Issues for Institutional Animal Care and Use Committees (IACUCs)

Institutional Animal Care and Use Committees: Who Should Serve?

Joy A. Mench, D.Phil, and W. Ray Stricklin, Ph.D.

INTRODUCTION

Every research and teaching institution has an ethical responsibility to ensure that all use of animals by its faculty, staff, and students is conducted in a humane manner. An institution that fails to meet this obligation can incur legal consequences, including a fine and closure of its facilities, loss of federal research funding, and loss of credibility. The primary responsibility for ensuring that an institution meets its obligations with respect to the treatment of animals lies with the institutional animal care and use committee (IACUC).

The IACUC functions according to locally developed procedures that follow approved federal regulations and policies. Obviously, the individuals who comprise the IACUC are extremely influential in determining the degree of success (or failure) of the institution’s animal care program. Thus, “Who should serve?” is a question worthy of deliberation and discussion.

Federal regulations and policies governing the care and use of research animals in the United States require that certain members be included on IACUCs. These regulations and policies are flexible enough, however, to permit committees to choose additional members who can serve the particular needs of their institutions. In this discussion we will present the current federal requirements for committee composition and then discuss some types of individuals who can be chosen to meet local institutional needs successfully. We will focus primarily on colleges and universities.
CURRENT REGULATIONS REGARDING COMMITTEE MEMBERSHIP

The establishment of IACUCs is detailed in the Public Health Service Policy on Humane Care and Use of Laboratory Animals (PHS, 1986), and the Animal Welfare Regulations (AWRs) (9 CFR 1-3) of the Animal Welfare Act. The PHS policy applies to all institutions receiving funding from the PHS that use vertebrate animals in biomedical research, research training, and testing. Other federal agencies, including the National Science Foundation and the National Aeronautics and Space Administration, also require compliance with PHS policy. The AWRs, on the other hand, are applicable to all institutions in which warm-blooded animals are used (with some specific exclusions such as laboratory-bred rats and mice, birds, and agricultural animals) for teaching, research, or testing activities regardless of funding source, unless the purpose of those activities is the production of food or fiber. A summary of information pertaining to the composition of IACUCs under different regulations and guidelines is presented in Table 1.

PHS policy stipulates that each IACUC have a minimum of five members, including a scientist from the institution who has research experience with animals; a veterinarian with training or experience in laboratory animal science and medicine who has direct or delegated program responsibility for activities involving animals at the institution; a nonscientist; and a member who is not affiliated with the institution or is not a member of the immediate family of a person who is affiliated with the institution. The AWRs specify that the IACUC have a minimum of three members, including a veterinarian with training or experience in laboratory animal science and medicine who has direct or delegated program responsibility for activities involving animals at the institution and a member who is not affiliated with the institution or is not a member of the immediate family of a person who is affiliated with the institution. The AWRs also stipulate that not more than three committee members can be from the same administrative unit of the institution.

There is another set of guidelines that may be appropriate for institutions. Research and teaching activities that use agricultural animals in programs oriented toward food and fiber production are not covered directly by either the AWRs or PHS policy. In 1988, a consortium of organizations and agencies developed the Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching (Ag Guide), which is patterned after the NIH Guide for the Care and Use of Laboratory Animals (NRC, 1985) but directed specifically toward agricultural animal research activities (Curtis, 1989). At present the implementation of these guidelines by an institution is voluntary, although the American Association for the Accreditation of Laboratory Animal Care has adopted portions of this document as the basis for accreditation of agricultural animal care programs.

The Ag Guide specifies that the IACUC should include a scientist from the institution with experience in agricultural research or teaching involving agricultural animals; an animal scientist who has appropriate training and experience in the management of agricultural animals and with recognized credentials as verified by scientific and professional societies in animal science, dairy science, or poultry science; a veterinarian who has appropriate training and experience in agricultural animal medicine; a nonscientist affiliated with the institution; and an unaffiliated member. The agricultural IACUC can be either a separate committee or the same committee as the regular IACUC, provided that the committee composition requirements in the Ag Guide are met.

FUNCTIONS OF IACUCS

There is a canon in biology that form follows function. The form of a committee is determined by its composition, which in turn, should be determined by its functions. The primary functions required of IACUCs are specified in three documents: the PHS policy, the AWRs, and the Ag Guide.

Under the PHS policy, committees are required to evaluate the institution’s animal care program semiannually, review the animal care portions of grant proposals and provide a continuous forum for concerns related to...

---

a The Animal Welfare Act was first passed in 1966 (Public Law 89-544) and was subsequently amended in 1970 (Public Law 91-579), 1976 (Public Law 94-279), and 1985 (Public Law 99-198). It is the 1985 amendment that contains the stipulations regarding the composition of animal care and use committees. Copies of the Animal Welfare Act and amendments, as well as the Animal Welfare Regulations can be obtained from the Deputy Administrator, U.S. Department of Agriculture, APHIS-VS, Federal Building, 6505 Belcrest Road, Hyattsville, MD 20782.

b The Animal and Plant Health Inspection Service of the U.S. Department of Agriculture has recently announced its intention to regulate agricultural animals used in biomedical research (Federal Register, vol. 55, no. 66, pp. 12631-12632, April 5, 1990).

c It should be noted that if the institutional Assurance Statement specifies that all of the institution’s animal research activities meet the Public Health Service requirements, then agricultural researchers must also comply with those requirements.

copies of the Ag Guide are available at a cost of $5.00 each from: Association Headquarters, 309 West Clark Street, Champaign, IL 61820 (telephone: 217-356-3182). The executive committee of the consortium welcomes comments on the Ag Guide, which can be sent to the Agricultural Animal Care Guide, Division of Agriculture, National Association of State Universities and Land-Grant Colleges, One Dupont Circle, NW, Suite 710, Washington, DC 20036-1191 (telephone: 202-778-0858).
### TABLE 1 Requirements for Institutional Animal Care and Use Committee Composition

<table>
<thead>
<tr>
<th>Item</th>
<th>PHS Policy</th>
<th>AWRs</th>
<th>Ag Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions affected</td>
<td>Institutions that receive funds from PHS. Other federal agencies also adopted this policy.</td>
<td>All institutions using warm-blooded animals&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Not mandatory&lt;sup&gt;b&lt;/sup&gt;, but species sections used by AAALAC for food/fiber animal facilities</td>
</tr>
<tr>
<td>Appointing responsibility</td>
<td>CEO of the institution</td>
<td>CEO of the institution</td>
<td>Appropriate administrative official</td>
</tr>
<tr>
<td>Committee size (minimum)</td>
<td>Five</td>
<td>Three</td>
<td>Five&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Required members:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veterinarian</td>
<td>Yes&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Yes&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Yes&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Scientist who uses animals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonscientist</td>
<td>Yes</td>
<td>—</td>
<td>Yes&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Non affiliated</td>
<td>Yes</td>
<td>—</td>
<td>Yes&lt;sup&gt;g&lt;/sup&gt;</td>
</tr>
<tr>
<td>Animal scientist</td>
<td>—</td>
<td>—</td>
<td>Yes&lt;sup&gt;h&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>Excludes laboratory-bred rats and mice, birds, and agricultural animals used for food and fiber research.

<sup>b</sup>Developed for use by IACUCs that review food and fiber agricultural animal protocols.

<sup>c</sup>Can be the same committee as that established under the NIH Guide provided that an animal scientist with appropriate training and experience in management of agricultural animals and a veterinarian with expertise in agricultural animal medicine are included.

<sup>d</sup>Must have training or experience in laboratory animal medicine.

<sup>e</sup>Must have appropriate experience in agricultural animal training and experience in agricultural animal medicine.

<sup>f</sup>Specifically, "A scientist from the institution with experience in agricultural research or teaching involving agricultural animals" (Ag Guide, P. 3).

<sup>g</sup>Must be affiliated with the institution.

<sup>h</sup>Specifically, "an animal scientist who has appropriate training and experience in the management of agricultural animals. . ." (Ag Guide, P. 3).

animal use at the institution. The AWRs require the IACUC to evaluate the institution's animal care program semiannually, to evaluate proposed research projects using animals, and to ensure that the living conditions of animals are appropriate for the species and that procedures likely to cause more than momentary or slight pain will be performed as specified by the regulations. The Ag Guide specifies that the committee should review the animal care program semiannually, as well as review protocols for animal care and use in research and instruction. All three require semiannual facilities inspections.

Thus a major responsibility, and possibly the most important function of the IACUC is the peer review of research and teaching activities (known generally as protocol review) to ensure that the animals involved are treated in a humane and appropriate manner. Some principles and methods of protocol review have been discussed elsewhere (Orlans, 1987a). In general, the three principles of humane experimentation (the three R's) proposed by Russell and Burch (1959) are useful criteria for committees, and incorporate many of the review considerations mandated under the AWRs. Committees evaluating protocols should pose the following questions:

- Can animals be Replaced with nonanimal models or with animals lower on the phylogenetic scale?
- Can the number of animals used be Reduced?
- Can experimental design and techniques be Refined?

In addition to the mandated functions of protocol review and facilities inspection, there are several other areas in which IACUCs can play a critical role within their institutions (Mench, 1989). First, the IACUC can monitor current and pending federal, state, and local regulations regarding animal care and use to ensure that its institution is in compliance. Second, as the primary interface between animal researchers and institutional administrators, IACUCs can be of assistance in promoting changes that improve the overall quality of the animal care program to the benefit of investigators. Third, the IACUC can help to increase public awareness of the institution's responsible attitude toward the treatment of animals.
**SCIENTIFIC MEMBERS**

At most large institutions, the majority of IACUC members are animal users. As such, the scientific members form the primary liaison between institutional administrators and investigators with respect to animal research and teaching issues at the institution. The scientific members of the IACUC should, therefore, be individuals who are well-respected both by their peers and by the administrators within their institution, and who also have a strong commitment to the improvement of the animal care program.

Likewise, the process of protocol review will be dominated by the scientific and veterinary members of the IACUC, not only because they comprise the majority of the committee but because their knowledge of research methodologies enables them to properly evaluate protocols with respect to replacement and refinement. Refinements that might typically be recommended include the use of more appropriate anesthetics, analgesics, or methods of euthanasia; aseptic surgical techniques and improved postsurgical care; and less invasive or stressful experimental methodologies.

At a large university with a diverse research program, it is important to include individuals who have expertise in different scientific disciplines to ensure adequate review of protocols. For example, because many of the ethical questions posed by animal protection groups concern the behavioral needs of animals, ethologists can be useful on the committee because they have an evolutionary understanding of animal behavior. Similarly, poultry and animal scientists are trained in areas such as animal housing, care, and nutrition, and their understanding of animal care issues can benefit the laboratory animal program. On the IACUC at the College Park campus of the University of Maryland we have a scientist from each department on campus in which animals are used, facilitating a broad-based representation.

In addition to the required animal user, a committee can include other scientifically trained individuals, who may or may not be animal users. Agricultural engineers who are knowledgeable about the design of animal facilities can be very valuable committee members because of their ability to answer questions on subjects such as air movement, humidity, and temperature control in animal facilities. If the program includes a significant farm animal research component, a veterinarian with clinical experience in farm animal medicine may be appropriate as a committee member. Additionally, a statistician with an applied interest in animal research can be extremely helpful in answering questions related to the appropriateness of experimental design, an important area which IACUCs must address. Some committee members may have reservations about a protocol because they have the uncomfortable feeling that it involves too many animals. However, it should be remembered that the principle of Reduction does not mean using the fewest animals possible, but instead refers to obtaining statistically valid results. Using too few animals can lead to unpublishable results (or published results that are invalid), which is a waste of animal life—possibly more of a waste than using too many animals.

Animal care technicians also represent a group of scientifically qualified individuals who can be asked to serve on IACUCs. Since technicians are responsible for the day-to-day care of the animals and have a working familiarity with protocols and animal facilities, they may be the first people in the institution to recognize a problem in the animal care program. Good communication between the IACUC and the technicians is, therefore, essential, and having a technician on the committee may help to achieve this goal. One difficulty involved in having a technician serve on the committee that should be recognized, however, is the potential for conflict of interest (Heidbrink, 1987). Technicians may feel uncomfortable commenting on research designed and conducted by their supervisors, and it may be inappropriate to ask them to do so. In such cases technicians can serve on IACUCs in a limited or non-voting capacity—on an appropriate subcommittee, for example.

**NONSCIENTIFIC MEMBERS**

Science is an attempt to understand and explain all phenomena in the natural world on a rational basis. Although this approach to the acquisition of knowledge has led to much of what contemporary society considers progress, it cannot be used to address the ethical and moral questions that are being raised about the intrinsic worth of the lives of nonhuman animals. For this reason, individuals from philosophy and religion departments are frequently asked to serve as the nonscientific members on IACUCs. Although these individuals generally have no formal training or professional interest in animal care issues, they can provide fresh perspectives on the complex ethical issues that confront IACUC members. With the general increase in public awareness of and interest in animal welfare, faculty from a variety of other departments, including mathematics, English, and music, have also become informed about animal use issues and can make important contributions to animal care programs. In fact, we believe that the academic community in toto, not scientists alone, should be involved in discussing ethical considerations relating to the use of animals in institutional teaching and research programs.

Other individuals who can assist the IACUC in carrying out its functions include institutional administrators, representatives from the grants and contracts office, and graduate and undergraduate students. Having representatives from the physical plant on the committee can also be helpful with regard to maintaining the structural integrity of animal facilities.
NONINSTITUTIONAL MEMBERS

The question "Who should serve?" is perhaps thorniest when applied to consideration of the noninstitutional member. Many institutions fear having an outside member because of the potential for adding an obstructionist to the committee. If appropriate consideration is given to selection and training, however, the noninstitutional members can make significant contributions to the institution's program.

Role of the Noninstitutional Member

The first issue that IACUCs must address is what role the noninstitutional member should play on the committee. Fortunately or unfortunately, present U.S. regulations and guidelines provide little enlightenment. The AWRs do indicate that the outside member should provide "representation for general community interests in the proper care and treatment of animals" (Fed. Regist. 55(168):36152, Aug. 31, 1989). However, determining what constitutes the concerns of the community is apparently left to the discretion of the IACUC.

What in fact are the attitudes of the community toward animals? A recent nationwide survey prepared for the American Medical Association (1989) indicates that there is serious public concern about the treatment of research animals in the United States. Although the public overwhelmingly respects scientists and is supportive of the use of animals in biomedical research, over 80 percent feel that animals have rights which must be respected and that they should be spared pain and suffering. Moreover, 73 percent believe that scientists often or sometimes torture animals, and 46 percent are aware that there are any regulations regarding the care, housing, and treatment of research animals. Of those that are aware of the regulations, 43 percent have little or no confidence in them.

Given this concern, we would suggest that providing an interface between the institution and the general public is an extremely important role for the noninstitutional member. The selected individual should, therefore, be respected within the local community and be able to act as a sounding board for public attitudes, as well as relay information about the institutional animal care program to the community. Ministers and lawyers are frequently asked to serve as noninstitutional members. Selecting a representative from a local animal welfare organization can also be an excellent means of establishing credibility for the animal care program.

Retired persons have been reported to be very successful outside members. One institution in the Sun Belt region has reported that a retired medical doctor has contributed greatly to its animal care program through his membership on the IACUC. There are of course many other professional backgrounds from which a retired person could come and provide service to an IACUC.

Should a scientist from another institution be asked to serve as the noninstitutional member? As tempting as this may be to some of the scientific members of an IACUC, we believe that public skepticism about the institution's animal care program is the probable result. However, an outside scientist as a second noninstitutional member could help to bring valuable perspectives to an IACUC and assist in promoting greater uniformity in protocol review among institutions.

Selecting the Noninstitutional Member

Because of the crucial role the noninstitutional member plays on the IACUC, and because of the importance of maintaining confidentiality in committee proceedings, potential noninstitutional members should be carefully screened. It is helpful for committees to develop a list of questions to use when interviewing candidates. Some examples are as follows:

- Is the individual interested in (or at least interested in learning about) animal issues and animal research?
- Can the individual devote the time necessary to become knowledgeable about scientific research, to attend meetings, review protocols, and conduct facilities inspections?
- Does the individual understand and respect the importance of confidentiality in committee proceedings?

If there are reservations about how well the potential noninstitutional member will interact with the committee, there are several possible safeguards. For example, the term of service for the noninstitutional member can be shorter than that of other committee members, or there can be a training period during which time the individual is encouraged to participate in discussions but is not permitted to vote.

Increasing the Effectiveness of the Noninstitutional Member

The process of critically reviewing the work of others, including protocols, is well understood by scientists. Except in rare instances, however, noninstitutional members thrown unprepared into the waters of protocol review will sink without trace. Training the noninstitutional member can be a time-consuming effort, but one that is likely to be rewarded by having a significant contributor to the institutional program. Training can consist of providing written materials6 and videotapes, as well as a tour of the

6At a minimum, we would recommend providing the NIH Guide for the Care and Use of Laboratory Animals (1985), the Animal Welfare Regulations, the Report of the AVMA Panel on Euthanasia (1986), the OTA volume Alternatives to Animal Use in Research, Testing and Education (1986), and a medical/scientific dictionary.
animal facilities and an opportunity to meet with principal investigators to discuss their programs. Bibliographies for noninstitutional members have been compiled by the Animal Welfare Institute, the National Agricultural Library, and the Canadian Federation of Humane Societies. There are also newsletters published by the Scientists Center for Animal Welfare (SCAW) and The Animal Protection Institute of America (New Paths) that address issues of concern to noninstitutional members. Attendance at conferences on animal care issues, like those sponsored by SCAW (Guttman et al., 1989), can also be beneficial. Noninstitutional (as well as other) committee members may also find reading case studies of protocol reviews by other IACUCs instructive (Orlans, 1987b; case studies are also regularly published in the journal Lab Animal).

The noninstitutional member of an IACUC is faced with a difficult task. In fact, the current IACUC process probably requires too much from the outside members relative to the benefits received for their contributed time. A common complaint among outside members is a feeling of isolation. They may perceive themselves as being the only animal advocates on the committees, and thus feel that their review of every protocol and attendance at every IACUC meeting is essential, leading to rapid burnout. Clearly, the attitude of the scientific members of the IACUC toward the noninstitutional member is extremely important. Noninstitutional members who are encouraged to voice their concerns and whose opinions are treated with respect are less likely to feel isolated or overwhelmed, even if they find themselves consistently in a minority. We would suggest that one of the best ways of resolving the problems of isolation and overwork is to have more than one noninstitutional member on the committee.

SMALL INSTITUTIONS

Forming an IACUC at a small institution can present some special problems with regard to mandated IACUC membership requirements. A small institution may have only a few researchers using animals, which results in those individuals becoming members of the committee ad infinitum and responsible for the scientific oversight of their own activities. Such a clear conflict of interest may result in the animal care program being perceived as inadequate by the public. McKelvie (1987) has suggested several possible solutions to this dilemma. If there are few protocols requiring review, the IACUC of another, larger institution within the state or jurisdiction might be persuaded to be responsible for the review of those protocols. Protocols could also be reviewed by joint institutional IACUCs comprised either of multi-campus or separate institutions that agree to cooperate. We would add that institutions may be unwilling to give up control of their animal care program to another institution. If so, using outside reviewers on a consulting basis can help improve credibility.

Meeting the requirement for a veterinarian can present financial problems for small institutions. Larger research institutions routinely have veterinarians on their faculty and usually also employ a veterinarian as the director of the animal care department. Smaller institutions can rarely afford to hire a veterinarian full time. Several means by which smaller institutions can meet these requirements include paying a small annual stipend to a local veterinarian to attend meetings, arranging for a veterinarian at a nearby larger institution to serve, or sharing the services of a veterinarian among several institutions (Driscoll and Rambo, 1989). It should be noted that if the services of a local clinical veterinarian are used at an institution that receives federal funding, however, the individual must have training or experience in laboratory animal science and medicine.

SUMMARY

The effectiveness of an institution's animal care and use program is greatly influenced by the membership composition of its IACUC, including the academic disciplines or professional backgrounds of the individual members. A broad range of expertise should be sought in the IACUC membership. A good balance can be provided by having as members a veterinarian with training or experience in laboratory animal medicine and practicing scientists from several scientific disciplines (including an expert on pain, if possible). In addition, representatives could be included from other academic disciplines such as the humanities, ethics, and law; the senior institutional administration; the animal care staff; and the student body. The noninstitutional member plays a particularly important role on the committee, serving as the liaison between the institution and the local community, and thoughtful selection and appropriate training of this member is imperative.

The answer to the question “Who should serve?” is: anyone who can assist the institution in meeting its teaching and research goals, while treating animals in a responsible and humane manner. All IACUC members, regardless of their scientific or professional discipline, should strive to attain this goal.

REFERENCES

