

problem-stimulated learning techniques. Time constraints prevent the group problem-solving aspect of this process from being included.

Although the long-term retention of skills and knowledge has not been well assessed for advanced cardiac life support (ACLS) programs, evaluations of our courses at Dalhousie University have been outstanding. The ACLS course has been part of the undergraduate medical program since about 1981, and in the practical (stations) aspect of the course students have rarely failed to reach a mark of 75% to 80% (good to outstanding). We strongly affirm that students are "enlightened, excited and rewarded" by these courses.

As to the rigidity of practice that protocols encourage, Christenson and McGonigle's point about a sound framework of organization for the inexperienced or panicky resuscitator is well made. In addition, our profession has revealed a tendency to leap onto the bandwagons of new treatments before they are properly assessed. The more deliberate review process used by the American Heart Association and the Heart and Stroke Foundation of Canada has prevented the wholesale adoption of several initially tempting modifications to cardiopulmonary resuscitation and ACLS, thus avoiding outcomes that proved to be disastrous in the longer term.

With respect to the points raised by Dr. David Hollomby and associates (*ibid*: 151) we have the following responses.

- Undergraduate medical programs teach a great deal of material at a level far beyond that used by undergraduate students, and properly so.

- The life support courses teach very little that is not included elsewhere in the curriculum. The strength of the ACLS program is to show how such princi-

ples and knowledge are integrated to initiate the management of the most critically ill patients promptly and efficiently.

- Positioning courses in advanced resuscitation skills early in the postgraduate period is too late. A graduate may be required to apply ACLS skills and knowledge on the first day of internship.

- Since many schools already include ACLS courses in the undergraduate program this would not be an addition. Such time as is necessary — we suggest that it is much less than 136 hours — can and should be spread over the 4-year program.

Do we detect a pejorative use of the term "technical training"? It may be fashionable to emphasize the didactic and self-learning aspects of medical education, but surely we have a responsibility to ensure some degree of basic technical competence in our new graduates. Their patients would certainly expect and appreciate it!

We support Goldstein and Beckwith's suggestion that a "comprehensive resuscitation curriculum" be offered. Since there is much common ground, the number of course hours could be markedly reduced.

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To add further fuel to the resuscitation fire!

The University of Saskatchewan introduced the ACLS course into its medical curriculum for the final undergraduate year (clinical clerkship) in 1984. This was done at the request of the students and was not the result of bombardment by well-intentioned groups, which Dr. Hollomby and associates seem to fear so greatly (of course our students are largely well intentioned).

The ACLS program was initially offered midway through the final year but was subsequently moved to the beginning of the final year, again at the request of the students. As course director I have some reservations about whether this is the optimum position, but several years' feedback from the students suggests that it is quite satisfactory.

Our undergraduates are taught ACLS in accordance with the principles outlined by Drs. Christenson and McGonigle, and as expected they have had little difficulty in mastering the knowledge and skills required, achieving overall success rates in the 90% range. The standards for successful completion are exactly the same as those required of health care workers at higher levels. The only substantial difference in our instructional methods is that we place greater emphasis on simulated resuscitation and problem solving and less on didactic instruction.

Contrary to the viewpoints of some correspondents, our students have expressed very strong preferences for "hands-on, nuts-and-bolts" skills instruction in the final year. It is worth noting that in many hospitals and their associated internships and residencies the knowledge and skill are expected to have been acquired during the undergraduate years. The student feedback about the ACLS program and the more recently introduced Neonatal Advanced Life Support and Pediatric Advanced Life Support (for which I bear no direct responsibility) has all been strongly positive.

Perhaps the deans of the Ontario medical schools might find it more useful to talk to their students instead of to each other, especially when it relates to resuscitation training.

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