

Part I - Animal Procedure Rooms Overview and Planning

Overview

Animal facility procedure rooms (PR) are important because they provide a specialized area beyond the fully equipped research laboratory where the investigator can perform research or therapeutic animal related procedures without removing the animal from the vivarium. Procedure rooms are generally co-located and/or adjacent to the animal holding room (s) they serve and are sited within the animal facility, distinct from animal housing/holding areas. Some animal procedures such as injections, eye and tail bleeds and cage changes may sometimes be performed in the animal holding room with approval from the Institutional Animal Care and Use Committee (IACUC). Invasive and traumatic procedures, such as euthanasia or surgery, induce negative effects on other animals when performed within the animal holding room; so they are generally performed in a separate room. Where rodents are housed in ventilated cage racks, procedures may be conducted within a procedure hood in the same room.¹ The equipment most often used to conduct procedures within the animal holding room is the laminar air flow (LAF) work station or biosafety cabinet (BSC). Because these are large units, they create competition for work space utilization. However, proper usage of these units can create efficiencies in cost, time management and animal transport as well.²

Considerations for Animal Procedure Room Planning

The following factors must be considered and discussed in detail with the veterinary staff and the intended users when planning the procedure rooms in the facility.

1. Type(s) of species housed in the facility
2. Total number of animals
3. Extent and sophistication of procedures to be conducted
4. Protocol design
5. Types of 'barrier' requirements
6. Data collection needs
7. Type of housing (mouse, rabbit, non-human primate etc.)
8. Technologies (i.e. transgenics; genomics; proteomics)²

It is important for the designer to acquire an understanding of the staff's specific design requests. Design choices reflect how the facility operates and can be highly influential in preventing barrier breeches and cross contamination of disease between animal populations and colonies. The designer might use these basic questions to understand how the facility will be used.

- What are the necessary and desired features of a PR?
- Will veterinary diagnostics be done in-house or in a satellite lab?
- Will the animals be removed to the research lab for the procedure? Note: In the majority of facilities, this will be a one way trip.
- What procedures must be done in the animal facility?

- Can the procedure be done in the animal holding room and is IACUC approval required?
- What technologies are preferably sited within the animal facility?
- What are the research objectives?
- Is this new construction or a renovation?
- How flexible and adaptable can the PR be?
- What type of data collection and management is required?
- What type of imaging equipment will be necessary?
- What utilities, adjacencies and accessibility needs are required?
- Does the facility require its own pharmacy?
- Query the users as to the specialized procedures that may be performed in the facility such as surgery, necropsy, perfusions, and behavioral studies.²

It is important to determine during the programming stage if animal holding rooms will house multiple species over time and if animal holding rooms and procedure rooms should be designed to be interchangeable with minimal structural modifications. Flexible design features incorporated in these critical areas will allow rapid accommodation of future programmatic changes and efficient space utilization.

Alternative Metric for Ratio of Animal Holding Room to Procedure Rooms

Although the NIH Design Requirements Manual³ suggests that a general rule of thumb for the ratio of holding rooms to procedure rooms is one procedure room for every three to four small animal holding rooms, McGarry² recommends that the number be based on the investigator-to-cage number-to-procedure room. This equates to about three procedure rooms to every five animal holding rooms for typical rodent research. This translates to no more than ten (mouse) racks, or about 750–1,200 cages per procedure room using 120 cages per rack as a standard for calculation. Cage number and animal census can be indexed to this metric for other species.

¹Canadian Council on Animal Care guidelines on: laboratory animal facilities-characteristics, design and development, (CCAC); developed by Drs David Neil and Donald McKay Ottawa ON Canada, 2003.

²McGarry, MJ, Huerkamp, AP, Percifield, J. Animal Facility Procedure Rooms: Design and Use. ALN September 25, 2011
<http://www.alnmag.com/article/animal-facility-procedure-rooms-design-and-use?page=0,0>

³National Institutes of Health (NIH). Design Requirements Manual. Bethesda, MD. NIH, Division of Technical Resources, 2008.
<http://orf.od.nih.gov/PoliciesAndGuidelines/BiomedicalandAnimalResearchFacilitiesDesignPoliciesandGuidelines/DesignRequirementsManualPDF.htm>

