

If the IACUC decides that Holland can use isoflurane, then it should insist that the anesthesia be administered in a proper induction chamber, attached to an anesthetic machine, so that the animal is given oxygen along with no more than 5% isoflurane. Holland's previous institution may very well have approved the use of isoflurane, but its use outside of a controlled vaporizer is bad methodology.

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RESPONSE

Not at our institute!

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We could not consider approval of Holland's protocol at our institution. There are a number of issues surrounding Holland's argument that our Committee would not accept. Use of anesthesia for a procedure that can be readily performed on an alert animal is unacceptable. Doing so moves the animal from pain and distress category C to category D, because we must assume that the animal would undergo more than momentary pain or distress that requires anesthesia. This is in direct opposition to 'refinement' as one of the 3Rs to be considered when evaluating any research use of animals¹. We are also concerned about the scientific impact of the use of isoflurane anesthesia. Although Holland mentioned that a light dose of isoflurane was used to anesthetize mice for i.v. tail injections at her previous place of employment, no indication was given to the present IACUC members that use of isoflurane was appropriate to the experimental design or that its use would not affect results^{2,3}. We have an additional problem with the method of anesthetic administration as described. Mice should not have direct contact with the anesthetic; a fume hood should be used for personnel protection; and isoflurane can reach deadly concentrations in a closed system⁴.

In lieu of anesthesia, we recommend appropriate training for Marshall, who lacks

the adequate skill required to administer i.v. injections into the tail vein of alert mice. *The Guide for the Care and Use of Laboratory Animals* (the *Guide*) directs that "technical personnel...who perform animal anesthesia, surgery or other experimental manipulations must be qualified through training or experience to accomplish these tasks in a humane and scientifically acceptable manner"⁵. It also states that any individual who uses animals must be qualified to do so. Additionally, Public Health Service (PHS) Policy requires personnel to be appropriately qualified and trained to conduct procedures on animals and requires the institution to provide such training⁶. PHS Policy also states that the IACUC is responsible for providing such training, and the IACUC has some responsibility in making recommendations on how to address this problem⁷. Either Marshall must be trained to administer i.v. injections to alert mice, and prove her competency with this technique, or another, competent individual must complete the injections instead.

We disagree with another component of the current proposal: the fact that Holland cited cost as a justification for anesthetizing the animal, in the context of not wasting material. According to PHS Policy, anesthesia is to be used to alleviate more than momentary pain and distress⁸. In the example presented here, the i.v. injection would not induce more than momentary pain or distress if the technician were adequately trained. Cost is not an appropriate justification for administering anesthesia to compensate for inadequately trained personnel.

We also feel that each IACUC is responsible for its own institution. Holland claimed that the IACUC at her previous place of employment permitted i.v. tail injections to be done in anesthetized mice and that this should convince the Great Eastern University IACUC to approve the procedure as well. The *Guide* and PHS Policy require that each institution appoint an IACUC to oversee that specific institution's animal program^{5,9}. Great Eastern University's IACUC, and not the committee at the other institution, has full responsibility for and authority over all animal work conducted at Great Eastern University.

In summary, on the basis of our concerns regarding the change in pain category

and disregard for refinement in the use of animals; the potential scientific impact of the use of anesthetics; the inappropriate handling and administration of a volatile anesthetic; the necessity for appropriate training; the use of cost as a justification for methods; and the IACUC responsibility, we disapprove of this protocol as written.

1. Russell, W.M.S. & Burch, R.L. *The Principles of Humane Experimental Technique* 238 (Methuen, London, 1959).
2. Prentice, E.D. Scientific justification? Scientific merit? Presented at IACUC Advanced Workshop. (Scientist Center for Animal Welfare, Chicago, IL; October 2005).
3. Prentice, E.D. & Oki, G.S.F. General concepts of protocol review. in *The IACUC Handbook* (Silverman, J., Suckow, M.A. & Murthy, S., eds.) 107-147 (CRC Press, Washington DC, 2000).
4. Wixon, S.K. & Smiler, K.L. Anesthesia in rodents. in *Anesthesia and Analgesia in Laboratory Animals* (Kohn, D.F., Wixon, S.K., White, W.J. & Benson, G.J, eds.) 165-204 (Academic, San Diego, 1997).
5. Institute of Laboratory Animal Resources. *Guide for the Care and Use of Laboratory Animals* (National Academies Press, Washington, DC, 1996).
6. Public Health Service. *Policy on Humane Care and Use of Laboratory Animals* IV.C.1.f and IV.A.1.g. (US Department of Health and Human Services, Washington, DC, 1986; amended 2002).
7. Public Health Service. *Policy on Humane Care and Use of Laboratory Animals* IV.B.5. (US Department of Health and Human Services, Washington, DC, 1986; amended 2002).
8. Public Health Service. *Policy on Humane Care and Use of Laboratory Animals* IV.C.1.b. (US Department of Health and Human Services, Washington, DC, 1986; amended 2002).
9. Public Health Service. *Policy on Humane Care and Use of Laboratory Animals* IV.A.3. (US Department of Health and Human Services, Washington, DC, 1986; amended 2002).

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RESPONSE

Try more training first

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In this scenario, it is possible to ensure humane care and use of the animals while retaining a highly skilled employee, but both sides will have to compromise.

Although the Great Eastern IACUC is reluctant to set a precedent for allowing use of anesthesia for this purpose, they