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Editorial Views

ANESTHESIOLOGY and Quality in the Science and Art of Anesthesiology

QUALITY is a curious thing. Too shy and delicate to be weighed, measured, photographed, or put under the electron microscope to determine its ultrastructure, quality cannot even be defined. Quality also goes its own way, insouciantly flourishing in unexpected places with blithe disregard for statistics and prophets of gloom and despair. The variety of the guises of quality and the perversity of its manifestations continue to confound those given to worry about the state of its health. There is, however, one thing about quality, at least as it applies to medicine: quality depends upon communication. Without communication, the art of medicine languishes, the science withers.

Communication in medicine consists of many things: daily conversations and contacts between physicians; conferences, informal staff meetings and major conventions alike; the written word. Above all, the written word. Nothing has proven over the years to equal the effectiveness of the written word as a means of providing the level of communication needed to assure quality in the science and art of medicine.

The written word in medicine consists primarily of books and periodicals. Today, medical books serve mainly as a means for reviewing a given field in depth and in detail. Unlike non-medical texts, medical books or monographs rarely serve as vehicles for the introduction and development of new concepts, ideas, or philosophies, or for presentation of new information. New information and new concepts in medicine are more frequently introduced in periodicals and later incorporated into books. Books and monographs are, therefore, especially useful as educational tools and as archives of information, rather than as a means for promulgation of original knowledge.

Medical periodicals come in four forms. One of these is books published periodically as series, usually three or four a year, that deal with a particular area of knowledge. The dividing line between periodically published books and quarterly medical journals is often thin. The main difference lies in the fact that books appearing as a series rely mainly upon review of presently existing information, whereas quarterly medical journals report original information. A second category of medical periodicals is publications that transmit organizational information of interest to the members of a particular society or organization. A third type of medical periodical is represented by the large and increasing number of commercial publications directed to physicians but owned and operated by non-professionals as profit-making ventures. The ratio of pages of advertising to pages of text in these "throw-aways," as they are generally referred to, is extraordinarily high. Editorial text relies heavily upon reviews and general expression of opinion, not on presentation of new knowledge. Content suffers from lack of peer review. Contents are not indexed, nor should they be. The half-life of publications of this type can be quite brief. They cease publication when advertising revenues and profits decline.

The backbone of quality medical communication is the fourth type of periodical,

primary medical journals. The function of primary medical journals is threefold: to transmit knowledge, especially new knowledge; to educate; and to serve as a repository for the permanent recording of information in a retrievable form. New knowledge in medical journals appears in the form of articles presenting original data from which conclusions are drawn. Data are presented in detail adequate to permit others to reduplicate the observations reported and thus confirm or refute the conclusions. More than 7,000 medical periodicals, of which ANESTHESIOLOGY is one, are presently published annually in the United States.

In this plethora of periodicals, ANESTHESIOLOGY has a very specific purpose. The object of ANESTHESIOLOGY is, in broad terms, to serve the American Society of Anesthesiologists, its owner, by reflecting the best in all aspects of the science and the art of anesthesiology. All aspects. Not just some. In the art as well as in the science of anesthesiology.

ANESTHESIOLOGY carries out its function by publishing two types of articles: those which present new, original information, and those which are of educational value. ANESTHESIOLOGY also serves as a repository for information, its archival function. On occasion, ANESTHESIOLOGY also communicates matters of organizaional interest to members of the American Society of Anesthesiologists, but this is usually more effectively accomplished by the *Newsletter* published by the Society.

ANESTHESIOLOGY is published for all its readers, for all those interested in the art or the science of anesthesiology. ANESTHESIOLOGY must not, cannot, and will not cater to the particular interests of any single group of its readers, by they clinicians or those involved in research. What is published must represent a balance of material of value to readers with diverse interests if the scientific, educational and archival obligations of ANESTHESIOLOGY are to be met. All readers cannot, therefore, be equally attracted to all articles. Nor should they be. The breadth and depth of anesthesiology are too great for such a parochial base.

More than 400 articles are submitted each year for publication in ANESTHESIOLOGY. Original scientific articles accepted for publication have four attributes in common. First, they provide information that is new, information not previously reported in the literature. Second, they provide information relevant to the science or the art of present-day anesthesiology. Third, the methods used, the data derived from them, and the interpretation of the data are scientifically valid. And, fourth, the articles are complete, definitive expositions of problems, large or small. The same criteria for acceptance are applied to clinically oriented articles as to articles reporting the results of laboratory research.

Articles are not accepted for publication if they contain material the majority of which has already appeared in print. Articles are also not accepted if they contain information that is of no real significance in anesthesiology. Included in this category are articles that report information that might have been significant to the practice of anesthesiology ten years ago but no longer is of interest or value. Also rejected are articles that report information that is new and scientifically sound but has nothing to do with anesthesiology. Articles on physiology or pharmacology, for example, should appear in journals other than ANESTHESIOLOGY if they have no application to anesthesiology, no matter how meritorious they may be physiologically or pharmacologically. Finally, articles that are preliminary reports or lack completeness because they report but part of a larger study are also rejected. Fragmentation of reports is a cause for rejection not only because of lack of completeness but also because the data presented are usually trivial.

The decision to accept or reject an article is made by the editor-in-chief, following peer review. Each original scientific article and laboratory report is sent to two of the nine members of the editorial board for analysis and comment. The editors, in turn, may enlist the assistance of outside consultants as indicated. The comments and opinions of the reviewing editors are returned, usually within three weeks, to the editor-in-chief in two forms: as a critique written in such a manner that it may be anonymously returned to the author, and, second, as an analysis for the editor-in-chief alone. The purpose of the

critique forwarded to the author is to help the author by defining the strengths and weaknesses of the article and, by offering constructive suggestions, to indicate how the article might be improved. After the opinions and comments of reviewers and consultants have been received by the editor-in-chief, he reads the article and arrives at a decision as to its disposition. He reads all articles and all other communications. He is not infallible. He may accept the article for publication as it stands (a rare occurrence); he may return the article to the author requesting a revision; or he may reject the article. Articles returned for revision may or may not subsequently be accepted, depending upon whether the revision successfully handles the criticisms and comments offered by the reviewers and the editor-in-chief. The editor-in-chief may or may not agree with the opinions of other reviewers. He cannot, of course, agree with the reviewers when, as may happen, the opinions of reviewers are diametrically opposed.

The same procedure is followed for Clinical Reports as for original scientific (clinical or research) articles, Clinical Reports being brief case reports or descriptions of new anesthetic technique or equipment. The only difference is that Clinical Reports are reviewed by two, not three, peers, and that the final decision to accept or reject rests with the editor to whom has been delegated responsibility for managing the Clinical Reports section of the journal.

Approximately 40 to 45 per cent of the articles submitted for publication in ANESTHESIOLOGY are rejected. The declination rate is the same for "clinical" articles as for "research" articles. The incidence of rejection has remained constant over a period of years.

If an article is meritorious but lacks clarity it, too, is returned to the author for rewriting. Unless material is presented clearly and unambiguously, it cannot be understood by its readers and will not be published. The objective of this type of revision is to improve clarity, not style. With clarity, style takes care of itself. Clarity is most likely to be achieved when articles are prepared in the format requested in the Guide to Authors, published twice a year.

The 400 articles received annually, plus approximately 200 manuscripts resubmitted following revision, provide the editor-in-chief with about 600 items each year to evaluate for possible publication.

The decision to accept or reject an article is made solely on the basis of merit. There is no quota of pages to be printed. There is no quota of types of articles to be printed. It is self-evident that only articles submitted for publication can be published, so if a dearth of one type or another of article occurs, this comes about because they are not being written and submitted for publication. But there is no policy whereby a certain number of "clinical" or "research" articles is published, with one being favored over the other. Such quotas should not exist in the first place. If they did, it would be impossible in many instances to determine whether a particular article were "clinical" or "research." Many are both. Furthermore, today's "research" article is tomorrow's "clinical" article, as a review of the contents of issues published five or ten years ago readily demonstrates.

The educational functions of ANESTHESIOLOGY are served in a number of ways. There are Medical Intelligence articles, which review and analyze current knowledge in a relatively discrete field of topical interest in anesthesiology. Larger, more definitive Review Articles summarize and interpret broader areas of information relevant to the science and the art of anesthesiology. Annual Symposium issues, also primarily of educational value, cover entire fields in the specialty by means of review articles. Editorials serve as additional educational mechanisms by commenting on or by interpreting articles appearing in an issue, or by discussing broad problems of current interest. Book reviews, abstracts of the literature, and letters to the editor further augment the educational role of the journal.

The insistence on quality as the sole criterion for publication has paid off. ANESTHESIOLOGY today has a circulation of more than 20,000 which makes it one of the major primary medical journals in the United States. Approximately 40 per cent of the subscribers to ANESTHESIOLOGY are not members of the American Society of Anesthesiologists, a reflection of the popularity

and the esteem with which the journal is regarded by those outside the parent organization and, indeed, outside anesthesiology. Circulation increases about 12 per cent per year amongst members and non-members. Circulation figures alone, however, are inadequate indices of the reputation ANESTHESIOLOGY enjoys, for ANESTHESIOLOGY today is amongst the most prestigious journals published. This enviable reputation was not developed overnight. It is due to the efforts and talents of decades of dedicated, perceptive editors-in-chief and editors with an unswerving commitment to quality. The result is not only to reflect favorably upon anesthesiology for the benefit of all who practice it, but to provide a means by which quality, that elusive attribute, may be assured in anesthesiology through communication, with quality in both the science and the art of anesthesiology receiving equal attention.—N.M.G.

The Tell-tale Heart Cells:

Metabolic vs. Functional Effects of Anesthetics

MORE THAN 100 YEARS AGO, Edgar Allen Poe,[1] with a bit of poetic license, utilized the intrinsic myocardial properties of automaticity, rhythmicity, and contractility to form the plot for one of his many tales of horror, wherein the excised beating heart of a victim exposed the murderer. In this issue, Stong, Hartzell, and McCarl,[2] utilizing the same intrinsic properties of myocardial cells, describe a unique preparation which promises to tell many tales of particular interest to anesthesiology. For many readers, this will be a first introduction to an *in-vitro* preparation of heart cells that retain these intrinsic properties. It is a unique preparation primarily because individual mammalian cells can be studied *in vitro* in an easily monitored spontaneously functional state. Accordingly, their metabolism in relationship to this function can be examined, the functional and metabolic effects of anesthetics can be correlated, the dependence of this function and of metabolism on various substrates can be studied, and the chronotropic and inotropic effects of a variety of drugs can be directly observed. No other mammalian tissue preparation available today offers such potential, since, although basic metabolic functions may be retained, special functions such as mechanical or electrical work are generally lost.

Until now, mammalian studies concerned with anesthetic potency or the metabolic effects of anesthetics have been limited to whole-body, whole-organ, tissue biopsy, or subcellular preparations. Each such preparation offers advantages, but at the same time, retains limitations. Whole-body studies have the major advantage of being "real" (that is, *in vivo*), but because of the great and little understood complexities of the entire system, it is often difficult or impossible to separate and examine individual cause–effect relationships. Whole-organ studies simplify this somewhat by eliminating exogenous influences and permitting artificial manipulation of the organ's environment and function which is not possible *in vivo*. However, such studies are still limited by the complexity of the organ itself and by the largely unknown impact of a foreign environment on an organ's normal function. Tissue biopsy and tissue culture studies have the dual disadvantages of loss of normal function and often loss of normal morphology, but offer relative simplicity in terms of examining cause–effect relationships. Subcellular preparations permit examination of individual processes not otherwise accessible for study; however, it is often unknown whether the cause–effect relationships identified in such preparations are applicable to *in-vivo* circumstances. The