

repeated or reinforced if there is to be continuing benefit. Depressive illness remains one of the major health problems facing society: its monetary cost in the United Kingdom has been estimated at £240 million annually.<sup>21</sup> Its cost in terms of human misery and blighted lives through suicide is probably incalculable. General practice can respond not only in terms of better recognition and treatment but by raising awareness in the whole primary care team. The message must be reinforced that depression is common, recognizable and, above all, treatable.

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# What should be the general practitioner's role in early management of acute myocardial infarction?

ACUTE myocardial infarction has a 28-day fatality rate of about 50%,<sup>1</sup> and half the deaths occur in the first two hours after the onset of symptoms;<sup>2</sup> about two thirds of deaths occur in the community.<sup>3</sup> Hospital care starting several hours after the onset of symptoms can therefore have little impact on overall mortality from acute myocardial infarction. The patient's needs for medical care are immediate; there is no 'golden hour'—a period of time during which an injury may go untreated without harmful effects—within which appropriate medical help can be organized. Ideally, the first doctor summoned should be able to administer all three essential elements of coronary care—resuscitation from ventricular fibrillation, pain relief with opiates, and thrombolysis.

Administration of thrombolytic therapy in hospital between four and five hours after the onset of symptoms saves between 20 and 30 lives per 1000 cases of myocardial infarction within a month.<sup>4</sup> Analysis of the three largest trials of prehospital thrombolysis suggests that the additional benefit within a month of prehospital thrombolysis is about 20 lives saved per 1000 cases of myocardial infarction per hour of earlier treatment.<sup>5</sup> Follow up of the Grampian region early anistreplase trial shows that there are further substantial mortality benefits after the first

month because patients with small first infarcts are better able to survive subsequent reinfarction.<sup>6</sup> The true benefit of prehospital thrombolysis may be as much as between 60 and 70 additional lives saved per 1000 cases of myocardial infarction per hour of earlier treatment; at least one in 10 lives will be saved by prehospital thrombolysis.

Giving thrombolytic therapy at the first opportunity is thus a matter of the utmost urgency; in terms of potential lives saved, it is more urgent even than resuscitation from cardiac arrest. More lives are likely to be lost by deferring thrombolysis until the patient enters hospital than would be lost by a similar delay in initiating treatment for ventricular fibrillation.<sup>7</sup>

Recognizing the importance of early thrombolysis, a British Heart Foundation working party on the early management of myocardial infarction considered that, ideally, patients should receive thrombolytic therapy within 60 minutes of making contact with the medical/paramedical services.<sup>8</sup> A 90-minute target 'call to needle' time was adopted as being attainable.

Patients with chest pain who dial 999 arrive in hospital sooner than those who call their family doctor.<sup>9,10</sup> This has been used as an argument for encouraging patients with chest pain to bypass their doctors. This policy discounts the possibility of general

practitioners giving thrombolysis, and ignores the value of their general medical care and personal knowledge of the patient. If the general practitioner is bypassed, using 'scoop and run' ambulances equipped with defibrillators, patients are denied pain relief and thrombolysis until after they have been transported to hospital. Success of this strategem depends on there being no delay once hospital is reached, but delays of an hour or more after arrival in hospital are the rule rather than the exception,<sup>9</sup> although they can be reduced.<sup>11,12</sup> By initiating coronary care when and where the patient is first seen, inhospital delays are avoided. Moreover, many eligible patients do not receive thrombolytic therapy in hospital,<sup>13</sup> perhaps because they are admitted to general medical wards,<sup>10,14</sup> or because an age limit is applied.<sup>15</sup> Giving it in the community before hospital admission ensures that eligible patients do receive thrombolytic therapy.

Numbering 32 000, general practitioners constitute an ample resource for the provision of prehospital coronary care, and the medical training and experience of general practitioners are excellent foundations on which to build the additional skills required for acute coronary care. By contrast, it is simply not possible for the 351 cardiologists in the United Kingdom to supervise the early management of coronary patients.

There is a growing acceptance of the important role of general practitioners in the early management of acute myocardial infarction, and the British Heart Foundation now gives explicit support for the policy of general practitioners giving thrombolytic therapy.<sup>8</sup> It is accepted that where journey times exceed 30 minutes, or combined journey and hospital delays exceed an hour, it would be better for patients with acute myocardial infarction if general practitioners initiated thrombolytic therapy.<sup>16,17</sup>

The Royal College General Practitioners myocardial infarction study is reported in this issue of the *Journal* (p.175)<sup>18</sup> and is helpful in providing independent confirmation of the feasibility and safety of thrombolytic administration by general practitioners, outwith the setting of a formal clinical trial.

Feasibility has to be considered in relation to time saving, and it is gratifying to find that half the patients in this study were seen by their doctors within 90 minutes of the onset of symptoms.<sup>18</sup> This means that it is realistic to expect patients to be given thrombolytic therapy by their general practitioners at a median time of about two hours after symptom onset, considerably earlier than is generally possible in hospital, and at a time when the treatment is highly efficacious.

There are two aspects to safety: the occurrence and management of adverse events, and accuracy of diagnosis. Serious adverse events were infrequent in the RCGP myocardial infarction study, but the study was not controlled, and was not large enough to demonstrate the slight excess of ventricular fibrillation that is associated with injection of a thrombolytic agent.<sup>19</sup> The authors rightly emphasize the importance of general practitioners who attend patients with acute myocardial infarction being equipped and prepared to defibrillate, whether or not they give thrombolytic therapy. Of minor adverse events, fall of blood pressure was the most common, and none presented any great management problems.

Electrocardiographic confirmation of the diagnosis of myocardial infarction was not required for giving thrombolysis because this was not stipulated in the data sheet for anistreplase; electrocardiograms were recorded in 69% of cases receiving thrombolytic therapy. The recordings were not made available to the investigators, so it is not known whether they were correctly interpreted or, indeed, whether they contributed at all to the decision to give thrombolytic therapy. The claim by the authors that thrombolytic therapy was given safely therefore needs to be qualified because there is now a consensus opinion that the diagnosis of myocardial infarction should be confirmed by an elec-

trocardiogram before thrombolysis is given.<sup>8,20,21</sup> The study shows that in everyday practice clinical diagnosis of acute myocardial infarction may not be so accurate as it is under trial conditions, underlining the importance of confirming the diagnosis by electrocardiogram before giving thrombolysis. The electrocardiogram should not be seen as an impediment to thrombolysis, but rather as an important safeguard, for the doctor as well as for the patient.<sup>8</sup>

A majority of patients in the user group did not receive thrombolytic therapy from their general practitioners although these doctors had expressed a willingness to give it. It would have been helpful to know how many of these patients received thrombolytic therapy in hospital. One suspects that in many cases the reasons given for patients not receiving thrombolysis from their general practitioner were specious, the real reason being the doctor's lack of confidence. An important practical reason for non-administration of anistreplase was its requirement for storage at 5 °C which meant that it was often not to hand when needed. This is not a problem with urokinase, which is also given as a bolus injection but may be stored at room temperature. It also has the advantage of being non-antigenic, so may be used repeatedly and in patients with previous exposure to streptokinase or anistreplase.

The efficacy of prehospital thrombolysis has been amply demonstrated by randomized clinical trials, and feasibility and safety have been shown by the RCGP study. We now face the difficult task of translating clinical research into clinical practice, the most serious obstacle being the need to develop new expertise and judgement on the job. The traditional way of acquiring a new medical skill — see one, do one, teach one — is not good enough for the administration of an extremely potent therapy with the potential for catastrophic harm as well as immense benefit; a more extended period of supervision and support is required. In Grampian this is being provided by an audit of the prehospital management of acute myocardial infarction supported by Grampian Health Board and the Scottish Home and Health Department.

The recent involvement of general practitioners and the RCGP in such an important area of clinical practice is most welcome, and is to be encouraged. Perhaps the best way for this involvement to develop might be for the RCGP to coordinate an audit of prehospital coronary care by general practitioners. The faculty structure of the RCGP would permit the day-to-day organization to be devolved to the regions, and would facilitate essential feedback of results to participants.

Any efforts made by the profession need to be backed by a high-level National Health Service initiative to encourage general practitioners to acquire the knowledge, skills and equipment to fulfil their role as main providers of prehospital coronary care.

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