

study in the absence of electrocardiographic criteria is not necessarily generally applicable. Unless thrombolysis is restricted to those presenting early and with classic symptoms of infarction, the proportion of alternative diagnoses (2.2%) is unlikely to be substantiated. For example, phase 1 of the myocardial infarction triage and intervention project found only one in six confirmed infarctions among those evaluated before admission to hospital.<sup>1</sup>

The statement that "even in an urban area there would be a temporal advantage in the general practitioner giving thrombolytic therapy in the home" is untested and cannot be extrapolated from the present study. A 1999 call and shortening of the delays in hospital would have reduced the difference between home and hospital treatment substantially. We have shown that in an urban area the time of administration of thrombolytic treatment after the onset of symptoms was reduced to a median of 150 minutes by the introduction of a "fast track" system.<sup>5</sup>

Until these issues are resolved it may be premature to advise the widespread implementation of pre-hospital thrombolysis without electrocardiographic confirmation.

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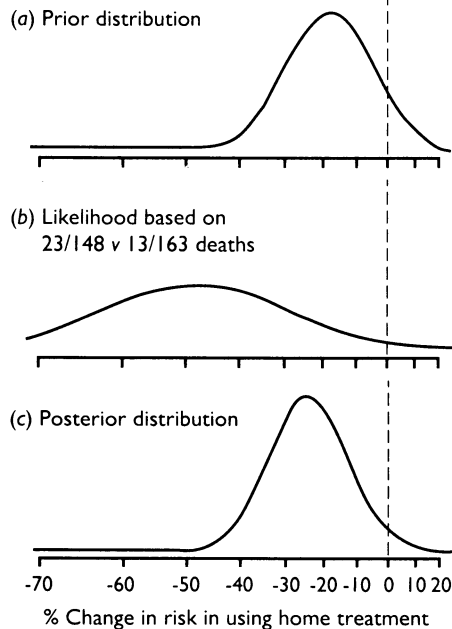
- 1 GREAT Group. Feasibility, safety, and efficacy of domiciliary thrombolysis by general practitioners: Grampian region early anistreplase trial. *BMJ* 1992;305:548-53. (5 September.)
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- 3 ISIS-2 (Second International Study of Infarct Survival) Collaborative Group. Randomised trial of intravenous streptokinase, oral aspirin, both, or neither among 17 187 cases of suspected acute myocardial infarction: ISIS-2. *Lancet* 1988;ii:349-60.
- 4 Weaver WD, Eisenberg MS, Martin JS, Litwin PE, Schaeffer SM, Ho MT, et al. Myocardial infarction triage and intervention project—phase 1: patient characteristics and feasibility of prehospital initiation of thrombolytic therapy. *J Am Coll Cardiol* 1990;15:925-31.
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EDITOR.—Much publicity has been, and will be, given to the finding of the Grampian region early anistreplase trial that patients who received thrombolytic treatment (anistreplase) at home had 49% fewer deaths than those who received it in hospital.<sup>1</sup> Unfortunately, the trial was really too small to estimate reliably any reduction in mortality, and so significance could be achieved only if (because of either chance or bias) an implausibly large treatment difference was observed. In such circumstances a bayesian analysis provides a useful interpretation by setting a surprising finding in the context of more cautious prior belief.<sup>2</sup>

First one expresses prior belief about the proportionate reduction in mortality due to thrombolysis at home. Given the known benefits of early thrombolysis<sup>3,4</sup> and the average two hours saved in time to treatment, it could be argued that a 15-20% reduction in mortality is highly plausible, while the extremes of no benefit and a 40% reduction are both unlikely. The figure (a) shows such a distribution of prior belief. This prior is compatible with the results of the European myocardial infarction project, in which the same drug was given to over 5000 patients.

In the Grampian region early anistreplase trial 23 of the 148 patients who received home thrombolysis died within three months compared with 13 of the 163 who received hospital thrombolysis. This is displayed in the figure (b). The observed 49% reduction is the mode of this distribution, and the 2% tail area beyond no effect indicates  $p=0.02$  one sided. The widely spread distribution illustrates the inevitable uncertainty with only 36 deaths in total.

Using Bayes's theorem, we have combined the prior belief and likelihood to produce a posterior belief distribution (figure (c)). This quantifies how opinion on the efficacy of home thrombolysis should be affected by the limited amount of highly positive data in the Grampian region early anistreplase trial. The peak of the posterior distribution is a 25% reduction in mortality, with a 95% confidence interval from no effect to a 43% reduction. Thus belief is shifted in a positive direction, but not by much, and, specifically, a halving of mortality remains implausible.



Bayesian analysis of data from Grampian region early anistreplase trial

Perhaps the Grampian region early anistreplase trial was just lucky. For instance, based on the figure (a) a difference of 23 versus 13 deaths or more should occur with probability 0.1. We are also concerned, however, about the emphasis on three month mortality (not a predefined end point), the lack of independent monitoring of data, the randomisation method, and the early stopping of the trial.

Overall, such an important therapeutic issue requires larger scale trials which can quantify the treatment effect precisely. Here we seem faced with publication bias. A small positive trial (the Grampian region early anistreplase trial) gets emphasised while another larger trial of the same issue (the European myocardial infarction project) remains unpublished. On a broader note, we would encourage a wider use of bayesian methods in reports of clinical trials, especially when a small trial is claiming a large treatment benefit.

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- 1 GREAT Group. Feasibility, safety, and efficacy of domiciliary thrombolysis by general practitioners: Grampian region early anistreplase trial. *BMJ* 1992;305:548-53. (5 September.)
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## On site medical services at major incidents

EDITOR.—Matthew W Cooke<sup>1</sup> and D G Nancekivill<sup>2</sup> emphasise the need for better organisation and training for hospital staff in providing on site medical services when a major incident occurs.

A hospital coping with a deluge of casualties from a major incident might be overstretched in providing one or more appropriate teams as well as a doctor senior enough to be the medical incident officer (the Department of Health has abandoned the term site medical officer). Cooke highlights the paucity of training in this role. Wide ranging discussions have taken place in London with representatives of the London accident and emergency consultants' group, the London Ambulance Service, the British Association for Immediate Care, and health emergency planning officers from each Thames regional health authority with the aim of creating a cadre of 40-50 trained and accredited medical incident officers. This scheme relieves the main receiving hospital of the onerous duty of providing all the resources required at the site. The scheme has been approved by all participants, but, in view of its variation from guidance from the Department of Health, individual units will retain the option of making their own arrangements.

Two established training courses for doctors are available nationally. A one day course is run by the British Association for Immediate Care each year in Cambridge, and a three day course on the medical management of major incidents is run jointly by the Royal Postgraduate Medical School and the British Association for Immediate Care at Hammersmith Hospital. This course is multi-disciplinary and combines lectures, seminars, and practical training for NHS staff called on to work as medical incident officers or with mobile medical and nursing teams. In the two years that the course has been run, 102 people have been trained. The participants undertake an assessment at the end of the course, a major function of which is to allow the course organisers to assess the effectiveness of the training offered in key principles.

Though advanced trauma life support courses offer excellent training in clinical aspects, specific training is required for all prehospital care, including elements of safety and working with the emergency services.

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- 1 Cooke MW. Arrangements for on scene medical care at major incidents. *BMJ* 1992;305:748. (26 September.)
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EDITOR.—We agree with D G Nancekivill that both medical incident officers and site medical teams for major incidents need to be trained and to be familiar with the procedures of the other emergency services.<sup>1</sup> We disagree that training is a problem. The British Association for Immediate Care has been training doctors in this work for many years.

The association produced its first guide to managing major incidents in 1985,<sup>2</sup> and the skills of doctors trained by the association were recognised in the report on the railway accident at Clapham.<sup>3</sup> The association's interservice and disaster liaison committee has been working with the ambulance, police, and fire services and the armed forces, coastguard, mountain rescue services, and, latterly, the Home Office adviser on civil emergencies on all aspects of managing major incidents. The association hopes to produce guidelines on the medical aspects of managing major