the basal expression of splenic pro-inflammatory cytokine gene expression (IL-1B, IL-2, IL-6) in rats. In contrast, tribromoethanol (TBE; Avertin) did not influence the basal expression of these cytokines. Tribromoethanol is routinely used in the RSV mouse model because it has minimal side effects and it induces rapid, deep anesthesia which typically delivers RSV directly into the lungs of mice upon intranasal infection. Importantly, since 1997, the CDC has used Avertin in the RSV mouse model and thus, using Avertin for these studies with hCoVs would be appropriate. If the anesthetic were changed, it would require additional mice to test the use of new anesthetic. The continued use of Avertin would avoid unnecessary use of animals in research.

Avertin/TBE use requires no special equipment for its administration and has been recommended for acute terminal studies. To prevent toxic breakdown of products and possible adverse effects, the Avertin will be prepared and stored using these guidelines: 1) stored and used under sterile conditions; 2) stored in a dark bottle, in the dark at 4C; and 3) solution will be discarded after four months (as recommended by the NIH and Univ. of MN Offices of Animal Care and Use). Since a drop in the pH of the solution to <5.0 may indicate breakdown products, the pH will be maintained at 6.5-7.0 and checked prior to use to ensure that it has a pH >5.

3. Regarding the physical restraint of rabbits used for tick feeding, the CDC-Atlanta IACUC has approved the following:
The rabbit is fitted with an Elizabethan collar to prevent it from removing the chambers during the 1-3 week feeding period. Rear legs of a rabbit are taped using 1/4" medical waterproof tape ("Band-Aid") with ~3" space left between the legs to prevent the animal from scratching and damaging tick-feeding bags on its back.

Space left between the legs allows a rabbit to comfortably sit, lay and move about the cage but not to scratch. Rear legs of a rabbit are taped for the duration of infestation but not exceeding 14 days.

4. Single housing of social species:
Efforts are made to pair or group social species. The IACUC has approved the single housing of social species for periods of studies that require single housed animals to evaluate infectious agents. These studies are generally short term. The IACUC reviews the single housing requirement in approved protocols annually. Additionally, the IACUC reviews social housing of nonhuman primates on a monthly basis during a convened meeting.
5. Regarding the housing of two separate species in the same room, the CDC-Atlanta IACUC has approved the following:
In some influenza studies conducted in BSL3+, mice and ferrets will be housed in the same room simultaneously, but in separate isolators. Ferrets will be housed in cages within bioisolators or in the HEPA-filtered environmental chamber and mice will be housed in individual isolator cages. Manipulations of mice and ferrets will be performed inside of a BSC but will not be conducted at the same time and animals will be transported using HEPA-filtered transport containers. CMB staff should perform mouse and ferret husbandry duties as usual as long as they are not performed at the same time and gloves are changed out between species.
6. Regarding isolation housing of ferrets, the CDC-Atlanta IACUC has approved the following:
Naive ferrets are to be housed in compatible pairs prior to infecting with influenza. Once infected, ferrets are singly housed in a Bio-Clens unit (BSL3+) or in Individually Ventilated cages (BSL2 and 3+). Every effort is given to house more than one ferret in a room at any given period of time. However, due to the nature of the creating of sera, there will be rare occasions when only one ferret is located in a room. This isolation will not exceed 14 days.
7. Regarding isolation housing of non-human primates, the CDC-Atlanta IACUC has approved the following:
When efforts to pair or group a nonhuman primate fails, every effort is made to house animals in such a way as to provide them with visual and auditory contact with other conspecifics. The IACUC reviews any cases of individually housed nonhuman primates that are unable to see and hear primates of their own or compatible species. The IACUC has approved isolation housing of nonhuman primates that cannot, for behavioral reasons, be housed in the proximity of conspecifics. This is a rare occurrence and these animals are closely monitored by CMB veterinarians and behavioral staff. These cases are evaluated by a veterinarian on a monthly basis and reported to the IACUC on a monthly basis during a convened meeting.