Cardiac arrest in Australian hospitals

The concept of "first-responder" defibrillation is not being embraced

THE ARTICLE IN THIS ISSUE of the Journal by Finn and Jacobs (*page 470*)[1] challenges our professions to find better ways of dealing with sudden unexpected cardiac arrest in the nation's hospitals — that is, in those places which should be best able to deal with it. Nurses, with a nursing perspective, wrote the article. It underscores the important role played by nurses, and the problem that needs to be addressed by nurses through their influence within our hospitals.

Australia played a major role in initiating coronary care wards for managing ventricular fibrillation (VF) in the early stage of myocardial infarction, through the work of Desmond Julian at Sydney Hospital[2] and Graeme Sloman at Royal Melbourne Hospital[3] during 1961 and 1962. While now taken for granted, one is apt to forget how controversial this development initially was, and how poor the initial results were until nurses were permitted to use defibrillators and so shorten the time from cardiac arrest to termination of VF. At the time, physicians claimed the high ground — defibrillators were too dangerous to be entrusted to nurses — ignoring the fact that the first article on successful use of external defibrillators was written in 1960 by two engineers and one surgeon.[4] Fortunately, reason and logic triumphed, and defibrillation became the most important priority for coronary care unit and intensive care unit nurses, with a doctor being summoned concurrently, and usually arriving in time to document return of consciousness and plan ongoing management.

Such pioneering work was followed by the development of automatic internal and external defibrillators (AIDs and AEDs, respectively). These are able to sense and interpret VF, and will operate and deliver a shock only if VF is present. They are small and ubiquitous. The US Vice-President, Dick Cheney, has an implanted AID. Indeed, the man who is "a heartbeat behind" the world's most powerful man is himself "a heartbeat behind" (obviously a number of heartbeats behind) the scrutiny of an automatic implanted defibrillator.

Implantation is one mode of use for defibrillators in people at high personal risk of VF. Another mode is public access defibrillation, where AEDs are placed in public places, like fire extinguishers, for use by minimally trained or untrained people, who apply chest pads to an unconscious person and respond to voice prompts delivered by the device. Providing such devices in Chicago's airport complexes (Box) has resulted in long-term, neurologically intact survival of 56% of sudden cardiac arrest victims, compared with no cases of neurologically intact survival before the devices were made available.[5] One of us (C S D) is responsible for a national program,[6] in which nearly 700 defibrillators have been installed in airports, train stations, and other busy public places across England. Early results suggest that 29 people have survived to hospital discharge after sudden cardiac arrest. The downside has been minimal, with no injury from use, and virtually no theft, misuse or vandalism. Other highly favourable experiences involving police and the community have recently been reported.[7,8]

What relevance does the community experience have for Australian hospitals? Finn and Jacobs have identified a number of anomalies. Certainly, AEDs are now available in many Australian hospitals, so that training for nurses in their use is easier, less formidable, and less costly. But most Australian hospitals (57%) still do not have these devices. In hospitals with any kind of defibrillator, 16% in Australia do not permit nurses to defibrillate; in those with AEDs, this figure is 9%. This practice persists despite the knowledge that survival decreases by 10% for each minute that passes after onset of VF until defibrillation is achieved — automatically by an implanted defibrillator, or with manual intervention after placement of pads by doctor, nurse — by anyone. It matters not who places the pads and pushes the button, but hospital procedures are often based on the view that it does. The outcome, demonstrated by hospital, national and published data, is that cardiac arrest is more successfully treated in Chicago or Heathrow airport, on an American Airlines or Qantas jet, or in a Boston post office, than in the vestibules, corridors or general wards of Australia's premier hospitals.

Two approaches to providing automatic external defibrillators (AEDs)

One of the many AEDs deployed along a concourse of Chicago's O'Hare Airport. The device is clearly signposted (not seen in picture), alarmed, and connected by automatic phone to the emergency medical centre.

AED in a corridor of a major Australian hospital. There is no signposting, the case is locked and no advice is given on the location of the key.

An example of the existing problem is shown in the Box, which contrasts the well signed, alarmed, and easily accessible defibrillator at O'Hare Airport with the unsigned, unalarmed, padlocked defibrillator in the corridor of a major Australian hospital. Providing a defibrillator in such a way is a contemptuous gesture to modern knowledge, and to pronouncements of the Australian Resuscitation Council, as described by Finn and Jacobs. This "AED in a cage" symbolises the problems exposed by Finn and Jacobs,[1] and illustrates the 1960s view — that defibrillation is the preserve of the enlightened few with access to the key.

We are not overly concerned with the issue raised by Finn and Jacobs in relation to CPR training for medical staff. Their survey was sent to directors of nursing and the replies reflect the nursing perspective, which may not include full knowledge of medical staff activities. Medical practitioners usually prefer to train themselves in resuscitation, and there are surely few who cannot initiate CPR or use a defibrillator, so the number of hospitals identified as offering CPR training to doctors may not be important. We are delighted to see how many hospitals train lay staff in resuscitation. Hopefully, the future will see more communication between doctors, nurses and lay staff at hospitals where issues of "turf", keys, and locked cages can be resolved, and where the chain of survival can be initiated expeditiously wherever and whenever the need arises. Forty years ago, the Australian hospital system was slow to pick up on the inspirational but logical initiative of Julian, Gaston Bauer (who recruited Julian to Sydney Hospital and encouraged subsequent developments) and Sloman. It remains slow in throwing off the shackles of officialdom. Finn and Jacobs are to be complimented on their fine work.

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