The role of automated external defibrillators in rural general practice

KARENA HANLEY

JOHN DOWLING

GERARD BURY

ANDREW MURPHY

SUMMARY
In a questionnaire survey (100% response rate) investigating the availability and use of automated external defibrillators (AEDs), it was found that the success rate (number discharged alive) compared favourably with pre-hospital defibrillation by other providers, and that AEDs aided the management of dysrhythmias not commonly seen in general practice. With appropriate training they are useful in rural general practice.

Keywords: defibrillators; dysrhythmia; general practitioners.

Introduction
A recent study has indicated that there is insufficient carriage of defibrillators by general practitioners (GPs).1 One reason for this may be doubts about how often they would be used.2 Most research has concentrated on the success rate of defibrillation in general practice.1 It has been recognized there are associated benefits of having access to a defibrillator.

Since May 1995, 17 practices have been provided with access to an automated external defibrillator (AED) by the Donegal Pre-Hospital Emergency Care Programme. Allocation is on the basis of both distance from hospital and participation by the GPs in an immediate care cardiac course. These AEDs (Laerdal Heartstart 3000) are similar to the model used in the ‘Heartstart Scotland’ project.4

Methods
A questionnaire survey was undertaken in August 1997 requesting participating GPs to identify all occasions on which they had used their AEDs. The questionnaire was designed using initial reports of situations in which the AEDs had been used, followed by a pilot survey in three practices. Data was collected on the types of clinical situations in which the AED had been used, on-call arrangements, and availability of the AED.

Twenty-six principals and 11 assistants were included. Vocational trainers were asked to include incidents in which trainees had used the AED in their figures.

Results
Thirty-seven questionnaires were sent out and all were returned following telephone reminders within five weeks.

Availability of the AEDs
Participants had on-call duties averaging a 1:3 rota (range 1:1 to 1:6). Twenty (54%) doctors always had the defibrillator on hand when in surgery or on duty. A further 10 (27%) had access to the defibrillator more than 50% of the time and seven (19%) had the defibrillator immediately available less than 50% of the time. The latter group represent rotas where participants do not share a centre of practice and distances are involved in transferring the defibrillator.

AED use
Table 1 lists the clinical situations in which AEDs were used and the estimated numbers of use for each indication. Four (10.5%) doctors had never used the defibrillators.

Those who reported use of an AED for defibrillation or treatment of a dysrhythmia were contacted by telephone. Eleven doctors confirmed that they had defibrillated from one to five patients, with a total of 24 defibrillated patients in all. Eight machines had been used for this purpose. Five patients were admitted to hospital and three were discharged alive.

Four doctors confirmed they had treated, under monitor guidance, one dysrhythmia each. Three of these were treatment of ventricular tachycardia from which two patients survived. The other was treatment of a supraventricular tachycardia.

Regarding the use of AEDs in cases of suspected acute myocardial infarction (AMI), the median number of uses quoted was three in the period of study. Seventeen doctors had used the AED for a non-cardiac event, such as collapse or trauma, on a total of 28 occasions, and nine doctors had confirmed death with the monitor on 12 occasions.

Discussion
In this study, every AED had been used. The number of AMIs cited as having been monitored is consistent with the prevalence of suspected AMI encountered in the same population and reported previously.3 The success rate of defibrillation (number discharged alive) (12.5%) compares favourably with pre-hospital defibrillation by other providers.5

The monitor also aided the management of dysrhythmias not commonly treated in general practice. Only four GPs had never used the AED: one doctor was part-time and three had not attended the cardiac course.

As a safety feature, this type of AED allows defibrillation only when the patient is in ventricular fibrillation or has a ventricular tachycardia of over 180 beats per minute. These machines are low maintenance and, with appropriate training, are useful in rural general practice.

References
Table 1. Number of doctors quoting each indication and frequency of use of AEDs.

<table>
<thead>
<tr>
<th>Clinical reasons for which AEDs were used by GPs for monitoring or treatment</th>
<th>Number of GPs quoting use for this indication (%)</th>
<th>Total estimated uses for this indication (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ventricular arrhythmia with defibrillation</td>
<td>11 (29.7)</td>
<td>24 (6.3)</td>
</tr>
<tr>
<td>Monitoring suspected AMI</td>
<td>32 (86.5)</td>
<td>171 (45.3)</td>
</tr>
<tr>
<td>Monitoring other cardiac event</td>
<td>21 (56.7)</td>
<td>139 (36.7)</td>
</tr>
<tr>
<td>Active treatment of dysrhythmia</td>
<td>4 (10.8)</td>
<td>4 (1)</td>
</tr>
<tr>
<td>Monitoring non-cardiac eventa</td>
<td>17 (49.9)</td>
<td>28 (7.4)</td>
</tr>
<tr>
<td>Confirmation of death</td>
<td>9 (24.3)</td>
<td>12 (3.2)</td>
</tr>
<tr>
<td>Total</td>
<td>37 (100)</td>
<td>378 (100)</td>
</tr>
</tbody>
</table>

*aNon-cardiac collapse or road traffic accident.


Address for correspondence
Dr Karena Hanley, Health Centre, Milford, County Donegal, Republic of Ireland.