portantly, bringing greater consistency to national decisions on educational matters.

The settlement regarding course organizers' pay and their inclusion in the regional postgraduate medical education structure, provides a unique opportunity to debate the future needs of general practice education and the strategies necessary to meet those needs.

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Automated external defibrillation

SUDDEN death from a cardiac arrhythmia remains a leading cause of death in the community. A lethal ventricular arrhythmia, particularly ventricular fibrillation, is responsible for the majority of such deaths.[1-3] Several reports have testified to the effectiveness of defibrillation performed by general practitioners;[4-6] in one study over 40% of patients surviving cardiac arrest went on to leave hospital.[3] Recent advances in technology have revolutionized the practice of defibrillation. It is timely to review the way that recent developments may affect the general practitioner.

The automated external defibrillator incorporates developments in electronics that make it a very different machine from that which most doctors will remember from their hospital experience.[7,8] Operation has been simplified; the only requirement of the operator is to attach two adhesive electrodes to the chest wall of the patient and to activate the machine by a single control. The electrodes serve the dual function of monitoring the electrocardiograph and delivering the direct current shock. The electrocardiograph is processed electronically and interpreted automatically by the machine. If an arrhythmia responsive to countershock (ventricular tachycardia or fibrillation) is present, the device will charge itself to a predetermined level and advise the operator that a shock is indicated. This is administered by pressing a second control. Written instructions are provided on a liquid crystal display screen and some models also incorporate synthesized voices to instruct the operator.

These new defibrillators are accurate[9-11] and eliminate the need for training in the complex skills of electrocardiograph rhythm recognition. The simplicity of operation decreases the time and expense of initial training and increases considerably the range of personnel who can operate the defibrillator. It is the automated external defibrillator that has enabled such rapid introduction of defibrillators into the ambulance service; at present every front line ambulance crew in the United Kingdom is equipped and trained to use the defibrillator. Automated defibrillators have also been used by lay personnel in a variety of industrial and recreational environments and in the UK voluntary aid societies are now training their members to use the automated external defibrillator.[12-17]

One consequence of these developments is that many more attempts are being made to resuscitate the victims of cardiac arrest outside hospital and it is inevitable that general practitioners will be involved with an increasing number of these. The risk of cardiac arrest in acute myocardial infarction is greatest in the early stages of the attack and the priority is clearly to bring the defibrillator to the patient as quickly as possible. If the general practitioner is unable to do this or if there is likely to be a considerable delay in attending, it seems sensible for the doctor (not the patient) to mobilize the ambulance service initially and meet the ambulance crew at the scene as soon as possible. The doctor can then provide diagnostic skill and give intravenous opiate analgesia when appropriate; at least the defibrillator is present as soon as possible. Considerable success has already been reported from Scotland where the automated external defibrillator is in universal use.[18,19]

General practitioners provide the initial medical care for many victims of myocardial infarction, a group of patients at high risk of developing ventricular fibrillation. Approximately 5% of all victims (perhaps 10 000 people in the UK each year) actually experience a cardiac arrest in front of their general practitioner (either in the surgery or at the patient's home).[5,20] The automation of several stages in the processes of defibrillation is an additional advantage to the general practitioner who may initiate resuscitation with only limited help available. A practice contemplating the purchase of a defibrillator should consider the automated external defibrillator; the cost is no greater than a manual defibrillator. All practice partners can learn to use the machine within a matter of hours regardless of previous experience, and the simplicity of operation reduces the need for refresher training. Other members of the practice team, for example nurses, might also learn to use the device. Most models incorporate a control or pass card that will change the defibrillator into the manual mode of a traditional defibrillator, should this be preferred by individual practice members.

The automated external defibrillator has brought the practice of defibrillation within the capability of all medical and paramedical personnel who care for patients outside hospital. The ability to give life saving treatment is now easily available to all general practitioners either by owning their own machine or by working with the ambulance service. This chance to reduce mortality from sudden cardiac death should be exploited immediately.

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