ing automated records. However important outcome is to QI, analysis of process measures is required by JCAHO.*

We appreciate Dr. Lagasse's enthusiasm for better QI, and we agree with his opinions about the importance of voluntary reporting. However, we cannot share his faith in QI systems which place the total burden of recording and reporting on us imperfect humans.

Kevin V. Sanborn, M.D.
Associate Professor of Clinical Anesthesiology
Columbia University
Department of Anesthesiology
St. Luke's-Roosevelt Hospital Center
Amsterdam Avenue at 114th Street
New York, New York 10025

* Improving Organizational Performance. In "1995 Comprehensive Accreditation Manual for Hospitals" Joint Commission on Accreditation of Healthcare Organizations. Oakbrook Terrace, IL 1994, pp 219–66.

References

1. Sanborn KV, Castro JC, Kuroda M, Thys DM: The detection of intraoperative incidents by electronic scanning of computerized anesthesia records: a comparison with voluntary reporting. ANESTHESIOLOGY 1996; 85:977–87

2. Cook R, McDonald J, Nunziata E: Differences between handwritten and automatic blood pressure records. ANESTHESIOLOGY 1989; 71: 385–90

3. Lerou J, Dirksen R, van Daele M, Nijhuis G, Crul J: Automated charting of physiological variables in anesthesia: A quantitative comparison of automated versus handwritten anesthesia records. J Clin Monit 1989; 4:37–47

(Accepted for publication June 25, 1997.)

Anesthesiology
1997; 87:724–5

In Reply: — Dr. Lagasse makes an excellent point in reminding us of the quality control program he described in ANESTHESIOLOGY.[1] His department seems to have created the kind of atmosphere that is required to encourage honest reporting of critical events and has correctly focused on the system problems that account for most adverse outcomes. Unfortunately, one apparently good QI system does not speak for the universe of anesthesia groups nor for those in other disciplines. I suppose we have an argument that cannot be settled by the available data. I maintain, from my reading of the literature and subjective interpretation of anecdotes told to me by many practitioners, that the system Dr. Lagasse describes is the exception to the rule. Rather, an inference from Sanborn *et al.*[2] and similar in principle to some accounts of medication-error reporting,[3,4] more likely represents the reporting in most departments — incomplete and only slightly useful for improving the quality of care.

Perhaps Dr. Lagasse' s disagreement with the statement ". . . the benefit to patient care of anesthesia QA systems has not been rigorously established" rests in the interpretation of the word "rigorous" in this context. None of the studies he cites provides evidence of the cost benefit or substantive improvement in anesthesia related outcomes.[5–7] Only one actually measured benefits and it concluded that the financial savings were greater than the expense to achieve that result.[6] After searching the literature for evidence of the cost effectiveness of QA programs, the authors of that study concluded that the paucity of information is disturbing.[8] In Dr. Lagasse's study, no example is given to illustrate that their program improved care or reduced the rate of common-cause or special-cause events. The absence of measurable, substantive cost and quality benefits is but one of the factors hindering the development and implementation of effective QI or QA programs (Other reasons were discussed in the editorial). An effective program must be based on open, honest reporting of the circumstances of adverse events. I strongly believe that is the right thing to do even in the absence of rigorous experimental proof.

It would be useful to know more about compliance and quality of event reporting and about the utility of quality improvement as implemented by anesthesia practice groups. If this could be studied, I suspect the result will indicate that most programs are not highly effective; I'd be pleased to be proven wrong. But, it will be difficult if not impossible to measure the benefits of adverse event reporting using conventional statistical approaches. Because catastrophic events are rare, statistical significance has a chance of being achieved only for measures of changes in surrogates of the important outcomes. Perhaps qualitative research methods will be more effective for extracting the information needed to convince people that quality improvement programs can work.

As I mentioned in the editorial, I do believe that reporting systems should continue to operate because they identify some problems that can be corrected. But, we have a long way to go before our quality systems routinely reveal those important details of critical events that will lead to design of effective methods to prevent system and human errors.

Jeffrey B. Cooper, Ph.D.
Associate Professor of Anaesthesia
Harvard Medical School
Anesthesia Department
Massachusetts General Hospital
Boston, Massachusetts 02114

References

1. Lagasse RS, Steinberg ES, Katz RI, Saubermann AJ: Defining quality of perioperative care by statistical process control of adverse outcomes. ANESTHESIOLOGY 1995; 82(5):1181–8

2. Sanborn KV, Castro J, Kuroda M, Thys DM: The detection of intraoperative incidents by electronic scanning of computerized anesthesia records: A comparison with voluntary reporting. ANESTHESIOLOGY 1996; 85(5):977–87

3. Cullen DJ, Bates DW, Small SD, Cooper JB, Nemeskal AR, Leape LL: The incident reporting system does not detect adverse drug events: A problem for quality improvement. J Qual Improvement 1995; 21:541–8

4. Allan EL, Barker KN: Fundamentals of medication error research. Am J Hosp Pharm 1990; 47:555–71

5. Posner KL, Kendall-Gallagher D, Wright IH, Glosten B, Gild WM, Cheney FW: Linking process and outcome of care in a continuous quality improvement program for anesthesia services. Am J Med Qual 1994; 9:129–37

6. Eagle CJ, Davies JM, Pagenkopf D: The cost of an established quality assurance programme: Is it worth it? Can J Anaesth 1994; 41:813–7

7. Schisler JC: Implementing continuous quality improvement: A private practice's experience. Int Anesthesiol Clin 1992; 30:45–56

(Accepted for publication June 25, 1997.)