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**UC Davis
Institutional Animal Care and Use Committee (IACUC)**

Title: *Durable Item Re-Use*

I. Purpose:

To establish the UC Davis policy for the re-use of durable items in research and teaching settings to ensure safety for the animals, and the integrity of research.

II. Policy:

The re-use of durable items is common in both a veterinary and research setting. If Investigators are planning to re-use durable items that are labeled by the manufacturer as “single-use”, performance standards must be met to ensure the item being reused still functions appropriately, and cleanliness standards are being met. Investigators must balance the risks and benefits of re-use vs. using new equipment. It is strongly encouraged that investigators use single-use labeled items only once.

III. Procedure:

A. Single-use vs. multi-use items

a. Multi-use

i. Some durable equipment is specifically designed to be re-used and is manufactured with the rigors of cleaning, disinfection, and potentially sterilization, in mind. These items are typically purchased non-sterile and must be further processed prior to their intended use as a sterile item.

ii. Surgical instruments, cloth surgical gowns, cloth pack wraps, some types of blood pressure cuffs, glass syringes such as Hamilton, some Hamilton needles, and metal gavage tubes are some examples of re-usable durable equipment.

b. Single use

i. Other durable equipment, while designed for single use, is sufficiently robust to withstand several uses if treated with care. Typically, these items will be purchased in sterile packaging or will have clear instructions to sterilize before use. Items that do not require sterilization may be sold singly, or as a multi-pack.

ii. Endotracheal tubes, most veterinary blood pressure cuffs, Christmas tree catheter adaptors, red rubber feeding tubes, paper pack wraps, and otoscope cones are some examples of equipment that may be sufficiently durable to re-use after proper cleaning, disinfection, and potentially sterilization.

B. Cleaning, disinfection, and sterilization

- a. Items must be appropriately cleaned and/or disinfected prior to re-use. If required, the items must also be sterilized in a manner compatible with the material the item is made from.
 - i. **Cleaning** refers to the removal of gross debris and buildup. This may be accomplished with mechanical action, such as a cleaning brush, ultrasonic cleaner, or using clean gauze, as appropriate. A cleaning agent, such as a detergent or a descaler, might be necessary to remove some types of contamination. Appropriate PPE must be worn when cleaning items to provide protection from potential hazards of either contaminated items or cleaning solutions.
 - ii. **Disinfection** is the process of reducing and neutralizing biological contamination, rendering the equipment safe for non-sterile re-use, or ready for the sterilization process. The disinfectant chosen must be appropriate for the material to ensure adequate contact time is not damaging to the item. For example, accelerated hydrogen peroxide is an effective disinfectant, but can etch or decompose some materials, rendering them unsafe for re-use.
 - iii. **Sterilization** is the process of complete elimination of all forms of microbial life, including spore forms of bacteria. This may be achieved either by an autoclave, which is the most common and cost-effective method, or other methods, such as gas or chemical sterilization, or irradiation.
 1. Availability of sterilization methods vary between different campus units; investigators should ensure an appropriate method is available to them prior to purchasing equipment that cannot be autoclaved.

C. Performance standards for re-used items

- a. Any equipment must be functioning as intended by the manufacturer prior to re-use. If the equipment is not functioning, it must be discarded into the appropriate waste stream. This is vital, both to produce valid data, and for the safety and well-being of the animals and the staff using the equipment.
- b. Items that contact the animals topically, either on the skin surface or on intact mucous membranes, should be cleaned of visible soil and then disinfected between uses. If there is a concern for disease, biota transmission, or biosecurity concerns, the equipment should be either sterilized or discarded.

- i. Example equipment includes blood pressure cuffs, otoscope cones, eyelid specula, endotracheal tubes, and orogastric or nasogastric tubes.
 - c. Items that contact non-intact mucous membranes, or any other part of the body that is considered sterile in a healthy animal (e.g. subcutaneous space, inside a body cavity) must be sterilized prior to reuse.
 - d. Sterility can be verified by indicators on autoclave or gas sterilizer packaging along with intact packaging.
 - e. Disinfection must be verified by RODAC or ATP testing. Please see IACUC Policy 58 "[Sanitization of Handwashed Equipment](#)" for more information.
- D. Reuse of needles in rodents
 - a. Needles used for injections into rodents are oftentimes not changed between individuals. This is typically done due to the high percentage of hub loss compared to the small size of doses.
 - b. This practice is discouraged, as best practices dictate each injection be performed with a new, sterile, needle to minimize the risk of pain and distress due to a dull needle, or the risk of infection due to bacterial contamination.
 - c. If an investigator elects to reuse needles in rodents, the following conditions must be met.
 - i. A needle may only be reused a maximum of 5 times, or fewer. If there is evidence of dulling, or the needle is dropped, damaged or contaminated, it must be discarded.
 - ii. A needle may only be reused on animals in the same cohort, and preferentially the same cage, to reduce the risk of disease or biota transfer between animals.
 - iii. A needle and syringe used on an animal known to be sick must never be reused on another animal and must be discarded.
 - iv. Once a needle has been used on an animal, it must not be reintroduced into a vial to prevent bacterial contamination.
 - v. A needle used for IV injection may only be used once.
- E. Reuse of needles in cattle
 - a. Routine herd vaccination in cattle is frequently done using a multi-dose injection gun. Needles may be re-used between animals when following Beef Quality Assurance Guidelines for injection technique.
 - b. The same needle may be used no more than 10 times, unless it bends, breaks, becomes contaminated, or shows evidence of dulling. In these instances, the needle must be changed immediately.
 - c. Needles may not be reused on animals that are sick or harboring a known bloodborne infectious disease.

- d. This practice is allowable for routine herd health only as it is standard industry practice. Research injections in cattle must not reuse needles unless being used in the context of vaccine related research.
- F. Re-use of needles in other livestock
 - a. Routine herd or flock vaccination in other livestock such as poultry, swine, sheep, and goats is frequently done using a multi-dose pneumatic vaccinators, or other multi-dose device.
 - b. The needle may be re-used as described in the manufacturer's directions.
 - c. This practice is allowable for routine flock or herd health or post birth processing only when it is standard industry practice. Research injections in other livestock must not reuse needles.
 - d. Final determination of needle re-use as an industry practice may only be performed at the discretion of the appropriate facility manager.
- G. Sterile pack storage standards
 - a. The minimum standard for sterile pack storage follows event-based shelf life as described by the CDC⁸. Autoclaves used for primary sterilization must be tested routinely for efficacy as described in [SC-50-103: Sanitation and Sterilization](#) Quality Assurance and Monitoring. These standards are as follows:
 - i. The product should remain sterile until an event causes the item to become contaminated (e.g., tear in packaging, packaging becomes wet or dusty, seal is broken, evidence of pests in storage area).
 - ii. Medical and surgical supplies should not be stored under sinks or in other locations where they can become wet.
 - iii. Closed or covered cabinets are ideal but open shelving may be used for storage.
 - 1. Items must be inspected for dust contamination prior to their use in either case.
 - iv. Any package that has fallen or been dropped on the floor must be inspected for damage to the packaging and contents (if the items are breakable).
 - v. If the package is heat-sealed in impervious plastic and the seal is still intact, the package should be considered not contaminated. If undamaged, items packaged in plastic need not be reprocessed.
 - b. Individual investigators and surgical cores are permitted to instead assign expiration dates to their sterile packs. This must be described in an internal SOP or policy.
 - c. When no longer sterile, packs and peel pouches must be re-processed using a

new peel pouch, and new indicators prior to use.

IV. **Resources:**

1. ILAR, Guide for the Care and Use of Laboratory Animals
<http://nap.edu/12910>
2. University of Wisconsin-Madison "The Reuse of Needles in Research Animals"
https://www.rarc.wisc.edu/policies/aur_2_the_reuse_of_needles.html
3. NC3R's "Single use of needles: putting refinement into practice"
<https://nc3rs.org.uk/news/single-use-needles-putting-refinement-practice>
4. IACUC-58 "Sanitization of Handwashed Equipment"
<https://research.ucdavis.edu/wp-content/uploads/IACUC-58.pdf>
5. University of Wisconsin-Madison "Animal Program: Storage of Sterile Materials"
<https://policy.wisc.edu/library/UW-4097>
6. Wayne State University "Autoclave Monitoring and Sterile Pack Storage Standards"
<https://research.wayne.edu/iacuc/autoclavemonitoringandsterilepackstoragestandards>
7. "Long-term storage of small surgical instruments in autoclaved packages"
DOI: [10.1016/S1015-9584\(09\)60303-1](https://doi.org/10.1016/S1015-9584(09)60303-1)
8. Guideline for Disinfection and Sterilization in Healthcare Facilities (2008)
https://www.cdc.gov/infection-control/hcp/disinfection-sterilization/sterilizing-practices.html#cdc_generic_section_7-storage
9. Assessing Reuse of Hypodermic Needles in Mice by means of Digital Imaging, Photomicrography, Bacterial Culture, Analysis of Nest Building, and Animal Vocalization
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10230537/>
10. BQA Antibiotic Stewardship Guidelines
<https://www.bqa.org/Media/BQA/Docs/bqa-antibiotic-stewardship-for-beef-producers-2024.pdf>
11. BQA Field Guide
https://www.bqa.org/Media/BQA/Docs/bqa_field_guide.pdf
12. SC-50-103: Sanitation and Sterilization Quality Assurance and Monitoring
<https://research.ucdavis.edu/wp-content/uploads/SC-50-103.pdf>
13. Hamilton Syringe Sterilization and Disinfecting Guide
https://www.hamiltoncompany.com/knowledge-base/article/syringe-sterilization-and-disinfecting-guide?srsId=AfmBOoaH_fYIQ8AJmLFOqvJ3CThNtOYDBUwWXoa_6730Bfudt1JMeoy