

Compilation of All AAALAC Standards

As of September 2026

Humane and Responsible Use of Animals

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REFERENCE RESOURCES:

- Guide for the Care and Use of Agricultural Animals in Research and Teaching: Institutional Policies (Chapter 1)
 - Guide for the Care and Use of Laboratory Animals: Front Matter and Key Concepts (Chapter 1)
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- Aseptic Surgery

REFERENCE RESOURCES:

- ACLAM Position Statement on Adequate Veterinary Care
 - ACLAM Position Statement on Medical Records Content and Scope (2020)
 - ACLAM Position Statement on Pain and Distress in Research Animals
 - AVMA Guidelines for the Depopulation of Animals: 2019 Edition
 - AVMA Guidelines on Euthanasia (At its May 2020 meeting, AAALAC International's Council on Accreditation adopted the "AVMA Guidelines for the Euthanasia of Animals: 2020 Edition" as an AAALAC Reference Resource with two clarifications noted on the first page of the document.)
 - FELASA-AALAS Recommendations for Monitoring and Reporting of Laboratory Fish Diseases
 - Guide for the Care and Use of Agricultural Animals in Research and Teaching: Agricultural Animal Health Care (Chapter 2)
 - Guide for the Care and Use of Laboratory Animals: Veterinary Care (Chapter 4)
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Personnel Competence and Training

POSITION STATEMENTS:

GUIDANCE STATEMENTS:

REFERENCE RESOURCES:

Occupational Health and Safety

POSITION STATEMENTS:

- Safety Requirements for Walk-In Cage/Rack Washers and Bulk Sterilizers
- Occupational Health and Safety Program
- B Virus (herpes B, monkey B virus, herpesvirus simiae, and herpesvirus B), Macacine alphaherpesvirus 1 (Herpes B virus)

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GUIDANCE STATEMENTS:

- Allergy Prevention
- Respiratory Protection

REFERENCE RESOURCES:

- Biosafety in Microbiological and Biomedical Laboratories (6th edition)
 - DNA Research
 - Guide for the Care and Use of Agricultural Animals in Research and Teaching: Institutional Policies (Chapter 1)
 - Occupational Health and Safety in the Care and Use of Research Animals
 - Recommendations for Prevention of and Therapy for Exposure to B Virus (Cercopithecine Herpesvirus 1)
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Physical Plant and Environment

POSITION STATEMENTS:

- Selecting the Appropriate Standard(s) for the Care and Use of Agricultural Animals

GUIDANCE STATEMENTS:

Animal Environment, Housing, and Management:

- Behavioral Management Guidance Statement
- Maintenance of Continuous Mouse Breeding Groups (such as trio breeding or harem breeding)
- Mouse Cage Sanitation Frequency
- Transportation of Animals Used in Research

Macroenvironment:

- Frequency of Monitoring Rodent Traps
- HVAC Measurements in Agricultural Settings
- Magnetic Resonance (MR) Scanners and Cryogen Gas Storage
- Temperature & Relative Humidity Control
- Use of Recirculated Air in Animal Facilities

REFERENCE RESOURCES:

Animal Environment, Housing, and Management:

- DNA Research
- Guide for the Care and Use of Laboratory Animals: Environment, Housing, and Management (Chapter 3)
- Guideline for Disinfection and Sterilization in Healthcare Facilities

Species Specific:

- Amphibians and Reptiles
 - Guidelines for the Use of Live Amphibians and Reptiles in Field and Laboratory Research
- Agricultural Species in Agricultural Research and Education
 - Guide for the Care and Use of Agricultural Animals in Research and Teaching (4th edition)
- Aquatics
 - Guidelines for the Care and Welfare of Cephalopods in Research
 - Guidelines for the Use of Fishes in Research, Use of Fishes in Research Committee
- Cats
- Dogs

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- Nonhuman Primates
 - o APV Food Restriction Guidelines for Nonhuman Primates in Biomedical Research
 - o Association of Primate Veterinarians Guidelines for Fluid Regulation of Nonhuman Primates in Biomedical Research
- Pigs
- Rabbits
- Rodents
- Ruminants
- Wildlife Field Studies
 - o 2016 Guidelines of the American Society of Mammalogists
 - o Guidelines to the Use of Wild Birds in Research

Macroenvironment:

- Guide for the Care and Use of Agricultural Animals in Research and Teaching: Husbandry, Housing, and Biosecurity (Chapter 3); and Species Specific Requirements (Chapters 6-13)
- Guide for the Care and Use of Laboratory Animals: Physical Plant (Chapter 5)
- Guidelines for Co-Housing Multiple Species of Laboratory Animals

Continuous Improvement

POSITION STATEMENTS:

- Culture of Care

GUIDANCE STATEMENTS:

REFERENCE RESOURCES:

Humane and Responsible Use of Animals

AAALAC POSITION STATEMENTS

The 3Rs

Science and education involving the use of animals is guided by the principles of the 3Rs, originally described by Russell and Burch in 1959 as Replacement, Reduction and Refinement. AAALAC International expects accredited institutions to apply these principles in a manner compatible with scientific and/or teaching goals.

Replacement of animals (absolute replacement) must be considered where non-animal models exist that are accepted by the scientific and, where applicable, regulatory communities. Examples may include, but are not limited to, validated, reliable and fit for purpose cell culture systems (including microphysiological systems), environmental health monitoring, computer modeling, simulation systems and other in vitro tests. However, consideration must also be given to relative replacement or use of animals with a lower potential for the perception of pain and distress.

When animal use is necessary in science or education, reduction techniques must be considered to support research rigor and reproducibility while minimizing the number of animals necessary to answer the scientific question. Examples may include, but are not limited to, fit-for-purpose experimental design, sound statistical and analysis practices, tissue sharing, responsible animal breeding, and, in well-justified cases, re-use of animals.

In addition to reduction techniques, refinement must also be considered to minimize pain and distress and provide positive experiences to enhance animal welfare throughout the animals' lifetime. Examples may include, but are not limited to, social housing, biologically relevant enrichment, acclimation, habituation, positive reinforcement training and other welfare improvements to experimental procedures, housing, and handling. As refinements evolve, personnel should have access to current refinement training and educational opportunities.

Institutions should establish a strategy for implementing the 3Rs, considering these guiding principles while complying with all national or regional 3Rs regulations, policies, and guidelines. This strategy may serve as a tool for continuous improvement and can include a combination of practices such as protocol considerations, standard operating procedures (SOPs), elements of veterinary care, and other components of the animal care and use program, including fostering a strong culture of care.

The Institutional Official, the Attending Veterinarian, and the Institutional Animal Care and Use Committee or comparable Oversight Body (IACUC/OB) should promote and advise on the principles of the 3Rs including the protocol review process. All research groups and IACUC/OB members should receive regular training in the concepts of the 3Rs.

Supporting Documents:

1. Russell WMS, & Burch RL. (1959). The principles of humane experimental technique. *Wheathampstead (UK): Universities Federation for Animal Welfare*. Accessible at <https://caat.jhsph.edu/the-principles-of-humane-experimental-technique/>
2. Balls M. et. al. (1995). The 3 Rs: The Way Forward. The Report and Recommendations of ECVAM Workshop 11. *Alt. Lab Anim.* 23(6):838-66.
3. Tannenbaum, J. & Bennett, B.T. (2015). Russell and Burch's 3Rs Then and Now: The Need for Clarity in Definition and Purpose. *JAALAS* 54 (2): 120-132.
4. Grimm, H. et. al. (2023). Advancing the 3Rs: innovation, implementation, ethics and society. *Front. in Vet. Sci.* (10): 1-13.
5. Lauwereyns, J. et. al. (2024). Toward a common interpretation of the 3Rs principles in animal research. *Lab Anim.* (53): 347-350.



AAALAC POSITION STATEMENTS

Cage or Pen Space

AAALAC International expects accredited institutions to comply with all national or regional regulations, policies and guidelines, as well as conditions of funding. Additionally, AAALAC International considers performance standards paramount when evaluating the space made available in cages or pens for housing animals used for research, testing or teaching. The performance criteria described in the *ILAR Guide*, *Ag Guide*, and ETS 123 are used by AAALAC in assessing the adequacy of cage or pen space available to the animal(s). In those countries where regulations or guidelines do not exist or mandate cage or pen dimensions, AAALAC International suggests institutions consider the ILAR Guide's space recommendations as a basis for addressing space needs while always recognizing that performance standards also must be met.

AAALAC POSITION STATEMENTS

Social Housing

The *Guide* states that single housing of social species should be the exception. Social housing will be considered by AAALAC International as the default method of housing unless otherwise justified based on social incompatibility resulting from inappropriate behavior, veterinary concerns regarding animal well-being, or scientific necessity approved by the IACUC (or comparable oversight body). When necessary, single housing of social animals should be limited to the minimum period necessary and, where possible, visual, auditory, olfactory and, depending on the species, protected tactile contact with compatible conspecifics should be provided. In the absence of other animals, additional enrichment should be offered, such as safe and positive interaction with the animal care staff, as appropriate to the species of concern; periodic release into larger enclosures; supplemental enrichment items; and/or the addition of a companion animal in the room or housing area. The institution's policy and exceptions for single housing should be reviewed on a regular basis and approved by the IACUC (or comparable oversight body) and/or veterinarian.

Acceptance of Exceptions to *Guide* or other AAALAC Standards

AAALAC International promotes humane treatment of animals in science through voluntary accreditation and assessment programs. Its evaluations are based on widely accepted standards—principally, the *Guide for the Care and Use of Laboratory Animals (Guide)*, alongside other recognized references such as the *Guide for the Care and Use of Agricultural Animal in Research and Teaching (Ag Guide)* and the European Convention ETS 123 (these three documents are the Primary Standards), AAALAC Position and Guidance Statements, as well as applicable legislation.

However, AAALAC International recognizes that rigid adherence to prescriptive guidelines may not always be the most effective or scientifically appropriate approach. Sometimes, thanks to the advent of new scientific information and new technology, there are situations where new methods or procedures not described in the *Guide* or other AAALAC standards may be available and result in equal or greater operational efficiency and welfare for the animals involved. In most cases, these exceptions involve a specific project or are limited in scope within an animal care and use program. Occasionally, exceptions are wider in scope and may involve the entire animal care and use program or even apply globally in the case of organizations with facilities in multiple countries; these are often referred to as program wide and global exceptions, respectively. As such, both types of exceptions to the *Guide* or other standards can be acceptable when justified and well-supported.

1. Performance-Based Approach

AAALAC endorses the performance-based approach to animal care and use. More information can be found in the Application of Performance Standards Guidance Statement: <https://www.aaalac.org/accreditation-standards/guidance-statements/>

2. Flexibility Across Geographies and Models

AAALAC accredits animal care and use programs worldwide, spanning diverse regulatory, cultural, and scientific environments. As such:

- The *Guide* is interpreted in a global context, and deviations may reflect national regulations or established practices that differ from U.S. practices.
- In agricultural, wildlife, and field settings, alternative standards or guidelines may apply, and practices may deviate from the *Guide* while still being ethical, effective, and contextually appropriate.

3. Institutional Oversight and Documentation

Acceptable exceptions are not arbitrary. To be considered valid by AAALAC:

- The Institutional Animal Care and Use Committee or other appropriate oversight body must document the rationale, review, and approval.
- There should be ongoing monitoring and outcome assessment to ensure that the deviation is effective and does not compromise animal welfare or scientific integrity.
- Institutions should be able to clearly articulate and support their position during the AAALAC site visit and evaluation process.

Application of Performance Standards

The concept of Performance Standards is explicitly highlighted in the *Guide for the Care and Use of Laboratory Animals (Guide)*, Eighth Edition (National Research Council 2011). According to the *Guide*, the concept and application of Performance Standards is essential for the development of a comprehensive animal care and use program.

Regulations often include specific requirements on animal care and use program areas. When these requirements are rigid and measurable, they are called Engineering Standards. Typical examples of Engineering Standards are minimum animal primary enclosure sizes; ranges for environmental temperature, relative humidity, light intensity levels, and air exchange rates of animal rooms; lists of accepted or regulated procedures; minimum sanitation frequency of animal cages and accessories; and minimum temperature requirements for the rack washer rinse water. Engineering Standards do not provide for interpretation or any modification of the expected specific limits, parameters, or methods to achieve a particular outcome. Additionally, Engineering Standards may not exist for all species in the program.

Alternatively, Performance Standards define the outcome of activities or procedures in detail and provide criteria for assessing whether the outcome is achieved. These criteria may be based on simple measurable acceptable data (e.g., microbiological growth data after sanitation practices), or on more general interpretation of the outcome of a process (e.g., analysis of the questions raised on the oversight and ethical review processes).

AAALAC endorses the performance-based approach to animal care and use. This approach emphasizes outcomes—animal well-being, scientific validity, and regulatory compliance—over strict adherence to procedures. Institutions may deviate from Primary or other AAALAC standards or recommendations when:

- There is a process to evaluate the effectiveness of the procedure (measure the outcome).
- They provide strong scientific or veterinary rationale.
- The deviation maintains or enhances animal welfare.
- The alternative method is reviewed and approved by the Institutional Animal Care and Use Committee or equivalent oversight body (OB).

This allows institutions to adopt innovative or tailored practices that suit their specific research, species, or facility conditions.

REFERENCE RESOURCES FOR
Humane and Responsible Use of Animals

- [OIE's Terrestrial Animal Health Code](#) (Chapter 7.8)

Compliance with Applicable Regulations

REFERENCE RESOURCES FOR Compliance with Applicable Regulations

- *ETS 123* (Appendix A*, Appendix B)

*background information for the species-specific section of Appendix A
may be [found here](#)...

Institutional Oversight

Avoiding Conflicts of Interest in the Leadership and Composition of the IACUC/OB

To ensure the integrity, independence, and credibility of the Institutional Animal Care and Use Committee or Oversight Body (IACUC/OB), institutions are expected to proactively identify, manage, and avoid conflicts of interest (COIs) in both membership composition and leadership roles. This is particularly important when individuals in positions of authority—such as the Institutional Official (IO) or Attending Veterinarian (AV)—serve as Chair or researcher. The IACUC/OB must function as an independent, objective body that provides impartial oversight of the animal care and use program. Undue influence, whether real or perceived, undermines ethical review, regulatory compliance, and public trust. Institutions are encouraged to give thoughtful consideration to the following factors to ensure avoidance of conflicts of interest in the leadership and composition of the IACUC/OB.

General Expectations

- The composition of the IACUC/OB should reflect a balance of expertise, perspectives, and independence consistent with applicable regulations and AAALAC expectations.
- All members should be encouraged to express concerns, request modifications, and vote without coercion or institutional pressure.
- Institutions should actively identify, disclose, and manage COIs for all members.

Conflicts of Interest in Membership

- A conflict exists when a member has a personal, professional, or financial interest that could compromise—or appear to compromise—their objectivity.
- Members with COI or potential COI must recuse themselves from review, discussion, and voting on protocols or programmatic issues in which they have a conflict.
- The IACUC/OB should document recusals and ensure quorum is maintained without conflicted individuals.

Leadership Considerations (Chair Role)

- The Chair plays a critical role in setting tone, ensuring fair deliberation, and protecting the independence of the committee.
- The Institution should appoint a Chair who does not hold a direct management role over the program being reviewed and is not responsible for institutional resource allocation decisions affecting the animal care and use program.
- The IO serving as Chair or as a researcher presents a significant potential COI due to the IO's authority over resources, compliance reporting, other committee members, and institutional priorities.

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- The Attending/Designated Veterinarian (AV) serving as Chair or as a researcher may also present a potential COI. The AV's role in program implementation and clinical decision-making may create perceived or actual COIs when overseeing aspects of the program they directly manage.

Some Safeguards and Best Practices may include

- Establish a written COI policy specific to the IACUC/OB.
- Establish a mechanism for periodic disclosure of potential conflicts and real-time disclosure during meetings.
- Appoint a Vice-Chair or alternate leader to manage discussions when the Chair has a conflict.
- Appoint an alternative veterinarian (including the use of external or independent expertise) to provide veterinary review when the AV has a conflict.
- Encourage a culture of openness, where raising concerns is protected and supported.

Adverse Events

Adverse events (AE) comprise unexpected events or outcomes impacting animal health or wellbeing, human health or well-being, or institutional integrity. Adverse events can be associated to a natural disaster (considered also in the institutional disaster plan); an animal welfare concern report; unexpected outcomes of research procedures; accusations/allegations reported in the media; and other events.

The institution should have an adverse event assessment and reporting plan that defines what is considered an AE and addresses how adverse events are assessed by the IACUC or comparable Oversight Body (OB). This plan should also address risk assessment and include development of a mitigation plan to minimize or prevent future recurrences. When appropriate, the plan should also include the procedures for reporting to appropriate internal and external oversight bodies. Council will review the effectiveness of AE oversight, including the reporting plan, as part of the triennial on-site assessment and program review.

Each accredited unit should establish its own process for reviewing potential adverse events and determining what should be reported to AAALAC in accordance with the Rules of Accreditation.

AAALAC International requires accredited units to promptly report the following significant adverse events:

1. investigations by applicable external oversight bodies;
2. public records requests, particularly those involving AAALAC documents (e.g., copies of Program Descriptions, correspondence between AAALAC International and the unit);
3. lawsuits alleging concerns regarding the animal care and use program (including the ethical conduct of studies with animal models); and
4. events anticipated to attract external attention (e.g. anticipated to elicit animal rights activities or media attention).

The unit is encouraged to contact/call the AAALAC Office if it is uncertain about the need to or the timing of reporting an adverse event.

- Download the Adverse Event Reporting i-Brief:
<https://www.aaalac.org/pub/?id=44C02288-BD4A-4D2D-898D-D36BB556102D>
- Download a full-size infographic “What’s Changed, What Hasn’t”
<https://www.aaalac.org/pub/?id=44D213CD-B8BC-C66C-0944-8EF059EDFC5D>
- Download a full-size Decision Tree
<https://www.aaalac.org/pub/?id=44E444AA-FFB4-3704-DBEC-60762ABD1ADF>
- Watch the Webinar on Adverse Event Reporting
<https://vimeo.com/1179647453/0a0f22851f?share=copy&fl=sv&fe=ci>

Evaluation of Scientific Rigor and Experimental Reproducibility

Scientific rigor and experimental reproducibility directly impact the welfare and number of animals used in research, testing and teaching. It is AAALAC International's view that programs should consider scientific rigor and experimental reproducibility when evaluating animal research activities. The evaluation may be based on an initial review by a grants review panel, and/or may be assigned to the Institutional Animal Care and Use Committee or Oversight Board (IACUC/OB) internal protocol review process. In either scenario, the IACUC/OB review should confirm that the protocol contains pertinent study design elements and ensure adherence to the principles of the 3Rs (replacement, reduction, and refinement). That review should include aspects such as the adequacy of the rationale for the use of animals, the purpose and design of the research-- including randomization, blinding, and controls-- the justification of species, and the proposed animal numbers (via statistical power analyses, if appropriate). Moreover, it should also include consideration of the availability of alternatives to the use of animals, less invasive procedures, and use of less sentient species, as well as the ethical use of animals under appropriate experimental conditions and housing environments. Use of an experimental planning checklist (e.g., the PREPARE Guidelines) into animal protocols for submission and approval may help assure consideration of these elements. To increase awareness of and competency when evaluating rigor and reproducibility, the IACUC/OB should confirm that the program provides education/training as well as direction/recommendations related to scientific rigor and experimental reproducibility to researchers and their staff as well as the IACUC/OB members. Appropriate reporting of experimental design methods in peer-reviewed journals is another important aspect of scientific rigor and experimental reproducibility (e.g., using the ARRIVE guidelines). Guidance on various aspects of scientific rigor and experimental reproducibility may be found at:

- ACD Working Group on Enhancing Rigor, Transparency, and Translatability in Animal Research.
https://acd.od.nih.gov/documents/presentations/06112021_RR-AR%20Report.pdf
- ARRIVE 2.0 Guidelines – a checklist for reporting in vivo experiments in enough detail to add to the scientific knowledge base; endorsed by over 1,000 journals worldwide and available in multiple languages.
<https://arriveguidelines.org/>
- Experimental Design Assistant – a free online tool to help design robust animal experiments more likely to yield reliable and reproducible results; recommended by major funders worldwide. <https://eda.nc3rs.org.uk/>
- PREPARE Guidelines – guidelines for planning research and experimental procedures on animals.
<https://norecopa.no/prepare>

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Additional Guidance Documents (*not to be confused with AAALAC International Reference Resources*):

- Leung, V., Rousseau-Blass, F., Beauchamp, G., & Pang, D. S. J. (2018). Arrive has not arrived: Support for the arrive (animal research: Reporting of in vivo experiments) guidelines does not improve the reporting quality of papers in animal welfare, analgesia or anesthesia. PLoS ONE, 13(5). <https://doi.org/10.1371/journal.pone.0197882>
- Liu, Y., Zhao, X., Mai, Y., Li, X., Wang, J., Chen, L., Mu, J., Jin, G., Gou, H., Sun, W., & Feng, Y. (2016). Adherence to ARRIVE guidelines in Chinese journal reports on neoplasms in animals. PLoS ONE, 11(5). <https://doi.org/10.1371/journal.pone.0154657>
- Macleod, M. (2019). Did a change in Nature journals' editorial policy for life sciences research improve reporting? BMJ Open Science, 3(1). <https://doi.org/10.1136/bmjos-2017-000035>
- Nunamaker, E. A., & Reynolds, P. S. (2022). 'Invisible actors'—How poor methodology reporting compromises mouse models of oncology: A cross-sectional survey. PLoS ONE, 17(10 October). <https://doi.org/10.1371/journal.pone.0274738>
- Reynolds, P. S., & Garvan, C. W. (2021). Preclinical Research Reporting in Shock: Room for Improvement. In Shock (Vol. 55, Issue 5, pp. 573–580). Lippincott Williams and Wilkins. <https://doi.org/10.1097/SHK.0000000000001544>
- Zhao, B., Jiang, Y., Zhang, T., Shang, Z., Zhang, W., Hu, K., Chen, F., Mei, F., Gao, Q., Zhao, L., Kwong, J. S. W., & Ma, B. (2020). Quality of interventional animal experiments in Chinese journals: compliance with ARRIVE guidelines. BMC Veterinary Research, 16(1). <https://doi.org/10.1186/s12917-020-02664-1>

Frequency of Program Review and Facility Inspection

AAALAC International expects the Institutional Animal Care and Use Committee or Oversight Body (IACUC/OB) to regularly review the animal care and use program and inspect animal facilities. This includes centralized and satellite (not centrally managed or maintained) housing, support areas, and labs where animal procedures are done. Regular reviews and inspections are important for overall monitoring and oversight. The Guide recommends these reviews and inspections happen at least once a year, but other regulations may require increased frequencies. AAALAC International encourages the IACUC/OB to carefully consider how often they should evaluate to ensure quality animal care and science. In some cases, more frequent self-assessments may be wise.

AAALAC International expects these reviews and inspections should be frequent and thorough enough to identify and fix any issues in a timely manner. The IACUC/OB should show evidence of being actively involved in evaluating the program and facilities and ensuring corrective actions are timely. The findings from these reviews and inspections should be promptly communicated to the Institutional Official to support the institution's research, testing, and teaching goals.

The frequency of reviews should match the complexity of the program to ensure effective oversight. AAALAC's site visitors may discuss the frequency based on performance-based outcomes. For example, if many issues are found across several program areas, this may indicate poor oversight by the IACUC/OB. This performance-based approach can also be used to adjust the frequency of reviews for specific areas or facilities based on past concerns.

Legal Acquisition and Use of Wild-Caught Animals

AAALAC International recognizes that the legal framework for the use of wild-caught animals in science and education can vary with local, state, national, or international regulations. In countries where regulations or guidelines may not exist regarding acquisition and use of wild-caught animals, AAALAC International recommends that institutions consider appropriate AAALAC International Reference Resources (<https://www.aaalac.org/resources/reference-resources/> under “species-specific”) as baseline references. In all cases where the utilization of wild-caught animals is part of the accredited program, any applicable local and international regulations serve as the minimum standard, with guidance from the primary standards and Reference Resources utilized by AAALAC International supplementing these standards.

In situations where the need for non-purpose-bred animals is proposed and the justification for such use is not obvious from the study focus (e.g., research involving wild species), AAALAC International expects that the Institutional Animal Care and Use Committee or Oversight Board (IACUC/OB) will require a thorough and robust justification for the use of non-purpose-bred animals for any breeding or research purposes. Additionally, the IACUC/OB must ensure species-appropriate management of these animals.

The collective professional judgment of the IACUC/OB, principal investigator (PI), and Attending Veterinarian must ensure that all applicable legal and regulatory requirements are met for the capture, acquisition, and use of wild-caught animals. The institution should have a process to maintain and ensure appropriate management of any required regulatory documents and permits for the use of wild-caught animals. The Council on Accreditation may request documentation (e.g., applicable permits, acquisition records) to verify the legal acquisition of animals.



AAALAC GUIDANCE STATEMENTS

Nonaffiliated Member of the IACUC

We are considering using a former employee as our nonaffiliated member. They are no longer affiliated with our program and they are familiar with the type of research we perform. Are there any concerns with this approach?

The *Guide for the Care and Use of Laboratory Animals (Guide)*, NRC 2011, does offer some guidance on the issue of what should be some of the traits of the nonaffiliated (public) member. The *Guide* states this person should represent the general community interests in the proper care and use of animals, should not be laboratory-animal users, and not be affiliated with the institution or be members of the immediate family of a person who is affiliated with the institution. The OLAW/ARENA Institutional Animal Care and Use Committee Guidebook (which is an AAALAC International reference resource) expands on this by stating that the nonaffiliated member can bring significant value to the committee by bringing a non-institutional perspective to the research endeavor. For programs with an NIH Assurance, OLAW provides some additional guidance in their frequently asked questions section of their website (http://grants.nih.gov/grants/olaw/faqs.htm#IACUC_1) by stating that “the unaffiliated member should have no discernable ties or ongoing affiliation with the institution, and may not be a member of the immediate family of a person who is affiliated with the institution. Immediate family includes parent, spouse, child and sibling. Appointment of an individual who is unambiguously nonaffiliated is the best way to fulfill the letter and spirit of this provision.” Using a former employee as the nonaffiliated member is certainly a gray area that might come into question during a site visit based on the above guidance, especially in context of the comments about the value of that member bringing a non-institutional perspective to the research endeavor and not having any discernable ties or ongoing affiliation with the institution. While not specifically prohibited, the Institutional Official should give special consideration to the use of a former employee as a nonaffiliated member to ensure that both the intent and the spirit of the *Guide* are being met.

Non-Pharmaceutical-Grade Compounds

Our IACUC receives protocols that require use of drugs or other chemicals not formulated for clinical use, which we understand to be characterized as non-pharmaceutical-grade compounds. We would appreciate AAALAC's guidance on the distinction between pharmaceutical- and non-pharmaceutical- grade compounds and how to evaluate this aspect of these protocols.

A pharmaceutical-grade compound is defined as any active or inactive drug, biologic or reagent, for which a chemical purity standard has been established by a recognized national or regional pharmacopeia (e.g., the U.S. Pharmacopeia (USP), British Pharmacopeia (BP), National Formulary (NF), European Pharmacopoeia (EP), Japanese Pharmacopeia (JP), etc.). These standards are used by manufacturers to help ensure the products are of the appropriate chemical purity and quality, in the appropriate solution or compound, to ensure stability, safety, and efficacy.

AAALAC International acknowledges that in an animal care and use program non-pharmaceutical-grade compounds often are necessary for scientific research. Where the use of non-pharmaceutical-grade substances may be essential for the conduct of science, the goal of the IACUC (or comparable oversight body (OB)) should be to consider the health and well-being of the animals while aiding the researcher in minimizing potentially confounding experimental variables and maximizing reproducibility of the research. The Council on Accreditation will apply a performance approach to its assessment of the use of non-pharmaceutical-grade compounds, and will expect that the IACUC/OB has established acceptable criteria for use of such compounds within the institution and for review and approval of their use.

AAALAC distinguishes between two scenarios when considering the use of non-pharmaceutical-grade compounds:

Clinical Use - compounds used for the clinical treatment of animals and to prevent or reduce/eliminate animal pain or distress. Whenever possible, pharmaceutical-grade compounds must be used.

Research Use - compounds used to accomplish the scientific aims of the study. If available, and suitable, pharmaceutical-grade compounds are preferred.

In all cases when non-pharmaceutical-grade preparations are used, AAALAC International expects investigators and the IACUC/OB to consider the following factors:

- Use must be compliant with applicable national or regional regulatory guidelines and requirements and the requirements of relevant funding agencies;
- A scientific justification is provided;
- The pharmaceutical-grade compound is not available in the appropriate concentration or formulation or the appropriate vehicle control is unavailable
- The compound is required to generate data that are part of an ongoing study or that are comparable to previous work;

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- The chemical properties of the compound are appropriate for the study and the route of administration (e.g., the purity, grade, stability in and out of solution, solution vehicle properties, pH, osmolality, and compatibility of the solvent and other components of final preparation). In some cases the reagent-grade of the compound may be as or more pure than the pharmaceutical-grade; and
- The method of preparation, labeling (i.e., preparation and use-by dates), administration and storage of formulations should be appropriately considered with the aim of maintaining their stability and quality (i.e., to prevent inadvertent co-administration of infectious agents or contaminants).

Post-approval Monitoring of Approved Animal Research Protocols

One of the tasks that AAALAC International expects to be performed by the IACUC (or comparable oversight body - OB) is the oversight of approved research protocols involving animal care and use at the institution, once they have started. This post-approval monitoring (PAM) procedure is considered important to help ensure that animal study procedures are conducted in accordance with the approved protocol, to identify and review potential unexpected outcomes or adverse events and their management, and ensure the principles of the 3R's are applied. AAALAC acknowledges that in some countries and institutions there may be other institutional bodies or named individuals (e.g., animal welfare officers, compliance staff, quality assurance units) participating in this process. In all cases, AAALAC applies a performance-based approach based on the efficacy of the system in place, while acknowledging that the final authority over the process relies on the IACUC/OB.

One component of a PAM program is the periodic program review and facility inspection by the IACUC/OB. The collaboration of research personnel in the self-evaluation or and in proactively reporting protocol changes, and involvement of animal care and veterinary staff are very important for the success of the PAM process. As indicated in the *Guide*, PAM methods may include continuing protocol review; laboratory inspections, conducted either during regular facilities inspections (link to Guidance Statement) or separately; veterinary or IACUC/OB observation of selected procedures and evaluation of personnel competency; and observation of animals by animal care, veterinary, and IACUC/OB staff and members.

Factors that may be considered when deciding on the frequency of PAM and on the attention to be paid to specific protocols include history of (non)compliance; potential risks to animals or staff; severity of experimental procedures; and legal requirements (e.g., triennial review required by PHS in the US). Although AAALAC agrees that ensuring compliance with approved protocols is critical, AAALAC International interprets the *Guide* recommendation for a PAM program in the broadest sense for the international community, namely that there will be a system for ensuring animal procedures conform with the approved protocol or study plan (including amendments), and that unexpected outcomes or adverse events are appropriately managed.

REFERENCE RESOURCES FOR Institutional Oversight

- [Guide for the Care and Use of Agricultural Animals in Research and Teaching: Institutional Policies](#) (Chapter 1)
- [Guide for the Care and Use of Laboratory Animals: Front Matter and Key Concepts](#) (Chapter 1)
- [Guide for the Care and Use of Laboratory Animals: Animal Care and Use Program](#) (Chapter 2)
 - [Humane Endpoints \(OECD\)](#)



Veterinary Care

AAALAC POSITION STATEMENTS

The Attending Veterinarian, Veterinary Team, and Provision of Veterinary Care

The animal care and use program is the collaborative responsibility of the Institutional Official, the Attending Veterinarian, and the IACUC or comparable Oversight Body (OB). The Attending Veterinarian or other equivalent veterinary position, hereafter abbreviated as AV, is responsible for the welfare and clinical care of animals used in research, testing, teaching, and production.

For the purposes of this Position Statement, the term “AV and/or designee(s)” is used below to recognize that responsibilities are often carried out by a team of individuals, and not solely the AV; however, AAALAC considers the AV to be the individual with primary oversight and authority.

This responsibility extends to monitoring and promoting animal welfare during all phases of the animal’s life. It is expected that the program of veterinary care will uphold high standards of care and ethics. Moreover, the AV must have sufficient authority to treat an animal and institute appropriate measures to relieve pain or distress, including euthanasia. In fulfilling these duties in a research environment, the AV should interact collaboratively with the research team (e.g., the Principal Investigator or Study Director) when making critical decisions regarding animal health and welfare. The AV must have adequate resources to manage the overall program of veterinary care. AAALAC acknowledges that other qualified individuals may assume some of the roles and responsibilities of the AV, under the oversight of the AV. The AV may delegate responsibilities to other individuals, including other veterinarians, who are qualified to perform those duties.

Important aspects of the role of the veterinarian(s) and the program of veterinary care typically include the following:

- Veterinarians providing clinical and/or program oversight and support must have appropriate experience and ongoing professional development in veterinary medicine, and relevant knowledge necessary to evaluate the health and welfare of the species used, in the context of the animal use being carried out by the institution. The AV shall have substantial knowledge and skills in the science of basic veterinary activities, including anatomy and physiology of healthy animals, housing and husbandry, nature of disease conditions (including zoonotic diseases) and their prevention/surveillance, diagnosis and resolution, behavioral management, anesthesia and surgery, and protection of animal welfare. Demonstration of proficiency through advanced training in comparative medicine or through instruction in animal health, husbandry, behavior, and welfare regulations beyond the completion of traditional veterinary school curricula, with mentored guidance from an experienced specialist is also desirable. In addition to the species-appropriate expertise listed, a competent veterinarian should be knowledgeable in local and national regulations, ethical guidelines, the 3Rs, animal models, and design of scientific procedures and research projects. The AV and veterinary staff should remain knowledgeable about the latest practices and procedures to ensure that high quality care is provided to animals.
- Any veterinarian providing clinical care and program oversight must be legally qualified to perform their designated duties. The AV and any designees must have access to all sites and all animal housing, care, use, and procedure areas, as well as access to animal use protocols and medical records.

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- There must be timely provision of veterinary medical care and emergency veterinary care, including after normal work hours, on weekends, and holidays. The AV may designate another individual with assigned responsibility to provide care under their supervision. However, there should be careful consideration of who is qualified to provide emergency veterinary care and their availability to be on site when needed for an urgent care situation. The veterinarian on-call must have appropriately designated authority and be sufficiently knowledgeable about the animal program to effectively provide veterinary care.
- Provision of veterinary care should be documented in medical records.
- The AV and designee(s) must have oversight of additional aspects of the veterinary care program, such as preventative medicine and health surveillance, medical treatment, establishment of sedation, anesthetic and analgesic guidelines, handling, immobilization, euthanasia, and reuse of animals, and should have oversight of other related aspects such as housing, husbandry, and rehoming.
- The AV and designee(s) must provide guidance to surgery programs and ensure adequate peri-operative (pre-procedural, surgical, and post-procedural) care.
- If there is no full-time AV on-site, there must be a designated, qualified, and adequately trained person who is responsible for daily animal care and use and facility management, who must communicate animal health issues promptly to the AV.

In addition, the AV or designee(s) has further responsibilities related to their role in the program and on the IACUC/OB. For example:

- The AV needs to interact with a variety of professionals within and outside the establishment/institute. Clear communication lines should be established between the AV and the IO or other senior administrative responsible person(s) with ultimate authority overseeing the care and welfare of all animals. The AV needs to have sufficient awareness and understanding of the local practices to be able to contribute to the IACUC/OB.
- The veterinarian(s) must have input in protocol review for all animal procedures, prevention/alleviation of pain or distress, the development of study removal criteria, and responsible conduct of research activities.
- The veterinarian(s) and/or individuals providing care to animals should understand the potential for adverse clinical complications that may arise from experimental procedures.
- The veterinarian(s) should have understanding and proficiency in performing acceptable methods of euthanasia for all species in the animal care and use program.
- The veterinarian(s) should be involved in the design and management of the facility and husbandry procedures, including the selection of personnel.

Supporting Documents:

1. *The Guide for the Care and Use of Laboratory Animals*, 8th ed., National Research Council. 2011.
2. ACLAM Position Statement on Adequate Veterinary Care. updated June 2022.
3. ESLAV/ECLAM/LAVA/EVERI recommendations for the Roles and Responsibilities & Training of the Lab Animal Veterinarian and the designated veterinarian under Directive 2010/63/EU. *Lab Anim.* 49(2), 2015.
4. Canadian Association for Laboratory Animal Medicine (CALAM)/ACMAL Standards of Veterinary Care. Updated April 2020.
5. *Guidelines on the Care and Use of Animals for Scientific Purposes*, 2nd ed., National Advisory Committee for Laboratory Animal Research (NACLAR), Singapore. 2022.
6. Noonan D. and Williams V. "Chapter 12 Laboratory Animal Regulations and Recommendations: Australia and New Zealand" *Laboratory Animals Regulations and Recommendations for the Care and Use of Animals in Research* 2nd ed. (J. Guillén Ed.) Academic Press. 2018.
7. Australian code for the care and use of animals for scientific purposes. 8th Edition, 2013 (updated 2021)
8. New Zealand Good Practice Guide for the use of animals in research, testing and teaching. Updated January 2022.

AAALAC GUIDANCE STATEMENTS

Analgesia and Anesthesia

Pain prevention and alleviation are fundamental responsibilities in veterinary medical care, particularly in the context of procedural and surgical interventions. In research settings, the ethical and scientific imperative to manage pain requires the judicious use of anesthetics and analgesics. A veterinary care program must include assessment of animal well-being, comprehensive management of pain, appropriate surgical and perioperative care, and an effective anesthesia and analgesia plan including consideration of preemptive analgesia. A multi-modal approach, utilizing agents from different pharmacologic classes with synergistic or additive effects to target multiple pain pathways, should be considered. Such strategies optimize analgesic efficacy while minimizing adverse effects associated with any single drug. Elements of perioperative care, including sedation, analgesia, and anesthesia, must be integrated into protocol development and reviewed by the Institutional Animal Care and Use Committee (IACUC) or equivalent Oversight Body (OB). These considerations apply not only to surgical models but also to non-surgical procedures that may result in pain. Ensuring these components are addressed and documented reflects a commitment to both animal welfare and research integrity. Non-pharmacological interventions (e.g., supportive care, modifying husbandry conditions, etc.) may also be considered as part of a multi-modal pain management strategy to enhance comfort, support recovery, and further mitigate pain.

Close and regular monitoring of animals, with documentation and objective assessment of well-being, is a critical component of effective pain management. This may include recording clinical signs, applying species-appropriate pain scoring systems, and verifying that analgesics and anesthetics are administered as prescribed or outlined in the approved protocol. Equally important is the evaluation of the effectiveness of these agents in alleviating pain, which must be assessed and adjusted as needed to ensure optimal animal welfare. Protocols must clearly define species-specific and experimentally anticipated indicators of pain, along with humane endpoints, to guide timely and appropriate intervention.

Oversight by the Attending Veterinarian is essential in ensuring that monitoring practices, drug administration, and protocol adherence meet the highest standards of veterinary care and regulatory compliance. Veterinary anesthesia and analgesia are constantly evolving fields, with new insights and advancements frequently emerging in the scientific literature. As such, it is incumbent upon responsible veterinarians to stay informed of the latest research and developments in veterinary practice.

AAALAC International acknowledges that there can be very diverse anesthetic and analgesic regimes for different procedures and situations. This diversity is essential to accommodate the varying needs of different species and the specific requirements of distinct research protocols. The evaluation of these regimes is conducted according to performance standards and current veterinary practice, ensuring that the chosen methods are both effective and humane.

By adhering to these standards, AAALAC International ensures that animal welfare is prioritized while maintaining the integrity and reliability of scientific research.

Anesthetic Equipment Calibration and Maintenance

Because anesthesia is a critical component of the veterinary care program, and the use of anesthetic gases may pose a risk to personnel, anesthetic machines and vaporizers should be evaluated for safe and effective operation. This should follow an established schedule, consistent with the intensity of use and manufacturers' recommendations. Properly functioning gas anesthesia machines and vaporizers are key to the delivery of accurate doses of anesthetic agent to the animal, and to the safety of personnel, avoiding the exposure to waste anesthetic gases.

The precision vaporizer should be maintained according to the recommendations of the manufacturer and may include on-site calibration and/or having the precision vaporizer returned to the manufacturer for more extensive work. Factors that may affect the schedule for service include the type of anesthetic agent used, the frequency of use of the machine, as well as the type of vaporizer used.

The anesthesia machine (what the vaporizer is attached to) can vary in complexity. There are many factors to consider (e.g., frequency of use, age of machine, environmental conditions, etc.) when developing a program for anesthesia machine maintenance and upkeep, and all components need to work properly as an integrated unit.

Several aspects may be considered for the calibration and maintenance program:

- Calibration: ensures that anesthesia machines and vaporizers deliver accurate and consistent doses of anesthetic gases, minimizing the risk of overdose or inadequate anesthesia. Inaccurate calibration can lead to patient harm, and equipment malfunction.
- Flowmeter accuracy: verification to ensure precise control over gas flow rates.
- Leak Testing: to identify and rectify any leaks in the anesthesia delivery system (e.g., hoses and seals/gaskets). This helps prevent personnel exposure to anesthetic gases and ensures accurate animal dosing.
- Scavenging systems:
 - Active scavenging systems may be used to prevent waste anesthetic gas exposure. These systems should be maintained according to manufacture recommendations.
 - Alternatively, carbon adsorption canisters may be used to scavenge anesthetics from waste gas lines. Canisters should be weighed prior to initial and each subsequent use, utilized in accordance with manufacturer's instructions, and replaced when necessary.
- Risk assessment: to be performed with respect to conditions of use (time of exposure, gases used, etc.) and attention to all staff that may be exposed to anesthetic gases.
- Training: of all staff that use the equipment, to identify and check the status of the equipment, and inform of any potential issue.

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- Documentation: for maintaining detailed records of calibration and maintenance procedures, including dates, results, and any adjustments made. A variety of methods can be used to effectively document anesthetic equipment maintenance (e.g., tags on machines, bar codes, spreadsheets, databases, etc.). Regardless of the record keeping method, the information should document that the anesthetic machines are in proper working order. This documentation may also be important for legal compliance.

More detailed guidance on checking anesthetic equipment can be found at:

<https://anaesthetists.org/Home/Resources-publications/Guidelines/Checking-Anaesthetic-Equipment>

AAALAC GUIDANCE STATEMENTS

Aseptic Surgery

Aseptic surgery and good surgical technique are crucial partners in ensuring patient safety and welfare, promoting healing, and minimizing infection risk. Aseptic surgical techniques and surgical proficiency (e.g. hemostasis, gentle tissue handling, accurate identification of tissue layers, minimization of dead space, appropriate suture size and tension) support successful surgical and research outcomes. Institutions must ensure surgical programs follow aseptic practices and that all individuals performing surgery are appropriately trained. Documentation of both surgical and aseptic technique training should be maintained.

The Institutional Animal Care and Use Committee or Oversight Body (IACUC/OB) and Attending Veterinarian (AV) are responsible for working with the researcher when aseptic technique cannot be achieved (e.g., field surgeries), or may not be practical (e.g., short terminal procedures, non-survival rodent surgeries, etc.) and identify alternative approaches that model best practices.

During the protocol/procedure/policy review the IACUC/OB and veterinary team should take the following into consideration.

1. Surgical Area

An IACUC/OB approved dedicated surgical area/room is preferred and may be required for large animals. The space should be arranged to support aseptic technique, isolated from other activities during the procedure, free of drafts, and be free of supplies and equipment not required for the procedures performed.

[Special Consideration, Laboratory Spaces: For rodents and other small species, an appropriately managed laboratory space may be acceptable. Appropriate use of such space may vary with procedure, complexity and duration. For lengthy or invasive procedures, suspending other laboratory activities or using a dedicated surgical suite may be appropriate. Spaces and practices should be periodically reviewed by the IACUC/OB and veterinary team.]

2. Preparation of Patient and Surgeon

Patient and Surgeon pre-operative preparation is key to ensuring asepsis. As part of procedural review and approval, the IACUC/OB must evaluate and ensure aseptic procedure is conducted, when appropriate. This review should include consideration of: proper surgery site preparation of the animal (including providing an area away from the surgical performance location for the removal of hair and skin preparation), using an appropriate antiseptic regimen, surgeon preparation (considering appropriate personal protective garments e.g. cap, mask, clean coat/scrubs, and sterile gloves, and training in aseptic and surgical techniques.

3. Sterilization of Instruments, Supplies, and Implants

For survival procedures, all instruments and materials that penetrate skin or are implanted must be sterilized before use, using validated methods (e.g., autoclave, ethylene oxide, or manufacturer-approved liquid/vapor systems). Routine monitoring of sterilization processes using indicators appropriate to the sterilization method ensures asepsis is maintained. Biological indicators are the gold standard for verifying sterilization. Alcohol is neither a sterilant nor a high-level disinfectant and should only be considered under IACUC/OB

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review with consultation of the veterinary team. For non-survival procedures, instruments must be clean, free of corrosion, and be in proper working order.

[Special Consideration, Serial Surgeries: Ideally, one sterile instrument set is used per animal. If instrument reuse is necessary, flash sterilization between animals is preferred. In rodents and other small animals, use of “tips-only” technique with glass bead instrument sterilization is common but variable in effectiveness. If employed, the IACUC/OB should approve its use, define the maximum number of animals on which a single instrument set can be utilized prior to re-sterilization, ensure that glass bead sterilizers are maintained and utilized in accordance with manufacturer recommendations, and periodically verify the effectiveness of the process.]

4. Maintenance of the Sterile Field

Aseptic technique involves the maintenance of a sterile field throughout the surgery by draping the animal and surrounding area, exposing only the surgical site. For stereotaxic procedures, draping of the frame or use of sterilized coverings is recommended; a non-sterile assistant may perform non-aseptic tasks.

5. Perioperative Monitoring and Records

Animals must be monitored intraoperatively to ensure an adequate plane of anesthesia and identify physiologic changes requiring intervention. Parameters may include temperature, respiratory rate, heart rate, mucous membrane color, and other metrics depending on species, complexity, duration, and anesthetic regimen. Non-survival surgeries also require appropriate monitoring. Personnel performing concurrent surgical and anesthetic tasks must be appropriately trained and competent in the procedures conducted. Documentation should reflect the monitoring performed and support clinical interpretation, scientific integrity, and IACUC/OB oversight, including tracking of multiple survival procedures. AAALAC does not prescribe a single format or level of detail; rather, documentation and monitoring must be tailored to the procedure and animal condition and should be addressed in pre-surgical planning.

REFERENCE RESOURCES FOR Veterinary Care

- [ACLAM Position Statement on Adequate Veterinary Care](#)
- [ACLAM Position Statement on Medical Records Content and Scope \(2020\)](#)
 - [ACLAM Position Statement on Pain and Distress in Research Animals](#)
- [AVMA Guidelines for the Depopulation of Animals: 2019 Edition](#)
- [AVMA Guidelines on Euthanasia](#) (*At its May 2020 meeting, AAALAC International's Council on Accreditation adopted the "AVMA Guidelines for the Euthanasia of Animals: 2020 Edition" as an AAALAC Reference Resource **with two clarifications** noted on the first page of the document.*)
- [FELASA-AALAS Recommendations for Monitoring and Reporting of Laboratory Fish Diseases](#)
- [Guide for the Care and Use of Agricultural Animals in Research and Teaching: Agricultural Animal Health Care](#) (Chapter 2)
 - [Guide for the Care and Use of Laboratory Animals: Veterinary Care](#) (Chapter 4)

Personnel Competence and Training

Occupational Health and Safety

AAALAC POSITION STATEMENTS

B Virus

(herpes B, monkey B virus, herpesvirus simiae, and herpesvirus B), *Macacine alphaherpesvirus 1* (Herpes B virus)

In addition to using its AAALAC's Three Primary Standards, AAALAC International uses the guidance from the Centers for Disease Control and Prevention (CDC) B Virus (herpes B, monkey B virus, herpesvirus simiae, and herpesvirus B)*, last reviewed January 30, 2019; the "Biosafety in Microbiological and Biomedical Laboratories," 6th Edition (DHHS 2020); the "Occupational Health and Safety in the Care and Use of Research Animals," NRC 1997; and the "Recommendations for Prevention of and Therapy for Exposure to B Virus (*Cercopithecine Herpesvirus 1*)," Cohen, et al. (2002), *Clinical Infectious Diseases* 35:1191-1203) as resources for assessing the appropriateness of measures to protect personnel and prevent transmission of B Virus, *Macacine alphaherpesvirus 1*.

As recommended in the designated references above, macaques should be presumed to be harboring *Macacine alphaherpesvirus 1* and handled accordingly. Each AAALAC International accredited institution housing macaques, or utilizing tissues or body fluids collected from macaques, must have a protection and prevention program for *Macacine alphaherpesvirus 1* as a part of its occupational health and safety program.

The basic elements of the program include standard operating procedures and training for handling macaques and their tissues and dealing with potential exposures; risk assessment and education of all personnel having potential contact with macaques; the presence of supplies for immediate and appropriate patient first aid and animal specimen collection; maintenance of bite, scratch, exposure and incident log; the required use of appropriate protective equipment, including that necessary for hand and arm as well as for eye and mucous membrane protection; and access to occupational health and safety staff and medical care staff knowledgeable of both exposure and transmission risks and disease signs and symptoms.

*<https://www.cdc.gov/herpesvirus/firstaid-treatment.html>

AAALAC POSITION STATEMENTS

Occupational Health & Safety Program

An occupational health and safety program must be part of the overall animal care and use program. The basic elements of a program include hazard identification and risk assessment, personnel training and protection, written procedures and policies regarding hazard use and monitoring, and medical evaluation and preventive medicine.

The extent and level of participation of personnel in the program should be based on the hazards posed by the animals and materials used and the activities performed; on the exposure intensity, duration, and frequency; on the susceptibility of the personnel; and on the history of occupational illness and injury in the workplace. A health history evaluation for individual employees by a medical professional may be advisable before work assignment to assess potential risks. Periodic medical evaluations with appropriate immunizations or titer surveillance may also be advisable for some risk categories.

In accordance with AAALAC's Standards, organizations must assure that all personnel (including external contractors) at risk are appropriately considered under the occupational health and safety program.

AAALAC POSITION STATEMENTS

Safety Requirements for Walk-In Cage/ Rack Washers and Bulk Sterilizers

Human fatalities have occurred when operators were entrapped in walk-in cage/rack washers. This Position Statement is intended to help mitigate that risk. Institutions must demonstrate that safety issues related to cage/rack washers and bulk sterilizers are addressed and regularly reviewed. These machines must be risk assessed as part of the occupational health and safety program (OHSP), considering appropriate use of safety equipment (engineering controls and personal protective equipment) and the development of processes and procedures (administrative controls). Trained personnel should regularly evaluate equipment to confirm that safety features function properly.

AAALAC International recognizes that equipment design, usage, and facility operations vary across institutions. At a minimum, the following must be included in a safety plan:

- **Training.** Equipment operators must receive appropriate and timely training to minimize risk. Training must occur before initial use and be reinforced periodically. It should cover equipment-specific safety features, how to de-energize the machine, and escape mechanisms. External signage should identify safety features and activation methods.
- **Entrapment.** The risk of entrapment during operation must be minimized through engineering controls, effective procedures, and personnel training.
- **Emergency shut-off controls.** An emergency shut-off mechanism to de-energize the machine must be present.
 - For bulk sterilizers, emergency stop mechanisms immediately halt the sterilization cycle and initiate processes to place the chamber in a safe mode. Door systems are designed with redundant safety features (mechanical locks, pressure controls) and programmed to remain locked until the chamber returns to atmospheric pressure and a safe temperature, preventing hazardous release of steam and/or pressurized contents. The time from cycle termination to door release varies with chamber size, load, and operating parameters but generally requires several minutes and is never immediate. Operators must rely on pressure indicators and interlocks to confirm the chamber is safe to open.
 - For rack washers, de-energizing means immediate stoppage of water flow and termination of the wash cycle, requiring deliberate reactivation. Safety and egress features inside the washer must be clearly identified, easy to distinguish and accessible.
- **Alternative approaches.** The following may be used individually or in combination instead of a de-energizing mechanism:
 - A lock-out system, requiring active disengagement of the emergency stop mechanism before restart.
 - A buddy system requiring at least two individuals to be present when equipment is being operated, with both verifying no personnel are in the chamber prior to activation.
 - Emerging technologies such as robotic or automated cage wash systems and racks specifically designed to prevent entry into bulk sterilizers.

Allergy Prevention

AAALAC International considers allergy prevention to be an important topic and a key component of the occupational health and safety program. The use of engineering controls (appropriate facility design, operation, and use of safety equipment) is preferred as the primary means to minimize personnel allergen exposure. Administrative controls (appropriate processes and procedures) are the secondary means to reduce allergen exposure. Personal Protective Equipment (PPE) should be used as an adjunct to engineering and administrative controls, rather than the initial or single means of protection. The activities most associated with allergen exposure are handling animals, cage changing, dumping soiled bedding, and other routes of exposure to animal excretions (such as laundry). Appropriate engineering controls may include: proper animal facility design and function with separation of functional spaces; a well-designed heating, ventilation and air conditioning (HVAC) system with appropriate airflow patterns and air pressure differentials; consideration of cage systems and designs which minimize personnel exposure; and the use of containment equipment such as cage changing stations, bedding dump stations, and other exhausted or downdraft work benches. AAALAC International site visitors evaluate occupational health and safety programs and the methods used to prevent or minimize research animal allergen exposure through review of the procedure of risk assessment by qualified occupational health and safety personnel, periodic personnel health evaluations, engineering controls, administrative controls, the appropriate selection and use of PPE, and ongoing personnel education and training.

Respiratory Protection

As part of the occupational health and safety program, consideration should be given to personnel exposure to harmful airborne particulate materials or vapors including dusts, fogs, fumes, mists, gases, smokes, sprays, and animal allergens. The primary protection should focus on preventing or minimizing atmospheric contamination with engineering control and administrative control measures. If, following appropriate risk assessment, it is decided that personal respiratory protective equipment is needed in addition to available engineering/administrative control measures, the ancillary guidance, as described below, should be considered to assure personal protection when respirators are used.

When personal protective equipment are necessary to protect individuals from contaminant exposure, an institutional program (Respiratory Protection Program or Personal Protective Equipment Program) is required. The Program is a cohesive collection of written worksite-specific procedures and policies that, taken together, address all relevant respiratory protection elements, including guidance for personal protective equipment selection (including appropriate protection factors); evaluation by an occupational health professional of the suitability of the individual to be medically able to wear the respirator and health hazards associated with the use of respiratory protection devices; qualitative and/or quantitative fit testing*; and respirator use training to include inspection, maintenance and care, quality, quantity and flow of breathing air, and routine and emergency use procedures.

When selecting personal protective equipment, it is important to consider that respiratory protection devices are specific to (or appropriate for) the contaminant type. For example, an N95 or FFP1-3 filtering face piece is often used for protection for respirable dust, smoke, and aqueous fog (aerosols), whereas chemical or gas exposures are better mitigated with a Chemical Cartridge/Gas Mask, Powered Air-Purifying Respirator (PAPR), or Self-Contained Breathing Apparatus (SCBA). Note that for air-purifying respirators, knowing the hazard and the amount of hazard in the air is important for selecting the proper filters/cartridges. Additionally, most dust masks or medical (surgical) facemasks do not seal tightly to the face, thus allowing airborne hazards, including animal allergens, to enter the breathing zone; and are not approved as respirators.

* https://www.cdc.gov/niosh/ppe/respirators/fit-testing.html?CDC_AAref_Val=https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/RespSource3fittest.html

REFERENCE RESOURCES FOR
Occupational Health and Safety

- [Biosafety in Microbiological and Biomedical Laboratories](#) (6th edition)
 - [DNA Research](#)
- [Guide for the Care and Use of Agricultural Animals in Research and Teaching: Institutional Policies](#) (Chapter 1)
- [Occupational Health and Safety in the Care and Use of Research Animals](#)
- [Recommendations for Prevention of and Therapy for Exposure to B Virus \(Cercopithecine Herpesvirus 1\)](#)

Physical Plant and Environment



AAALAC POSITION STATEMENTS

Selecting the Appropriate Standard(s) for the Care and Use of Agricultural Animals

AAALAC International recognizes that the biomedical or agricultural research, testing or teaching objectives as well as the health and welfare of the animals will dictate when application of the recommendations of the *Ag Guide*, *ILAR Guide*, or ETS 123 is most appropriate. For animals in an agricultural setting, AAALAC International takes the position that, in accredited programs, the housing and care for farm animals should meet the standards that prevail on a high-quality, well-managed farm. The collective professional judgment of the responsible oversight body (i.e., IACUC, Ethics Committee), principal investigator and veterinarian should determine which standard(s) applies best with regard to the care and welfare of agricultural animals, based on a performance approach in the context of the requirements of the study and the species used.* The rationale for making this determination should be documented.

**For institutions that also hold a U.S. Public Health Service Assurance, see additional information regarding this topic at <http://grants.nih.gov/grants/olaw/faqs.htm#g7>.*

Physical Plant and Environment

Guidance Statements:
Animal Environment, Housing, and Management

Behavioral Management Guidance Statement

Behavioral Management is a comprehensive approach aimed at enhancing the welfare and health of animals used in science and education and consequently, research reproducibility. By focusing on species-specific behavior as a key indicator, a Behavioral Management program improves various aspects of animals' lives, including but not limited to housing, husbandry, and handling techniques.

A comprehensive approach to Behavioral Management should be an essential element of the animal care and use program. Considerations for cage, pen or enclosure space and how it is furnished, choice of substrate/bedding, social housing, animal handling and restraint, opportunities for choice and control of aspects of their home enclosure, appropriate preparation of animals for science and education through habituation and training, opportunities for exercise, and provision of food and other resources to provide stimulation and alleviate boredom should be included.

Environmental enrichment and social housing are critical components of the Behavioral Management Program.

Environmental Enrichment

Environmental enrichment refers to the process of enhancing the living conditions of research animals to promote their natural behaviors and improve their overall welfare. It is crucial because it helps reduce distress, prevent abnormal behaviors, and improve the reproducibility of research by ensuring animals are in a healthy environment. Abundant literature has been produced on the benefits and means of implementation of enrichment strategies. Environmental enrichment has been adopted globally as standard practice in animal care and use programs and is already required in the legislation of some countries.

In general, provision of environmental enrichment will include appropriate housing and enclosure space including any elements that facilitate natural behavior depending on the different species needs (e.g., exploring, digging, hiding, chewing, exercising, nest building, manipulating, foraging, climbing).

Environmental enrichment should be provided in a consistent manner across the animal program, with due attention to animal welfare, and personnel and animal safety.

Implementation of environmental enrichment should also take into account the scientific goals of the study for which the animals are used; enrichment should be considered an independent variable and, thus, suitably controlled. Therefore, "consistency" in the implementation of the enrichment program does not necessarily mean that all animals must be provided with the same enrichment, but that the enrichment decided to be appropriate for each species, study or housing conditions, is applied consistently.

To ensure implementation of effective enrichment strategies, training on the enrichment program should be one aspect of the overall training program for all personnel taking care of animals at all levels and designing and

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performing animal experiments. AAALAC International expects that the IACUC/OB, with the collaboration of the veterinarians, animal care staff and researchers will coordinate and review periodically the implementation of the enrichment program and continuously monitor and adapt it to meet evolving standards and scientific understanding.

Social housing

Social housing will be considered by AAALAC International as the default method of housing unless otherwise justified based on social incompatibility resulting from inappropriate behavior, veterinary concerns regarding animal well-being, or scientific necessity approved by the IACUC or equivalent oversight body (IACUC/OB).

AAALAC recognizes that sometimes research objectives, the health condition of the individual animal, and/or the challenges associated with the social behavior of some species, strains and/or sex of the animals may preclude social housing. Not all members of a social species are necessarily socially compatible. Social housing of incompatible animals can induce chronic stress, injury, and even death. In some species, social incompatibility may be sex biased. The research and welfare benefits and consequences of both affiliative and aggressive species-typical natural social behavior should be considered.

When necessary, single housing of social animals should be limited to the minimum period necessary and, where possible, visual, auditory, olfactory and, depending on the species, protected tactile contact with compatible conspecifics should be provided. If such contact with compatible conspecifics is not possible, additional enrichment should be offered, such as safe and positive interaction with the animal care staff, as appropriate to the species of concern; periodic release into larger enclosures; supplemental enrichment items; and/or the addition of a companion animal in the room or housing area

The institution's policy and exceptions for single housing should be reviewed on a regular basis and approved by the IACUC/OB, with the collaboration of the veterinarians, researchers and animal care staff.

There may be a spectrum of social experience that can be made available to an animal based on the species, health, and use of the animal. These experiences are important because, when properly managed, they can significantly enhance the welfare of the animal. Full time social housing is the optimum manner to provide social experience. However, when full time housing with conspecifics is not possible, whether due to social incompatibility, veterinary concerns or scientific necessity, other social experiences should be considered such as part time access (e.g., overnight, when the animals are between studies, defined periods of time during the day, etc.) to full contact with conspecifics or protected contact that allows interaction. In this manner, the social experience of the animal occurs as a normal aspect of the animal's housing environment or as a separate activity that occurs outside of the primary enclosure, such as in a play yard, exercise cage, animal holding room aisle or facility corridor, etc. The staff responsible for the day-to-day management and oversight of the social experience of the research animals should be well versed in recognizing aggressive and affiliative behaviors of the various species in their care to provide for rapid identification and any necessary intervention.

Performance-based approach

The IACUC/OB, with the collaboration of the veterinarians, researchers and animal care staff should identify appropriate performance criteria, as well as a process for assessment, and ensure that the adequacy, safety, comfort and configuration of the animal environment is regularly reviewed to meet animal welfare and research

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quality needs. Animals should be adequately acclimated to their environment, as well as habituated to handling before experimentation begins to reduce stress as well as experimental variability. Non-aversive animal handling and positive reinforcement training methods should be used whenever possible to minimize stress and it should be performed by adequately trained personnel. When developing a performance-based approach to Behavioral Management, careful consideration should be given to addressing the specific needs of each species, taking into account factors such as, age, sex, animal size, group sizes and social structure, duration of study and behavioral needs according to current scientific understanding.

Behavioral Management should be applied to all animals including commonly used species such as mice, other rodents, and fish. The following species exhibit unique Behavioral Management and housing needs in addition to what is already described in other AAALAC standards.

Dogs

Dogs are generally social, athletic animals with a strong affinity for people. In managing the behavior of laboratory dogs, it is essential to address their social and physical needs to enhance welfare:

- Most dogs thrive on social interaction, both with humans and other familiar dogs. Regular, positive engagement with staff and opportunities for social experience with other known, compatible dogs can significantly enhance a dog's quality of life.
- Provision of comfortable living conditions, such as beds and chew toys help to promote dog comfort, health, and the expression of normal behaviors.
- Abnormal repetitive behaviors, such as circling, jumping, bouncing, and pacing, may be seen with suboptimal housing conditions or may be induced by fear, stress or aggressive interactions with other dogs. Additional assessment may be helpful to address specific behavioral problems.
- The expression of natural behaviors, such as sniffing, licking, physical activity, and play (for younger dogs), are natural stress relievers for dogs and contribute to positive welfare. Facilities that house dogs should incorporate daily opportunities for dogs to exercise and engage with their environment as well as with other dogs.

Nonhuman Primates

Nonhuman primates are non-domesticated species with significant cognitive capacity and require thoughtful housing and Behavioral Management programs to reduce the likelihood of injuries, boredom and frustration from developing in captive research settings. Key Behavioral Management needs for primates in research include appropriate housing environments, opportunities for social housing with familiar animals, habituation and desensitization to facility personnel, as well as research equipment and procedures, stimulating resources that are rotated on regular intervals to reduce boredom, and training to increase predictability and reduce stress during various procedures.

- Primary enclosures should allow animals to express their normal behavior and social hierarchy (e.g. perform a full range of normal movements and postural adjustments, provide safe and comfortable resting spaces that allow animals to avoid agonistic interactions, provide food foraging opportunities that encourage cognitive stimulation and give animals something to do, use of furnishings, such as swings and climbing devices, which encourage play and free movement, etc.).
- Abnormal behaviors may be seen with suboptimal management or in primates with fearful or anxious

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personalities, who may not adjust well to captive research settings. Additional assessment may be helpful to address specific behavioral problems.

- Primates are social species; thus, must be socially housed and enclosures must permit pair or group housing of animals (see Position Statement [\(link\)](#)). Opportunities for animals to move out of sight from each other to avoid agonistic encounters is encouraged. Perches and resting platforms should accommodate animals huddling and sleeping in pairs or groups, providing thermal and mental comfort.
- Most species worked with in research are arboreal/partly arboreal and they require enclosures that permit vertical flight. Some species also require sufficient space for brachiation. Enclosure modifications, such as tunnels, pop-outs, and verandas may be added to provide opportunities for animal choice and control in their environment.
- Provision of puzzle devices and manipulable objects (e.g. mirrors, balls, rings, etc.) can provide engagement and cognitive stimulation for animals, but should be safe and rotated on a regular basis to reduce boredom.
- Primates thrive on routine in captive settings, which includes predictable schedules for feeding, cleaning, training, and experimentation, as well as familiar caregivers. Consistency in personnel managing care and treatments also helps to promote better care in that personnel who are familiar with the primates they work with are more aware of individual animal temperament, social hierarchy, and past experiences, and can adjust their approach accordingly.
- Careful handling using non-aversive techniques that animals are habituated to, and use of positive reinforcement training to promote voluntary cooperation with procedures are highly recommended. These help to reduce stress in animals and personnel and can be a form of cognitive engagement for animals when performed appropriately.

Rabbits

Although inherently social creatures, rabbits are a highly territorial species and social incompatibility issues often arise when they are not provided with sufficient space in their home enclosure. Intact adult males may not always be suitable for social housing because of behavioral aggression, but juvenile rabbits, castrated male rabbits, and intact adult females may often be socially housed (generally in same sex groups in research settings). Does with litters should not be group housed with other adult rabbits, but kits can be mixed between litters at weaning. It is essential to provide hiding places or visual barriers and escape routes when introducing adult females to minimize agonistic encounters. As relationships between animals can evolve due to changes in physiological status, age, and experimental manipulation, ongoing observation of rabbit interactions is needed to detect and promptly address significant signs of social incompatibility.

Other factors that may improve the Behavioral Management of rabbits include:

- Sufficient space to allow rabbits to express natural behaviors and postures, such as multilevel enclosures or elevated resting platforms (appropriate to allow the animal to lie, sit, and easily move underneath), and sufficient enclosure height without their ears touching the enclosure top when seated on the cage floor.
- Regular opportunities for rabbits to dig, explore, and chew. For example, offering free choice roughage, hay, or chewing-sticks allows animals to forage, helps them to control their own microclimate, helps to keep teeth worn, and promotes good gut health.
- Habituation of rabbits to regular gentle handling.

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- Solid floors with bedding or molded plastic perforated floors are preferable. Grid, stainless steel slatted, or wire floors should only be used if a resting area large enough to hold all of the rabbits at any one time is provided.

Rats

Rats are highly intelligent and social animals that respond well to positive human interactions. Consideration for housing and optimal Behavioral Management for rats in research settings has not generally kept pace with other species. As for other species, rats benefit from opportunities to perform a full range of postural adjustments and movements, including climbing, stretching vertically, hopping, and running and facilitation of such behaviors should be considered. Except for stud males kept long term for breeding, it is rare for rats of either sex to require separation due to intolerable agonistic encounters. As for other species, rats require sufficient space and enclosure furnishings (e.g., tunnels or huts) to be able to move out of sight and avoid agonistic encounters. Other factors that may improve Behavioral Management of rats include:

- Regular opportunities for rats to dig, explore, and chew. For example, scattering small amounts of seed or other tiny food items in the bedding at cage change can promote foraging and exploration, and nylon or destructible materials can be offered to promote chewing.
- Regular access to a play cage can promote exercise, free movement, and exploration – these can be particularly useful when housing enclosures are more restrictive in space.
- Rats will build nests when provided with materials they prefer, such as long strands of shredded paper. Materials need to be provided in a sufficient quantity to construct nests or comfortable resting places.
- Healthy, normal rats are meticulous about grooming and juvenile rats commonly engage in rough and tumble play when provided with sufficient space.
- Rats respond well to gentle, non-aversive handling techniques, and are readily habituated and trained to cooperate with experimental procedures using positive operant conditioning methods.

Most AAALAC-accredited facilities will already have many aspects of a Behavior Management program in place. These should be incorporated into a coherent program, expanded where needed, and tailored to each species housed within the facility. A key means of improving current programs is to employ an ‘outcomes-focused’ approach, that is, one that asks what behaviors are normal for a given species and should be promoted. Addressing some needs may require structural modifications of housing enclosures; however, other needs can be met with simple materials or procedural changes. This will remain an evolving area within the field and one that accredited units should continue to monitor to ensure they are promoting good animal welfare and quality science.

Maintenance of Continuous Mouse Breeding Groups (such as trio breeding or harem breeding)

Maintenance of monogamous pair breeding mice (one adult male and one adult female) is simple and allows tracking of their litters and minimizes overcrowding. In general, outbred mice that produce larger litters are best propagated by a pair breeding strategy. However, continuous mouse breeding groups (such as trio breeding, one adult male and two adult female mice, or harem breeding, one male and three or four adult female mice) is commonly proposed to increase breeding efficiency, especially for some strains that are difficult to propagate.

Individuals responsible for the maintenance of these colonies who propose the group breeding scheme must accept full responsibility of the health and welfare of the animals and establish additional animal husbandry criteria to ensure adequacy of cage space for mothers and pups. The increased husbandry practices should include but not limit to ensuring adequate animal observation and frequency, applying established criteria for separation of pregnant females and multiple litters, the suitable cage change frequency, the prompt weaning of mature pups as well as the prompt separation of animals if the number of animals becomes greater than the established criteria.

When considering cage space/animal density policies, it's expected that the Institutional Animal Care and Use Committee or comparable Oversight Body (IACUC/OB) always considers national or regional regulations, policies and guidelines animal behavioral needs, and critically evaluates objective measures of outcome-based performance standards. The proposed cage type should allow all animals to make normal movements and postural adjustments and rest away from soiled areas, provide free access to food and water, and provide sufficient space for mothers with litters to allow the pups to develop to weaning age without detrimental effects to the mothers or the litters. This evaluation should include consideration of strains that have potential large litter sizes, number of adults, the age of female mice, the need for cross-fostering, the growth rate of pups and the average litter size or whether one or more litters are present or possible number of different litters of pups at potential age ranges, the calculation of anticipated number of animals to be produced and to be used or the plan needed for surplus animals, as well as the successful outcomes that support animal well-being.

Mouse Cage Sanitation Frequency

While the *Guide for the Care and Use of Laboratory Animals (Guide)*, NRC 2011 recommends solid bottom cages be sanitized at least once a week, it goes on to say that some types of cages might require less-frequent sanitation, which include individually ventilated cage (IVC) units. The *Guide* stresses the use of performance standards when making these determinations. As an example, scientific studies have looked at environmental conditions (1) and cage changing frequency (2) for IVC systems and determined that under normal circumstances, changing cages in these types of units once every two weeks provided for an acceptable environment for the mice. However, there are other factors to take into consideration. While this frequency of cage changing may be acceptable for many mice, it may not be acceptable for others (e.g., diabetic mice that exhibit increased urine output). The Institutional Animal Care and Use Committee or comparable oversight body (IACUC/OB) should review current cage changing practices for IVC units based on current literature and other factors (phenotype of the mice, type of bedding, housing density, etc.). For an IVC cage change interval longer than 2 weeks, verification of microenvironmental conditions may include measurement of pollutants such as ammonia and CO₂, microbiologic load, observation of the animals' behavior and appearance, and the condition of bedding and cage surfaces. Also, as with any performance standard, there should be a system in place to monitor the outcome and report back to the IACUC/OB.

Transportation of Animals used in Research

Recognizing the critical impact the transportation of research animals has on the quality of research and that the welfare of the animals being transported is governed by a number of regulatory agencies, what are AAALAC International's expectations to ensure humane transport of research animals?

AAALAC recognizes that the continuation of humane transportation of animals is vital to the research enterprise. However, this can be a stressful experience for the animals. The total experience of the animal during transport is influenced by many factors. It is expected that the parties involved are aware of and comply with all applicable regulatory requirements for the transportation of animals and the critical importance of ensuring that the animals are treated humanely at all times during the journey. Please refer to AAALAC International's Reference Resources (<http://www.aaalac.org/resources/reference-resources/>) for additional guidance.

The following points should be considered:

Security: The consignor of the transportation containers and arrangements should ensure that the possibility of damage, misdirection and breach of biosecurity is reduced to a minimum by the use of suitably recognized reputable transport operators and sub-operators. Procedures should be in place to prevent theft or adulteration of transportation containers.

Species specific transportation: Containers and transport vehicles should provide appropriate environmental conditions for the species being transported and personnel should have appropriate knowledge relative to animal biosecurity to maintain the animals' health status.

Transportation logistics: Special attention should be given to the mode of transport and the journey times should be minimized as much as possible. Journey plans should be in place with alternate plans available in case of disruption of the original plan. The receiving institution should be informed about the itinerary and any changes in the timetable or any deviations from the plan which occur during transport. The receiving institution should have arrangements in place to receive the animals and trained personnel are available at the receiving institution to ensure the animals are removed from the shipping containers and inspected in a timely manner.

Commercial carriers: When commercial carriers are used, they should be appropriately licensed, and they should use well-designed animal transport vehicles which are capable of maintaining appropriate environmental conditions for the species being transported, which are documented through appropriate record keeping. The drivers must be trained in the transport of animals and the regulations thereof. When non-commercial carriers are used they and their vehicles should be approved by the IACUC /OB.

Planning for unexpected events: In case of an unexpected event, everyone in the transport chain should have a common understanding of contingency plans and knowledge of emergency contact persons who are available to respond during each segment of the journey. A clear emergency plan should be available and all the relevant information about contact persons, containment of the animals, and other relevant information should follow the animals on the crate or containers.

Intra-institutional transport: When animals are being transported within an institution, the IACUC/OB should approve the vehicle(s) and the personnel who perform this function, taking into account the relevant points described in this FAQ. Responsibility of the IACUC/OB: The IACUC/OB (or comparable oversight body) and veterinarian should evaluate transportation of animals to ensure compliance with regulatory expectations as well as attention to the animals' well-being.

Physical Plant and Environment

Guidance Statements:
Macroenvironment

Frequency of Monitoring Rodent Traps

How often should vermin* traps (live trap or lethal) be checked by staff?

The *Guide for the Care and Use of Laboratory Animals (Guide)*, NRC 2011 indicates that pest control managed by the animal care and use program personnel should be designed to prevent, control, or eliminate the presence of or infestation by pests in the animal environment. The *Guide* states (pg. 74) that “If traps are used, methods should be humane; traps that catch pests alive require frequent observation and humane euthanasia after capture” and also notes (pg. 112) that “all animals should be observed for signs of illness, injury or abnormal behavior by a person trained to recognize such signs. As a rule, such observation should occur at least daily.” The *Guide* (pg. 105) further indicates that an adequate veterinary care program consists of assessment of animal well-being and effective management of pain and distress. The *Guidelines of the American Society of Mammalogists for the Use of Wild Mammals in Research***[†], an AAALAC International Reference Resource, indicate that lethal traps should result in a clean, effective kill and should be checked at least once a day, and in the event that an animal is still alive, it should be immediately dispatched in accordance with guidelines of the American Veterinary Medical Association.

In considering the information provided by the above references, the Council on Accreditation has determined that live mouse traps should be checked at least daily to prevent potential animal distress related to food or water deprivation. If the live trap provides food and water, then the IACUC should determine the appropriate frequency of checking traps. Alternatives to “sticky/adhesive” live board traps should be used for mice to avoid unnecessary animal distress as required by the *Guide* as part of a program of adequate veterinary care. Lethal traps (e.g., snap traps) should be checked daily so that in the event that a animal is still alive, it can be promptly euthanized. Council also considers that this guidance applies to all mice, be they laboratory or vermin mice.

*Excluding arthropods

** <https://www.mammalsociety.org/uploads/Sikes%20et%20al%202011.pdf>



AAALAC GUIDANCE STATEMENTS

HVAC Measurements in Agricultural Settings

The AAALAC International Program Description has a table (Appendix 11, Heating, Ventilation and Air Conditioning (HVAC) System Summary) where comprehensive HVAC data are requested. Can you clarify AAALAC's expectations for HVAC performance data for buildings used in agricultural programs?

Proper air quality for animal facilities is important for the health and welfare of the animals as well as for the personnel working in the facilities. The *Guide for the Care and Use of Agricultural Animals in Research and Teaching (Ag Guide)*, American Dairy Science Association®, the American Society of Animal Science, and the Poultry Science Association 2020, provides a description of Ventilation and Air Quality (p. 18) as well as guidance on methods and strategies to optimize the environment. In agricultural settings, the design and use of the buildings will determine the extent of HVAC information that is needed. In agricultural situations, the assessment of relative pressurization and air exchange rates may be unnecessary. However, pressurization is important for containment facilities at ABSL-3-Ag. The provision of emergency power to exhaust fans is critical for animal housing where mechanical ventilation is required to maintain air quality and environmental temperatures. AAALAC site visitors will consider the buildings' design and function and utilize the recommendations of the *Ag Guide* when assessing the HVAC data and air quality for agricultural programs.

Magnetic Resonance (MR) Scanners and Cryogen Gas Storage

Although the *Guide* indicates that rooms with MR scanners or in which cryogen gases are stored must be equipped with oxygen sensors and a method for increasing room ventilation to exhaust inert gases during cryogen filling, AAALAC International recognizes that institutions may apply a variety of alternative methods to maintain personnel safety in areas where cryogen gases are used. AAALAC International expects that all institutions, through their occupational health and safety program, should conduct a critical risk assessment of hazards associated with the management of MR scanners and cryogen gases and implement appropriate safety measures to protect personnel. This should include periodic reassessment of safety equipment and procedures. Personnel working in these areas should be trained to recognize the hazards associated with MR scanners and cryogen gas storage, and in the relevant safety features and procedures.

Temperature & Relative Humidity Control

The importance of temperature and relative humidity (RH) relates to thermoregulation, important for animals or species with limited capacity to regulate body temperature (e.g., neonates, amphibians); respiratory health, because extremes in temperature or RH may exacerbate respiratory conditions or support growth of pathogens or allergens; or other specific pathological problems (e.g., ring tail due to prolonged low RH).

However, the control of temperature and RH is particularly difficult in certain areas due to extreme climate and limitations of heating, ventilation and air conditioning systems. Additionally, animal husbandry activities may provoke temporary fluctuations (e.g., residual water in large species enclosures).

Rather than prescribing rigid numerical limits, AAALAC International embraces a performance-based approach that allows institutions to justify and demonstrate how their environmental parameters meet the needs of the species housed and support the goals of the animal care and use program. In this context, AAALAC encourages institutions to:

- Define acceptable temperature and RH ranges based on species-specific needs, scientific objectives, and local environmental conditions.
- Monitor and document temperature and RH as appropriate for the species and housing conditions.
- Assess the impact of temperature and RH fluctuations on animal health and wellbeing through health surveillance, behavioral monitoring, and outcome-based evaluations.
- Identify/recognize, respond to, and implement corrective actions when temperature and RH levels deviate from the established acceptable range in a manner that could impact animals or research outcomes.
- Comply with local regulatory requirements.

If no issues are identified by the institution or the AAALAC site visit team that may compromise the health and well-being of the animals or jeopardize the integrity of animal studies, then it is not likely that the Council on Accreditation considers this variation a problem. If, however, animal welfare or study issues are reported that can be linked to variation in temperature or relative humidity, then AAALAC expects the institution to address the lack of control of temperature or RH to ensure animal welfare and reliable data.

Use of Recirculated Air in Animal Facilities

Determining the use of recirculated air and the appropriate proportion of fresh and recirculated air requires careful evaluation. Where HEPA filtered recirculated air is used without gaseous filter, a greater proportion of fresh air (50%) is recommended. However, where both HEPA and gaseous filtering are performed, a greater percentage of recirculated air may be appropriate. Because ventilation needs vary by species, space, and risk level, decisions should be based on measurable environmental parameters and the performance of the filtration system in use.

Risk assessment along with filtration, recirculated air ratio, environmental quality, proper maintenance and husbandry practices help ensure that air quality supports animal health, personnel safety, and operational efficiency. By integrating routine assessment with appropriate engineering controls, facilities can achieve an evidence-based balance between air cleanliness, energy consumption, and cost while meeting accepted standards for high-quality animal care.

Key Considerations

1. Risk Assessment

Because airborne pathogens and contaminants can travel in exhaust air, recirculating air—especially among multiple animal rooms—can present cross-contamination risks.

Situations where recycling exhaust air may be inappropriate include:

- Nonhuman primate housing
- Biohazard containment areas
- Other high-risk animal housing environments

Air from non-animal areas (e.g., offices, certain storage areas) may pose less risk and typically requires less-intensive filtration.

2. Filtration Requirements Particulate Filtration

If recirculated air is used:

- Exhaust air from animal spaces should be filtered at minimum with high-efficiency particulate filtration (e.g., HEPA or 85–95% ASHRAE-efficient filters, depending on risk).
- The extent and efficiency of filtration should be proportional to the hazards present.

3. Environmental Quality Requirements

Even when air is recirculated, the system must maintain:

- Acceptable temperature and humidity
- Adequate fresh-air dilution
- Control of odors, ammonia, and other gaseous byproducts

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Good husbandry practices—such as frequent bedding changes, optimal stocking density, and appropriate sanitation—help maintaining safe air quality, especially when recirculation is used.

4. System Maintenance and Monitoring

Proper operation of HVAC systems requires periodic measurement of recirculation rates, regular preventive maintenance and documented evaluation. The following should be considered as part of regular review:

- What is the source of air and if less than 100% fresh air, what is the recirculation rate?
- Is the air treated (e.g. use of filters, absorbers, etc.) appropriately?
- What are the frequency and methods of assessing, monitoring, and documenting the function of the HVAC system?

Failure to maintain filtration or monitoring systems can render them ineffective, increasing risks to animals and people.

REFERENCE RESOURCES FOR

Physical Plant and Environment:
Animal Environment, Housing, and Management

- [DNA Research](#)
- [Guide for the Care and Use of Laboratory Animals:
Environment, Housing, and Management](#) (Chapter 3)
- [Guideline for Disinfection and Sterilization
in Healthcare Facilities](#)

REFERENCE RESOURCES FOR

Physical Plant and Environment:

Species Specific

Amphibians and Reptiles

[Guidelines for the Use of Live Amphibians and Reptiles
in Field and Laboratory Research](#)

Agricultural Species in Agricultural Research and Education

[Guide for the Care and Use of Agricultural Animals in Research and Teaching](#) (4th
edition)

Aquatics

[Guidelines for the Care and Welfare of Cephalopods in Research](#)
[Guidelines for the Use of Fishes in Research, Use of Fishes in Research
Committee](#)

Cats

Dogs

Nonhuman Primates

[APV Food Restriction Guidelines for Nonhuman Primates in Biomedical
Research](#)

[Association of Primate Veterinarians Guidelines for Fluid Regulation of
Nonhuman Primates in Biomedical Research](#)

Pigs

Rabbits

Rodents

Ruminants

Wildlife Field Studies

[2016 Guidelines of the American Society of Mammalogists](#)
[Guidelines to the Use of Wild Birds in Research](#)

REFERENCE RESOURCES FOR
Physical Plant and Environment:
Macroenvironment

- [Guide for the Care and Use of Agricultural Animals in Research and Teaching: Husbandry, Housing, and Biosecurity](#) (Chapter 3); and [Species Specific Requirements](#) (Chapters 6-13)
- [Guide for the Care and Use of Laboratory Animals: Physical Plant](#) (Chapter 5)
- [Guidelines for Co-Housing Multiple Species of Laboratory Animals](#)

Continuous Improvement

AAALAC POSITION STATEMENTS

Culture of Care

A Culture of Care may be defined as both a mindset and a holistic approach to caring for and working with research animals within an institution. It is exemplified by an organizational culture that starts with the commitment to go beyond compliance with minimum standards of local, regional or national regulatory requirements. A Culture of Care is demonstrated by promoting caring and respectful behavior towards animals and personnel, as well as instilling a sense of responsibility for sustaining processes of improvement. When implemented, a Culture of Care will ensure ongoing programmatic improvements. As such, the concept of Culture of Care is consistent with AAALAC's mission to continuously improve animal welfare in science and education.

Culture of Care is not a recent concept. The Guide for the Care and Use of Laboratory Animals (NRC; 2011) states that *"the implementation of a humane care program, and creation of a laboratory environment in which humane care and respect for animals are valued and encouraged, underlies the core requirements of the Guide and the system of self-regulation it supports"*. Moreover, processes such as post-approval monitoring *"should support a Culture of Care focusing on the animals' well-being"*.

The key components of Culture of Care include thoughtful consideration and active implementation of beneficial animal welfare and 3Rs practices for all species being maintained and worked with; promoting well-being of those caring for and working with research animals, an institutional emphasis on excellence in research integrity, quality and reproducibility, and the presence of mechanisms that foster institutional transparency and societal openness.

Animal care and use programs are encouraged to promote a Culture of Care. The Council on Accreditation may recognize evidence of an effective Culture of Care through commendations. Examples of Culture of Care may include:

- Definition of institutional values and policies concerning animal care and use encouraged and fostered through internal communication. Information provided to new staff is important for the future consolidation of these values at the institution.
- Coordination and cooperation between senior management and the IACUC or equivalent Oversight Body (IACUC/OB) for commitment to and implementation of Culture of Care across the whole program. Open discussion between all of the members of the animal care and use program is essential for achieving a successful and effective Culture of Care program.
- Active consideration of the wellbeing of personnel, especially those performing tasks associated with increased risk of inducing stress and compassion fatigue, as there is no Culture of Care for animals without Culture of Care for people.
- Effective education and training programs to ensure that facility personnel working with animals are skilled, competent and aware of the institutional Culture of Care. This facilitates empathy towards animals and reduction of animal stress and enhances personnel confidence and satisfaction, contributing to high quality, reproducible research data.

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- Active involvement of the IACUC/OB in continuous improvement of the animal care and use program. This can be achieved by periodic review and evaluation of the program, ensuring that continuing education opportunities are available to the IACUC/OB members and those working with animals, as well as through retrospective review with researchers and facility personnel.
- Empowerment and encouragement of all personnel participating in research program support.
- Active promotion of 3Rs approaches when caring for and working with research animals. Recognizing and rewarding 3Rs achievements by animal care and research personnel may be a practical way to encourage improvements in this area.
- Clear and open communication to the public on how, when and why animals are worked with in science, which helps to maintain the societal trust.

Supporting Documents:

1. Robinson S, Sparrow S, Williams B, Decelle T, Bertelsen T, Reid K, Chlebus M. The European Federation of the Pharmaceutical Industry and Associations' Research and Animal Welfare Group: Assessing and benchmarking 'Culture of Care' in the context of using animals for scientific purpose. *Lab Anim*. 2019 Nov 19;54(5):23677219887998. doi: 10.1177/0023677219887998. Epub ahead of print. PMID: 31744380; PMCID: PMC7564339.
2. Brown MJ, Symonowicz C, Medina LV, Bratcher NA, Buckmaster CA, Klein H, Anderson LC. Culture of Care: Organizational Responsibilities. In: Weichbrod RH, Thompson GA, Norton JN, editors. *Management of Animal Care and Use Programs in Research, Education, and Testing*. 2nd ed. Boca Raton (FL): CRC Press/Taylor & Francis; 2018. Chapter PMID: 29787190.
3. Klein HJ, Bayne KA. Establishing a culture of care, conscience, and responsibility: addressing the improvement of scientific discovery and animal welfare through science-based performance standards. *ILAR J*. 2007;48(1):3-11. doi: 10.1093/ilar.48.1.3. PMID: 17170491.