

## CORRESPONDENCE

ulate "what-if" scenarios for different conceived anesthetic plans. The spreadsheet tool was useful in identifying relative costs of groups of anesthetics and techniques (e.g., regional vs. general).

**Conclusions.** Accounting of anesthesia pharmaceutical and disposable equipment costs can be simplified with the use of a computer spreadsheet program. The use of a computer spreadsheet allows non-computer programmers to quickly set up a customized tool to identify anesthesia costs at their individual hospital institutions. Application of the spreadsheet tool permits accurate cost accounting for drugs given to the patient, as well as drugs that are drawn up but not used (i.e., wasted at the close of each case). The tool allows comparative cost analysis between anesthetic techniques and agents and between individual anesthesia care providers. The tool also can be used to identify costly practices and monitor savings that result from educational efforts, as well as uncover or enhance the value of published clinical trials involving different anesthetic regimens.

**Arnold H. Morscher, M.D.**  
Assistant Professor of Anesthesiology

**Charles E. Smith, M.D.**  
Associate Professor of Anesthesiology

**Gregory J. Gordon, M.D.**  
Assistant Professor of Anesthesiology

**Nilesh Patel, M.D.**  
Anesthesiology Resident

Department of Anesthesiology  
MetroHealth Medical Center  
Case Western Reserve University  
2500 MetroHealth Drive  
Cleveland, Ohio 44109

## References

1. Lanier WL, Warner MA: New frontiers in anesthesia research: Assessing the impact of practice patterns on outcome, health-care delivery, and cost. *ANESTHESIOLOGY* 78:1001-1004, 1993
2. Peter D: The cost of anaesthetic vapours. *Can J Anaesth* 39: 633, 1992

(Accepted for publication April 22, 1994.)

Anesthesiology  
81:516, 1994  
© 1994 American Society of Anesthesiologists, Inc.  
J. B. Lippincott Company, Philadelphia

## Insensitivity of Implicit Memory to Anesthesia Methods

*To the Editor:*—Schwender *et al.*<sup>1</sup> are to be commended for their pioneering exploration of relationships among midlatency auditory evoked potentials, implicit memory, and methods of general anesthesia. A note of caution concerning their results seems warranted, however. They state that "implicit recall was statistically significant more often in group 1 than in the control group (group 4) or group 2 or group 3 ( $P < 0.01$ )."<sup>1</sup> Readers should not interpret this statement to mean that flunitrazepam/fentanyl anesthesia (group 1) significantly increased the incidence of implicit memory relative to isoflurane/fentanyl (group 2) or propofol/fentanyl (group 3) anesthesia. The significance level of  $P < 0.01$  in the statement apparently refers to a test comparing all four treatments and indicating that they were not all equivalent. Schwender *et al.* did not report additional analyses indicating whether groups 2, 3, and 4 individually differed from group 1. Such analyses, either with the chi-squared tests used by Schwender *et al.* or Fisher's exact tests, which are more appropriate because 50% of the cells have expected counts fewer than 5, indicate that group 1 differed significantly from group 4, but not groups 2 or 3 ( $P = 0.051$  by chi-squared test and  $P = 0.14$  by Fisher's exact test). Although the trend toward a greater incidence of implicit memory with the combination of the benzodiazepine and the opioid

than with the combinations of isoflurane or propofol with the opioid warrants further investigation, anesthesiologists' judgments about the choice of anesthetic regimens should not be influenced by these equivocal differences.

**Robert I. Block, Ph.D.**  
Assistant Professor

**M. M. Ghoneim, M.D.**  
Professor

Department of Anesthesia  
The University of Iowa  
Iowa City, Iowa 52242

## Reference

1. Schwender D, Kaiser A, Klasing S, Peter K, Pöppel E: Midlatency auditory evoked potentials and explicit and implicit memory in patients undergoing cardiac surgery. *ANESTHESIOLOGY* 80:493-501, 1994

(Accepted for publication April 22, 1994.)