

**To the Editor:**

I read your editorial in *Prehospital and Disaster Medicine* and applaud you. You put into writing exactly the thoughts I've mulled over for the past two decades.

Not only is there a dearth of leadership in the world, but medicine, organized or otherwise, has abdicated by whimpering that "we must comply." There has been no vision, innovation or the self-confidence to offer better solutions to the real problems in health care.

Despite this, health care today is far ahead of the "good old days" which in retrospect weren't that good. In the years to

come, because of technology, health care will be light years better for those who have access to it.

I appreciate your thoughts very much and will pass them on to some of our administrators, Deans and Departmental search committees.

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**To the Editor:**

We recently read the letter of Dr. Maleck<sup>1</sup> discussing our work with cardiopulmonary resuscitation (CPR) performance in ambulances and helicopters,<sup>2-4</sup> and would appreciate an opportunity to respond. Dr. Maleck's comments are cogent and well-taken, and we would like to clarify the issues he mentions.

Our study on chest compressions in an ambulance<sup>2</sup> did not mention that the ambulance used was a van-type ambulance, and that the speed of the vehicle was approximately 35 miles per hour with at least two turns during the compression study period. We feel that the problems with performance of chest compressions in moving ambulances are due to motion (rather than space) considerations in any but the most cramped ambulances, but we did not evaluate the ability of subjects to perform compression in an immobile vehicle.

While an influence of ambulance size and design on the ability to perform in transit CPR may be possible, we feel that it is probably unlikely in any but the most extreme cases of motion or space limitations. Almost all ambulances provide more effective workspace than almost all helicopters; therefore, research on CPR in helicopters has focused on space considerations, while investigation of CPR in ambulances seem to illuminate the worst motion artifact as the problem in the ground setting.

The problem of CPR performance since has been demonstrated to extend beyond the prehospital setting into the emergency department resuscitation area itself.<sup>5</sup> Because of this, the pressure-sensing device alluded to by Dr. Maleck may provide some help, but the key to improved compressions may be more

personnel to perform CPR. This often is available in the ground ambulance setting, and usually is not available for the air transported patients. The fact that no extra personnel to help with CPR can be loaded onto the helicopter, combined with reports of dismal survival<sup>6</sup> for patients requiring in-flight CPR, mitigate against increased use of helicopters, such as the BK-117, for transport of patients in arrest.

The problem of providing efficient CPR in the helicopter well may lie in use of mechanical compression devices that have been demonstrated to be effective in rotor-wing aircraft.<sup>7</sup> These devices also may be a solution to provision of CPR in ground ambulances, with preliminary data appearing promising.<sup>8</sup> We agree with Dr. Maleck that further research into this is indicated, and appreciate his interest in our work.

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