

## Potential error in the use of AEDs during an in-flight emergency

*To the Editor:* In their recent case report regarding the use of an automated external defibrillator (AED) on a transatlantic flight, Katis and Dias<sup>1</sup> illustrate several important issues relating to the use of AEDs that educate us about this emerging trend of AED implementation on aircraft, in shopping malls and even at golf courses.

I feel it is important to clarify one important point, however. In the in-flight emergency case documented, the authors suggest that a potential error in the use of the AED led to “inappropriate intentions to start CPR in a spontaneously breathing patient with a pulse.” This inappropriate action resulted from a message on the AED display screen. The problem is, there was no indication to use the AED device. In the case described the machine performed correctly, but the operators did not.

AEDs currently deployed on aircraft in North America are not approved for use on a patient with a pulse, breathing or with other signs of life. In fact, given that this patient is described as having a pulse of 55 beats/min, a blood pressure of 90/60 mm Hg and a respiratory rate of 12 breaths/min shows that there are contraindications to placing the device on the patient or to even powering on the device. The guiding principle of AED use is that they are only designed to shock rapid, unstable rhythms such as ventricular fibrillation or ventricular tachycardia, neither of which would be present as described in this case.

As the deployment of these lifesaving devices becomes more common in our community centres and shopping malls it is the responsibility of all physicians, regardless of area of practice, to be current in CPR and the use of AEDs. In fact, many aircraft now carry

a fully stocked medical kit, which includes a hand held rhythm monitor and a full ACLS drug complement.

Although I commend every physician for assisting during in-flight emergencies, be aware that flight crews naturally assume the physician will be knowledgeable in all facets of emergency response. I do agree with the authors, who recommended larger screens and universal voice prompts, but I would add one stronger recommendation. Peer into your wallet and answer the following questions: Are you current in your CPR? and Have you received an orientation to the use and limitations of an AED? If not, I suggest you familiarize yourself with these devices and download the latest ACLS algorithms to your PDA so the next time you hear, “Is there a doctor on board?” you are not surprised when an AED and fully stocked medical kit arrive at your side.

**Allan Holmes, MD**

Royal Columbian Hospital  
New Westminster, BC

### Reference

1. Katis PG, Dias SM. Potential error in the use of an automated external defibrillator during an in-flight medical emergency. *Can J Emerg Med* 2004;6(1):45-7.

## Considering air embolism

*To the Editor:* I would like to commend Dr. Tang for her excellent discussion of paradoxical embolism consequent to arterialization of venous thrombi through a right-to-left shunt.<sup>1</sup>

A related phenomenon, paradoxical air embolism, has been of interest to the diving medicine community, since it may account for at least some cases of “undeserved” neurological decompression sickness occurring on relatively conservative dives within the limits of

standard dive tables.<sup>2,3</sup> Venous gas bubbles forming after normal dives are usually filtered and eliminated harmlessly in the pulmonary vasculature; however, there remains a chance that bubbles can pass across a patent foramen ovale, present in perhaps 28% of the general population, into the arterial circulation.<sup>4</sup> This is a separate mechanism from cerebral air embolism, occurring secondary to pulmonary barotrauma in divers who breath-hold on ascent from scuba dives.

There have also been many cases of iatrogenic arterial air embolism reported in the literature following inadvertent air injection at central line placement, vascular interventions in the catheterization lab, or surgery.<sup>5</sup>

It is important that emergency physicians consider the possibility of air embolism whenever neurological symptoms present after any dive or potential vascular misadventure. The treatment for suspected arterial air embolism, regardless of cause, is prompt hyperbaric oxygen therapy.

**John Fitz-Clarke, MD, PhD**

Hyperbaric Medicine Unit  
Queen Elizabeth II  
Health Sciences Centre  
Halifax, NS

### References

1. Tang CE. Paradoxical embolism: a rare life- and limb-threatening emergency. *Can J Emerg Med* 2004;6(1):40-4.
2. Wilmshurst PT, Byrne JC, Webb-Peploe MM. Relation between intra-atrial shunts and decompression sickness in divers. *Lancet* 1989;2:1302-5.
3. Bove AA. Risk of decompression sickness with patent foramen ovale. *Undersea Hyperb Med* 1998;25(3):175-8.
4. Hagen PT, Scholz DG, Edwards WD. Incidence and size of patent foramen ovale during the first 10 decades of life: an autopsy study of 965 normal hearts. *Mayo Clin Proc* 1984;59:17-20.
5. Blanc P, Boussuges A, Henriette K, Sainty JM, Deleflie M. Iatrogenic cerebral air embolism: importance of early