
Editorial

Patient delay in calling for help: the weakest link in the chain of survival?

On average, one third of cases of myocardial infarction (MI) are fatal before hospitalisation and most of the deaths have occurred within four hours of the onset of acute symptoms.¹ The very high pre-hospital mortality is particularly a problem in younger patients as over 90% of the deaths in those less than 55 years old occur before they come to hospital, whereas in the 70–74 year age group 67% of the deaths occur outside hospital.² A greater emphasis on pre-hospital care has more potential for reducing the mortality from acute MI than further development of hospital based treatments.

The delay between the time of onset of symptoms and the time at which the patient comes under medical attention is a major determinant of prognosis in acute MI; the largest single component of the delay is that taken by the patient deciding to summon help.³ In the UK heart attack study, lives saved per thousand patients treated were 107 for patients coming under care within one hour of onset, compared with 31 for those coming under care at 4–12 hours and 21 if the delay was 12 hours or greater.⁴ Reducing delay optimises the benefit of thrombolytic treatment and is also crucially important for improving outcome in patients who develop ventricular fibrillation. Currently only about 25% of all infarct patients receive thrombolytic treatment and this number would increase significantly if delays were shortened. Delaying the administration of thrombolysis by 30 minutes, particularly in the early hours of acute MI, reduces life expectancy by an average of one year.⁵

Which patients with acute MI delay in calling for help?

The median time from onset of symptoms to calling for help ranges from 2–6½ hours.³ Observational studies have indicated the patient attributes associated with prolonged delay include female sex, older age, a history of diabetes mellitus and angina pectoris, and people who live alone.⁶ Somewhat surprisingly several studies have shown that patients with previous infarction do not call sooner.^{6,7} Patients whose symptoms develop at night are more likely to delay, probably because they do not want to trouble the doctor out of hours and are hesitant to call an emergency ambulance for what might be a trivial problem. Patients generally will call an ambulance earlier than their general practitioner (GP), and those who call an ambulance arrive in hospital on average an hour sooner than those who call their GP.⁸

A patient's call for help seems to be instinctively related to his or her level of distress and the severity of pain,⁹ and the degree of left ventricular dysfunction in patients with larger infarcts is associated with shorter response times.¹⁰

What can be done to shorten delay times?

Patients have difficulty identifying the onset of vague prodromal symptoms that wax and wane, and approximately one third of patients do not report an abrupt onset of

symptoms.⁶ A major cause of delay by patients seems to be a failure to recognise the significance of their symptoms. Symptoms may be misinterpreted, perhaps because of a psychological defence mechanism such as denial or displacement and rationalisation.¹¹ However for many people their perception of a heart attack is a dramatic event, perhaps accompanied by collapse. The study by Ruston and colleagues showed that for most victims the heart attack differed considerably from their concept of a heart attack.¹² This misunderstanding needs to be dispelled. Studies indicate that if patients believed they were experiencing a heart attack and they were aware of the significance of their symptoms then they would delay less in seeking medical treatment.¹²

A previous history of MI has been associated with a prolonged delay in some studies and a shorter delay in others,¹³ indicating that a patient's behaviour may be favourably influenced by receiving better information about recognising significant symptoms. This is supported by the observation of Ridker and colleagues who found that well informed patients experience significantly shorter delay.¹⁴

Keynon and colleagues have shown that acute MI patients who are more sensitive to somatic and emotional symptoms seek treatment significantly earlier.¹⁵ Similarly, angina patients with silent ischaemia also seem to have a low awareness not only of cardiac but also of other somatic sensations. This raises the possibility that assessment of these characteristics, using standard psychological tools, in high risk patients could potentially allow identification of those liable to excessive delay in responding to symptoms of acute MI.

We know that patients with established coronary disease are high risk, accounting for up to 50% of heart attack admissions. These high risk patients and their families need to be targeted with clear information in a sensitive manner, taking care to avoid undue anxiety. This should be part of the educational material provided during rehabilitation. It is essential that patients with coronary heart disease are provided with clear information about what to do and who to call should they develop symptoms of suspected heart attack (for example, chest pain lasting more than 15 minutes often with nausea, sweating, and shortness of breath). They should be advised to call immediately for an ambulance. The earlier recommendation that patients should be encouraged to call their GP and the ambulance service needs to be simplified.¹⁶ Involving the GP increases delay and most GPs do not carry a defibrillator essential for effective treatment in the community. Although recent evidence indicates a shift from calls to the GP to the emergency services,¹⁷ most patients will probably continue to first call their GP who should have a practice policy for responding immediately and effectively to patients with chest pain.

High profile general public education campaigns of limited duration have shown only small trends for shorter time intervals. These general media campaigns seem to

have little long term impact. There is no evidence that media campaigns increase ambulance use and they have not resulted in any improvement in mortality.¹⁸ It is likely that a long term low intensity campaign raising the profile of coronary disease in the community, even starting in schools, would pay better dividends.⁷ Younger people tend to be more aware of media messages than the elderly¹⁹ and since most heart attacks occur in the home, an informed bystander has potentially an important role in a patient's decision to call for help. The National Service Framework should help by raising the profile of coronary heart disease in the community.

The paper by the Glasgow MONICA (monitoring trends and determinants in cardiovascular disease) group in a recent issue of *Heart* highlights the challenges to reducing delays in calling for help.²⁰ Only 25% of relatively young infarcts (< 65 years) called for help within an hour of symptom onset and 40% delayed more than four hours. Irrespective of their previous medical history, the majority of cases (55%) thought that phoning the GP should be their first course of action even though in Glasgow the ambulance is the locally agreed first line service. Of greater concern is the finding, as in other studies, that up to 50% of patients attributed their symptoms to non-cardiac causes. The most frequently given reason for delaying was "thinking that the symptoms would go away" and "not thinking it was serious".

The most critical factor influencing the delay in calling for help is the recognition by patients and others that the symptoms are cardiac. The profession must not be complacent about the difficulties to be overcome to influence behaviour. We must make it more acceptable for patients to access the emergency services. The European Council's recommendation of a single dedicated telephone number ("112") has not been widely implemented²¹ and this might be an opportunity for NHS Direct to triage all calls with chest pain. Whatever the strategy for pre-hospital care—and this will depend on local circumstances—we must increase resources in the community if we are to reduce the mortality from heart attack, particularly in the young.

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- 1 Chambless L, Keil U, Dobson A, *et al* for the WHO MONICA Project. Population versus clinical view of case fatality from acute coronary heart disease: results from the WHO MONICA Project 1985–1990. *Circulation* 1997;**96**:3849–59.
- 2 Norris RM, on behalf of The United Kingdom Heart Attack Study Collaborative Group. Fatality outside hospital from acute coronary events in three British health districts: 1994–95. *BMJ* 1998;**316**:1065–70.
- 3 Task Force Report. The pre-hospital management of acute heart attacks. Recommendations of a task force of the European Society of Cardiology and the European Resuscitation Council. *Eur Heart J* 1998;**19**:1140–64.
- 4 The United Kingdom Heart Attack Study Collaborative Group. Effect of time from onset to coming under care on fatality of patients with acute myocardial infarction: effect of resuscitation and thrombolytic therapy. *Heart* 1998;**80**:121–6.
- 5 Rawles JM. Quantification of the benefit of earlier thrombolytic therapy: five years results of the Grampian region early anistreplase trial (GREAT). *J Am Coll Cardiol* 1997;**30**:1181–6.
- 6 Dracup K, Moser DK, Eisenberg M, *et al*. Causes of delay in seeking treatment for heart attack symptoms. *Soc Sci Med* 1995;**40**:379–92.
- 7 GISSI—Avoidable Delay Study Group. Epidemiology of avoidable delay in the care of patients with acute myocardial infarction in Italy. *Arch Intern Med* 1995;**155**:1481–7.
- 8 Birkhead JS, on behalf of the Joint Audit Committee of the British Cardiac Society and a Cardiology Committee of the Royal College of Physicians of London. Time delays in provision of thrombolytic treatment in six district hospitals. *BMJ* 1992;**305**:445–8.
- 9 Rawles JM, Metcalfe MJ, Shirreffs C, *et al*. Association of patient delay with symptoms, cardiac enzymes, and outcome in acute myocardial infarction. *Eur Heart J* 1990;**11**:643–48.
- 10 Trent RJ, Rose EL, Adams JN, *et al*. Delay between the onset of symptoms of acute myocardial infarction and seeking medical assistance is influenced by left ventricular function at presentation. *Br Heart J* 1995;**73**:125–8.
- 11 Dracup K, Moser DK. Treatment-seeking behaviour among those with signs and symptoms of acute myocardial infarction. *Heart Lung* 1991;**20**:570–5.
- 12 Ruston A, Clayton J, Calnan M. Patients' action during their cardiac event: qualitative study exploring differences and modifiable factors. *BMJ* 1998;**316**:1060–5.
- 13 Ottesen MM, Kober L, Jorgensen S, *et al* on behalf of the TRACE Study Group. Determinants of delay between symptoms and hospital admission in 5978 patients with acute myocardial infarction. *Eur Heart J* 1996;**17**:429–37.
- 14 Ridker PM, Manson JE, Goldhaber SZ, *et al*. Comparison of delay times to hospital presentation for physicians and nonphysicians with acute myocardial infarction. *Am J Cardiol* 1992;**70**:10–13.
- 15 Kenyon LW, Ketterer MW, Gheorghide M, *et al*. Psychological factors related to prehospital delay during acute myocardial infarction. *Circulation* 1991;**84**:1969–76.
- 16 Weston CFM, Penny WJ, Julian DG, on behalf of the British Heart Foundation Working Group. Guidelines for the early management of patients with myocardial infarction. *BMJ* 1994;**308**:767–71.
- 17 Birkhead JS, on behalf of the Myocardial Infarction Audit Group. Trends in the provision of thrombolytic treatment 1993–1997. *Heart* 1999;**82**:438–42.
- 18 Herlitz J, Blohm M, Hartford M, *et al*. Follow-up of a 1-year media campaign on delay times and ambulance use in suspected acute myocardial infarction. *Eur Heart J* 1992;**13**:171–7.
- 19 Blohm M, Herlitz J, Schroder U, *et al*. Reaction to a media campaign focusing on delay in acute myocardial infarction. *Heart Lung* 1991;**20**:661–6.
- 20 Leslie WS, Urie A, Hooper J, *et al*. Delay in calling for help during myocardial infarction: reasons for that delay and subsequent pattern of accessing care. *Heart* 2000;**84**:137–41.
- 21 The Council of the European Communities. Council decision of 29.7.91 on the introduction of a single European emergency call number (91/396/EEC). OJ 1991: L 217; 6.08, 1991.