

## EDITORIAL VIEWS: SPECIAL SECTION—ECONOMICS

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### *Economics of Anesthesia Care*

#### *A Call to Arms!*

WITH major changes occurring in the financing and delivery of healthcare in the United States, anesthesia is not exempt from the impact of managed care and progressive decreases in reimbursement from Medicare and other third-party payers. Facing increasing economic constraints, especially in prepaid systems, anesthesia practitioners are pressured to decrease the cost of providing care. Because one of the major—and changeable—costs of anesthesia care is the cost of anesthetic drugs, we are being encouraged to resume use of older generic drugs, such as pancuronium, thiopental, and isoflurane. During this same period, newer, and often more expensive, drugs with appealing clinical profiles are being introduced into anesthesia practice. For example, propofol, desflurane, and sevoflurane are associated with rapid emergence from anesthesia; rocuronium has an onset similar to that of succinylcholine; mivacurium has a recovery index rivaling succinylcholine's; and ondansetron significantly decreases the incidence of postoperative vomiting.

If data existed to support a better cost *versus* benefit outcome with these new drugs, they would likely supplant the use of older drugs. Unfortunately, as Watcha and White<sup>1</sup> report in this issue of ANESTHESIOLOGY, evidence supporting such an outcome is lacking. For example, patients may be able to perform simple mental tasks more rapidly after desflurane or sevoflurane administration than after isoflurane anesthesia, but there is little evidence that patients require less nursing care in the post-anesthesia care unit or are more satisfied with their perioperative experience. Similarly, ondansetron's reduction of the number of postoperative emetic episodes

should produce a shorter stay in the recovery room and fewer unplanned hospital admissions resulting from refractory postoperative nausea and vomiting (PONV). However, the large sample size and cost required to demonstrate a reduction in hospital admissions make this endpoint difficult to achieve in clinical trials. Of the few trials reporting duration of recovery room stay (we speculate that more of such data are collected than reported), most have failed to demonstrate shorter stays after ondansetron administration.

The implications for clinical practice of this lack of data to support the cost efficacy of new drugs or technologies are significant. For example, one can imagine that anesthesiologists giving ondansetron more frequently may be asked to defend this practice should their patients not demonstrate improved outcomes relative to patients not receiving ondansetron. Similarly, if no cost *versus* outcome benefit can be shown, the choice of anesthetic drugs may be dictated based on surgical procedure—clinicians will be given only a limited palette of drugs, its contents having been formulated by hospital administrators and pharmacists, rather than by anesthesiologists.

Most anesthesiologists likely believe that the choice of anesthetic regimens should be made by the practicing clinician rather than by nonanesthesiologists. However, lacking appropriate cost and outcome data, it is difficult to justify using more expensive drugs, even if we contend (based on our clinical experience) that these agents improve patient outcomes. Well-designed outcome studies with appropriate sample sizes and endpoints are rare in our field.<sup>2</sup> This is because of, in part, the large costs of conducting a randomized clinical trial. Although such trials are expensive and cumbersome, their use of randomization and blinding has made them the gold standard for answering important clinical questions. Alternatively, analyses of actual clinical practice patterns using existing databases (often developed for purposes other than research) may yield new insights. The latter approach can provide information on large numbers of patients but, not being randomized or blinded, may be subject to bias.

Moreover, when a single issue is examined using these two approaches, results can differ markedly. Random-

In this issue of ANESTHESIOLOGY, we are doing something a bit unusual. We have assembled a series of original articles, reviews, and editorials, all dealing with the economics of anesthesia practice. By presenting these articles together, we hope to provide our readers with a useful, thought-provoking—and perhaps controversial—"course" on some of the economic issues that confront us all.—The Editors

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ized clinical trials typically demonstrate that nearly any intervention is capable of decreasing the incidence of PONV. Contrast this with the application of these same interventions in an "uncontrolled" clinical environment in which clinicians presumably use their "best" techniques for all patients. For example, Cohen *et al.*<sup>3</sup> reported that an education program designed to encourage use of techniques to prevent PONV (*i.e.*, antiemetic premedication, nasogastric tubes, droperidol, metoclopramide) was successful, as measured by the increased frequency with which clinicians applied those interventions. Yet, the incidence of postoperative vomiting decreased minimally. Perhaps "structured" interventions are more successful in the context of randomized clinical trials than in clinical practice!

Watcha and White's article in the present issue offers a comprehensive overview of the existing literature regarding economics of anesthesia care, and they review the methodologies appropriate for future studies. A Medical Intelligence article by Sperry<sup>4</sup> provides an excellent overview of the principles of economic analysis that should facilitate the reader's understanding of Watcha and White's review. Investigators in academia and private practice should consider the recommendations from these articles. Watcha and White stress that the perspective from which studies are performed should be identified. If PONV distresses a patient but has no effect on duration of recovery room stay, a study that evaluates its impact on patient satisfaction yields markedly different results from one that examines only costs of providing care. Moreover, patient satisfaction may be high, despite pain and nausea, if other factors (*e.g.*, the physical plant where perioperative care is delivered, timing, and professionalism of care) are key to the patient's perception of quality of care. Only by identifying the perspective from which the study will be performed can we formulate the appropriate questions and determine the best way to answer them.

A final consideration is that new agents should be compared with the best available alternative to quantify incremental cost and benefit. In the absence of this information, practitioners and society cannot decide the value of new agents and technologies. Thus, in evaluating a new muscle relaxant, it may be difficult to demonstrate an important advantage over the excellent drugs already available in clinical practice. Similarly, a new inhaled anesthetic with lower blood solubility and, therefore, more rapid elimination may not be advantageous if the factor limiting patient discharge is not alertness after surgery. In contrast, development of an anal-

gesic free from the adverse effects associated with opioids or nonsteroidal compounds may change clinical practice dramatically.

Watcha and White's review reveals that the number of quality articles in this area have been few. Interestingly, that situation may be changing rapidly. This issue of *ANESTHESIOLOGY* contains two articles by Lubarsky *et al.*<sup>5,6</sup> demonstrating the role of information systems in controlling pharmacy costs. Two recent articles examine cost issues not related to drugs: Wright *et al.*<sup>7</sup> examined the accuracy of surgeon's predictions of operating room time compared with predictions from a computerized scheduling system. And Macario *et al.*<sup>8</sup> examined whether preoperative measures of patient illness predicted hospital costs, thereby justifying larger reimbursement for hospitals caring for sicker patients. We challenge our colleagues in academic and community practice to continue this new tradition of high-quality cost *versus* benefit outcome studies. Otherwise, we risk that decisions regarding our practice of anesthesia will be made by others.

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