had pain relief estimated to be more than 80% and no longer required major analgesics.

In most patients, post-thoracotomy pain will eventually resolve, and in both of my patients, who had protracted pain, the condition may have been about to improve spontaneously. Certainly the results have very little scientific significance. The magnitude of the problems that both of these patients faced, however, seemed so monumental and the relief that they obtained from the chiropractor's treatments was so dramatic that I believe it is worth communicating with readers of the journal this approach as an alternative to be considered in patients with serious post-thoracotomy pain syndrome. Perhaps with a wider patient base and experience this may prove to be a beneficial method of treating these patients whose condition is so difficult, if not impossible, to manage by the current standard treatment.

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Monitoring patients in the intensive care unit after carotid endarterectomy

We are worried that Dr. Passerini's suggestion that postoperative intensive care unit (ICU) monitoring of patients who have undergone carotid endarterectomy (CE) is unnecessary (*Can J Surg* 1996;39:99-104) will be adopted as a cost-saving measure in some centres without further scrutiny.

Based on her Table IV (page 103), she stated that the "absence of events in the RR [recovery room] had a negative predictive value of 97%," implying that monitoring in the recovery room acts as a satisfactory screening test for postoperative complications. However, the data have been artificially forced into a two × two table format, since it is impossible to classify a patient who suffers a recovery-room complication as having no overall complication; this cell can be nothing other than zero. It is more proper to state that 97% (104 of 107) of those without complications in the recovery room continued to be free of major problems during their hospitalization. A more pessimistic view of the same data is that if the author's recommendations had been in effect during the study period, 38% (three of eight) of all major complications developed beyond the recovery-room period, potentially on the surgical ward. Also, the study patients spent an average of 3.5 hours in the recovery room, a period of time that may differ significantly from that in other hospitals — our endarterectomy patients remain in the recovery room a mean of 63 minutes before routine transfer to the ICU.

It is difficult to accept the author's strong conclusion that routine postoperative ICU care is unwarranted, since this study was an observational case series, lacking a control group for comparison. The routine ICU care that in fact occurred during this study may well have averted additional major complications. Clearly, whether or not ICU care prevents the development of, or progression to, significant complications will only be answered by a prospective controlled trial with randomization of care to either the ICU or general ward.

In Edmonton, hemodynamic instability is a common phenomenon after CE, developing in 62% of patients postoperatively.[1] Previous cohort studies have linked postoperative fluctuations in blood pressure with major complications,[2-4] and our experience is that severe postoperative systolic hypertension (greater than 220 mm Hg) is significantly associated with stroke and death. Although we believe that hemodynamic problems are best recognized and treated in an ICU setting, an acceptable compromise may be the use of intermediate care units with readily available arterial line monitoring and intravenous vasoactive agents.[5]

In these times of fiscal restraint, there are calls from all sides to restrict the use of expensive resources such as the ICU. However, since the question of whether ICU care actually prevents complications has not yet been answered, should not the surgeon's argument be to err on the side of patient safety? Until we become more skilled in predicting which patients are at most risk, where we decide to care for our patients after CE will depend on surgeon preference and availability of ICU resources. We must ensure that our decision continues to be founded on medical grounds rater than financial concerns.

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Dr. Passerini responds

In their letter, Drs. Wong and Findlay raise legitimate concerns of inappropriate interpretations of my study (*Can J Surg* 1996;39:99-104). I recognized the limits of my retrospective analysis and the fact that I could not rule out the role of intensive care unit monitoring in preventing major complications. I suggested that an alternative management for patients who had undergone carotid endarterectomy could be to extend the recovery room stay before deciding on admission to the intensive care unit on the basis of an early occurrence of complications. This suggestion is supported by the observations in other studies.[1-3] My conclusions specifically addressed the issue of "routine admission" to the intensive care unit. I believe that the decision to admit a patient to the intensive care unit should be based on assessment of the patient in the recovery room.

I agree that ideally a prospective controlled trial should be done to evaluate our clinical practices although it would be very difficult to do. With sound medical judgement we can apply current evidence from the literature to prospective evaluation of our practices. I agree that financial incentives have no place in decision making at the bedside. However, I believe that physicians have a social responsibility to use resources to the best of their knowledge rather than their preference, because financial restraints are a reality.

Improvement in anesthetic techniques, including regional anesthesia,[4] and improved surgical techniques allow physicians to manage patients differently. Changes in routine management are always difficult to implement. As a result of our experience, we have applied the recommendations made in my paper to extend the recovery room stay to 6 hours before discharging the patient to the surgical ward or the intensive care unit. Before implementing this change in practice, I and my colleagues held many discussions with staff in the anesthesia department, the vascular surgery service and the intensive care unit and with nursing staff. All patients are assessed by the anesthesiologist and the surgeon in the recovery room; they discuss their decision as to the need for intensive care unit monitoring with the intensivist. We have evaluated our short experience of just a few months with this new protocol: we currently admit to the intensive care unit about 25% of patients who undergo carotid endarterectomy. This is a higher percentage than we expected, probably reflecting our concern to provide "safe" care. We believe there is a learning curve associated with changes in practice. This prospective evaluation is ongoing and should provide further indications for intensive care unit monitoring of carotid endarterectomy.

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