EDITORIAL VIEWS

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Unresolved Issues Relating to Peer Review, Industry Support of Research, and Conflict of Interest

That the issue of "conflict of interest" is of importance to biomedical scientists is reflected in the greater than 300 Medline citations of papers dealing with this issue published over the past 4 yr. Conflict of interest may be defined in many ways and encompass many situations, but usually an inference exists that loss of scientific objectivity is *possible* because of financial or other material incentives. Such incentives, often the result of a collaboration between industry and scientists, may include stock options or cash payments in return for consultative services, support for clinical or laboratory research, funding for travel to scientific (and, at times, not so scientific) meetings, meals and other entertainment, and honoraria for lectures and/or product-related presentations.

None of the above necessarily implies that an individual's integrity has been compromised or that scientific misconduct has occurred. Neither should it be inferred that pharmaceutical support of biomedical research is to be condemned. To the contrary, many important pharmacologic advances related to anesthesiology have occurred as a consequence of industry-sponsored research. However, as Korenman recently stated, "Often, individual investigators who have financial interests in the outcome may consider their activities to be appropriate and objective, but even the perception of a conflict of interest tends to undermine the credibility of their actions."[1] Thus, the overriding opinion is that all relevant financial interests and potential conflicts be disclosed, which at a minimum allows the audience, be it the readership of a journal or those attending a lecture, to judge for themselves whether the data being described are accurate, and that the conclusions and recommendations are fairly stated. Such disclosures are a part of the Guide for Authors of ANESTHESIOLOGY and also are required for refresher course lecturers as well as those submitting abstracts for presentation at the annual meeting of the American Society of Anesthesiologists.

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Conflict of interest also may exist when the likelihood of success of an individual's research and consequently that individual's fame (and perhaps fortune) are furthered not by direct research activity but indirectly by lack of support of a competitor's research grant or nonpublication of a competitor's research manuscript. Thus, individuals serving on review committees charged with assessing worthiness of a competitor's research plan or participating as a reviewer of a competitor's manuscript are confronted by a potential conflict of interest not easily eliminated by prior disclosure. In other words, the peer review process, be it review of research grants or manuscripts, attempts to involve those most expert, who in turn may stand to benefit the most from failure of either the reviewed grant to achieve funding or a reviewed paper to achieve timely publication. Although there are those who advocate that reviewers who have such a conflict of interest not be involved in the review process, it is my opinion that peer review, for all of its limitations, would be much less effective if all individuals with expertise who have potential interest in the outcome of a research grant or manuscript review were to excuse themselves from participation in the review process.

An additional example of conflict of interest is provided in this issue of the Journal in the form of two papers[2,3] describing toxicity of compound A, an olefin formed by the reaction between soda lime or Baralyme and sevoflurane, a volatile anesthetic available for clinical use in Japan and currently under investigational study by Abbott Laboratories in the United States. The results described in these papers suggest that a concentration of compound A similar to that achieved during low-flow anesthesia with sevoflurane[4,5] administered *via* a circle absorption system is associated with histologic evidence of chemically induced toxicity.

The conflict of interest to which I refer relates to the fact that one of the authors of these two reports is a senior, experienced, and respected investigator and one of those most responsible for the clinical and laboratory characterization of the pharmacology of desflurane, an inhaled anesthetic recently released for clinical use. Furthermore, this individual is, as noted in both papers,[2,3] a paid consultant to Ohmeda, and these studies

were supported by Ohmeda, the manufacturer of desflurane. During the review of these papers, concern was raised by several reviewers, quite apart from the scientific assessment of these papers, that an important conflict of interest was potentially present because of this investigator's association with and long-time support from Ohmeda. This issue was discussed among all editors, who unanimously expressed the opinion that the principal concern should be the quality of science reflected in these papers and that, if appropriate, additional reviews should be obtained from individuals with scientific expertise in toxicology and no relationship to anesthesiology, Ohmeda, or desflurane. Such reviews were solicited and reaffirmed the initial positive recommendation that the papers deserved publication.

Obviously, publication of these papers does not mean that our concern regarding conflict of interest is resolved, and if anything, additional issues related to defining what is appropriate involvement between investigators and funding sources are raised. For example, might it not have been more appropriate, in this case, for the sponsor (Ohmeda) to have engaged alternative investigators to conduct these studies? Similarly, might not the investigators have suggested that others conduct the studies? Surely, there are well regarded toxicology laboratories that might have carried out these studies equally well without involving *both* a sponsor and investigators for whom a closely related conflict of interest exists.

This and remaining related issues notwithstanding, we believe that, to the best of our ability and that of the peer review process used by the Journal, the science presented is of a quality deserving of publication and that disclosure of the relationship between authors and sponsors is openly and accurately described. Furthermore, we do not believe that proscribing publication of these papers because of the acknowledged association between author and sponsor is appropriate nor that it would well serve the anesthesia community. We view our principal responsibility as publication of high-quality science that is (or may be) relevant to practice, even when that information generates (as may be the case with these papers) controversy or has financial implications. I welcome and fully expect additional commentary from our readers regarding how well we have accomplished our goals.

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Editor in Chief

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