Delay in the treatment of acute coronary syndromes

Robin M Norris

Ventricular fibrillation (VF) is the major mode of death in the acute coronary syndromes (ACS). VF occurs most commonly at or near the onset of an acute ischaemic episode and is most readily treated by defibrillation when it happens within an hour or so of the onset. It follows that the proper management of patients with ACS is to provide them with access to a defibrillator as soon as possible after they call for help. Ambulances carry defibrillators and paramedics are trained to use them.

Delay in coming under care is the most potent avoidable risk factor for patients with developing heart attacks, and the risk from not having immediate access to a defibrillator is greater than the risk of more serious damage to the myocardium from delay in delivery of thrombolysis or primary angioplasty.1,2.

In this issue of the Journal, Garofalo and colleagues3 from Middlemore Hospital in Auckland, New Zealand describe the delay from onset of symptoms to defibrillator availability in 805 consecutive patients with ACS admitted over an 18-month period during 2009–2010. Defibrillator availability was defined as the time of arrival at hospital or the time of arrival of an ambulance, whichever was the sooner. Middlemore Hospital was an ideal site for the study since it serves the population of South Auckland with its mix of ethnicity and degree of social deprivation.

Results of the study are important and give cause for concern. The median time from onset to defibrillator availability was nearly 3 hours, the most important determinant of delay being the patient's behaviour in calling for help. For the 43% of patients whose first call was to the ambulance, the median time from onset to defibrillator availability was 1¼ hours, but for the 34% who called their general practitioner the time was 9¼ hours, a full 8 hours longer than if they had called the ambulance.

Māori, Pacific Islanders, and Asian Indians as well as patients from areas of high social deprivation were less likely to call the ambulance. The assumption must be that patients arriving with the longest delays must increasingly be a population of survivors who have had the good fortune to have escaped the complication of VF which happens in perhaps 10–20% of ACS, most commonly over the first few hours. Those who have died before they reach hospital are of course unaccounted for.

Only 20 (2.5%) of the 802 Middlemore patients had a cardiac arrest, and we are not told whether these arrests happened in the ambulance or in hospital or how many survived to be discharged from hospital. Again the assumption must be that an avoidable number of patients died outside hospital because of unnecessary delay.

What needs to be done? First, we need to know to what extent the problems at Middlemore Hospital happen throughout New Zealand. We also need to know the relationship between delay and success of defibrillation both in and out of hospital. This implies collaboration between hospital clinicians and the ambulance service, and a seamless national audit of the treatment of ACS both inside and outside hospital.
recent publication in this Journal confirms the vital role of the ambulance service in preventing death from out-of-hospital cardiac arrest.

Second, we need to re-evaluate the role of the general practitioner in dealing with patients with putative ACS. Of course the Middlemore data tell us only the bare facts, and there may be legitimate reasons for delay in many cases. Many patients may delay calling the GP until after their symptoms have abated and are probably at low risk of arrest. Many practices may have defibrillators and can safely evaluate patients in their surgeries, ordering an emergency ambulance for those with continuing pain or with ST segment elevation in the electrocardiogram. Nevertheless, the Middlemore study raises important questions.

What happens when a patient with acute chest pain telephones his or her GP? If this happens during working hours, the call will be answered by a receptionist. Is the call referred immediately to the doctor, is the patient given the next available appointment, or are receptionists instructed to advise patients to call 111 for an emergency ambulance? If the call happens outside working hours does the recorded message from the surgery specifically advise patients with emergencies such as acute chest pain, breathlessness or bleeding to call the ambulance directly, or is some less specific advice given?

Nearly 20 years ago, the National Heart Foundation instigated a public educational campaign in New Zealand (Heart Attack Action!) which gave the message "Chest pain lasting more than 15 minutes. Call 111 for the ambulance." The aim of the campaign was to raise funds for all ambulances carrying cardiac patients to be equipped with defibrillators so that patients with ACS could be protected during their journey to hospital. But disappointingly only a minority (43%) of the Middlemore Hospital patients called the ambulance, and Māori, Pacific Islanders and socially deprived people were less likely to do so than less deprived European New Zealanders.

A recent publication from the UK Myocardial Ischaemia National Audit Project (MINAP) on more than 600,000 patients treated between 2003 and 2010 reported that nearly 60% had called the emergency services and the proportion doing so was greater in older than in younger patients.

We need a repeat of Heart Attack Action!, but this may not be sufficient because "one-off" campaigns of this type have had limited success. As with advice against smoking, public health education may take years or decades to be effective, and in other countries (Denmark and Germany in particular) campaigns to reduce patient delay in calling for help are continuing. Here in New Zealand, advice on Heart Attack Action! could be usefully combined with public education on optimum dietary and lifestyle factors for primary prevention of coronary heart disease.

Competing interests: None declared.

Author information: Robin M Norris was cardiologist in charge of the Coronary-Care Unit at Green Lane Hospital and Honorary Professor of Cardiovascular Therapeutics at the University of Auckland School of Medicine until 1992. After 1992 he was an honorary consultant cardiologist at the Royal Sussex County Hospital, Brighton, UK from where he directed the UK Heart Attack Study and helped to set up the UK Myocardial Infarction National Audit Project (MINAP). He is now retired.
Correspondence: Dr Robin Norris, 17 Aberdeen Rd, Castor Bay, Auckland, New Zealand. Email: robbinorris@orcon.net.nz

References:

1. The United Kingdom Heart Attack Study Collaborative Group. Effect of time of onset to coming under care on fatality of patients with acute myocardial infarction: effect of resuscitation and thrombolytic treatment. Heart 1998;80:114-120.