LETTERS

Thrombolytic treatment of acute myocardial infarction in general practice: need for evaluation

Hampton and McWilliam discussed prehospital management of patients with acute myocardial infarction.¹ Comprehensive clinically controlled trials have shown that thrombolytic treatment can reduce death from acute myocardial infarction.²⁻⁷

To obtain maximum effect thrombolytic treatment should be started as soon as possible after coronary thrombosis, but there are often considerable prehospital and in hospital delays before treatment. Prehospital thrombolysis has been introduced to shorten this treatment delay. It is now generally accepted that early diagnosis of acute myocardial infarction must be based on electrocardiographic evidence because only half of the patients with clinically suspected acute myocardial infarction will in fact have an infarct.⁸

All Danish general practitioners (GPs) have a contractual agreement with the national health service, and they are paid for electrocardiograms (ECGs). It is thus possible to obtain exact information of ECG activities in Danish general practice. More than 96% of the population is registered with an individual GP for medical care.

We analysed Danish health service to determine the rate of electrocardiography in 150 Danish general practices in the county of North Jutland. ECGs were taken in 79% (95% confidence interval 72% to 85%) of practices, significantly more in partnership practices than in single practices (89% *v* 72%; *p* = 0.02, Fisher's exact test).

In addition, all GPs who obtained ECGs were interviewed by telephone: 76% (67% to 84%) had a transportable electrocardiograph and 63% (54% to 72%) had a positive attitude towards possible prehospital thrombolytic treatment of acute myocardial infarction administered by GPs.

The proportion of Danish GPs who perform electrocardiography in general practice seems to be rather higher than in England.⁹ As GPs use many ECGs in their daily routine one essential prerequisite for prehospital treatment of acute myocardial infarction is fulfilled. Therefore thrombolytic treatment started by GPs might be an alternative to the specialised cardiac ambulances, especially in rural or isolated areas which are far away from the nearest hospital.

Prehospital thrombolysis may become routine in the near future, and an organisation to provide it will be required. Controlled clinical trials with evaluation of the benefits and safety of such treatment for acute myocardial infarction (provided by GPs or specialised cardiac ambulances, or both) are needed before prehospital thrombolysis becomes

accepted good practice unsupported by published evidence.

HENRIK TOFT SØRENSEN

EJLER EJLERSEN

HENRIK HØJGAARD RASMUSSEN

Department of Internal Medicine M,
Aalborg Hospital,
DK-9000,
Aalborg,
Denmark

JENS MØLTER-PETERSEN

Department of Medicine M,
Randers Hospital,
DK-8900,
Randers,
Denmark

FREDE OLESEN

Institute of General Practice,
University of Aarhus,
DK-8000,
Aarhus C,
Denmark

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Population screening for osteoporosis

In the reformed NHS, health authorities are responsible for purchasing effective health care for their populations and thus ensuring health gains. Little information on the effectiveness of health care interventions, however, is readily available, and the task of obtaining such information, given the vast array of diagnostic and therapeutic procedures and resource and methodological considerations, is beyond the scope of most district health authorities and provider units. The Department of Health's project, commissioning *Effective Health Care* bulletins for advising purchasers and providers was therefore welcome news and the reports were

eagerly awaited. The first bulletin produced in January 1992¹ addressed a major public health problem – osteoporosis – and focused on screening to prevent fractures. Though agreeing with its conclusion that routine population based bone screening programme for menopausal women with the aim of preventing fractures was inadvisable, we and others (National Osteoporosis Society press release, 17 January 1992) disagree with many other conclusions in the bulletin. The limited examination of the evidence for many issues – highlighted on the first page of the report, usually the part read by many busy health care professionals and managers – and little consultation with the prominent workers in the field made for an incomplete report and seriously jeopardised our efforts to examine bone density measurements for identifying high risk women.

Population screening has not been advocated by any of the centres carrying out bone densitometry. The current work in Aberdeen and Humberside is addressing its potentials and is in the research stage. The bulletin therefore addresses a proposal that has not yet been promoted. The potential for beneficial effects of alternative antiresorptive therapy that is, bisphosphonates – was ignored; similarly the potential for beneficial effects of hormone replacement therapy (HRT) on fractures in the bulletin was confined to prevention of hip fractures and ignored fractures at other sites.

The bulletin hinted at the possibility of selected screening of patients with high risk factors, as advocated by the scientific advisory board of the National Osteoporosis Foundation of America.² This fact, however, did not feature in the summary recommendations of the bulletin.

The conclusion of the report that there are no scientific trials that assess the effectiveness of population bone screening programmes in preventing fractures in the elderly is true. However, there is in the words of the report of the National Osteoporosis Foundation's scientific advisory board "compelling evidence that long term oestrogen therapy prevents bone loss and fractures." Plainly the long term randomised controls and trials mentioned in the bulletin are not feasible. However, case-control studies consistently show a reduction in hip and Colles' fractures associated with long term HRT – for example, the study of Hutchinson *et al.*³ The contention that "bone density measurements are poor at identifying which women will go on to have a fracture in later life" ignores the fact that bone densitometry is at present the only method of providing an index of risk for bone fracture. The argument that the effectiveness of HRT or any other antiresorptive therapy would be compromised by low compliance is an important, but secondary, issue.

We welcome the choice of osteoporosis as a subject for a bulletin but question the value of a scientifically incomplete report. We suggest collaboration with

authoritative workers in the field, a sound study methodology, and a sensitive presentation of the findings in future bulletins.

Furthermore, it is not in the best interest of either patients or the profession to have a service which has no impact on patients' health, and we recognise the responsibility of the medical profession to undertake detailed assessment of any emerging technologies. The service in South Tees Health Authority must therefore be subjected to audit to determine outcomes for patients and to develop guidelines for the users.

The purchasing authorities want value for money, but obtaining outcomes data has resource requirements. Now the issue has been raised there is an onus on the Department of Health to complete the investigation into the use of bone densitometry.

J N FORDHAM
South Cleveland Hospital,
Middlesbrough,
Cleveland
TS4 3BW

R MADHOK
South Tees Health Authority,
Middlesbrough

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AUTHORS' REPLY – Each *Effective Health Care* bulletin focuses on a key purchasing question about which there is a perceived need for rational information and aims at providing that information in an accurate, concise, and accessible form for clinical and non-clinical decision makers. Of necessity, the bulletins are very focused, presenting only a distillation of the material that the research team reviews. Inevitably, some people who work in the field will feel that the subject has not been comprehensively covered. For example, we did not consider antiresorptive therapy because the bulletin was about population screening to identify women at high risk. The bisphosphonates have been shown to be effective only in reducing the rate of vertebral fracture in women with established osteoporosis.^{1 2} There is as yet no evidence that they reduce fractures in healthy patients thought to be at risk of osteoporosis, and they are not licensed for this purpose.

The bulletin concentrated on hip fractures because they are associated with a high mortality, considerable morbidity, and considerable cost to the NHS. Vertebral fractures, though more common, are less well understood and are often asymptomatic. We should have

included more information on wrist fractures, though our conclusions would not have been significantly affected.

Though it would have been interesting to discuss the effectiveness of bone scanning and treatment for women with risk factors such as early menopause, this is not part of population bone screening. We made this clear in the bulletin, and we did not review the evidence for this practice.

Drs Fordham and Madhok are no doubt aware that case-control studies have major biases which can overestimate the effectiveness of treatments. For example, screening for breast cancer, which has been shown by randomised controlled trials to reduce risk of death by around 30%, is estimated by case-control studies to reduce risk by 50-70%.³ This problem, combined with the evidence we referred to indicating that benefits may diminish after therapy has ceased⁴ but before the period of highest fracture incidence, makes the evidence of long term effectiveness of hormone replacement therapy in preventing fractures less than compelling.

It is also crucial that a screening programme is based on a test that is good at identifying those women most able to benefit from the treatment. The fact that bone density measurement is the only predictor we have at present is irrelevant. On the other hand, compliance is crucial: "The success of any primary screening programme is ultimately dependent on the at-risk population complying with a regimen."⁵

The claim by Drs Fordham and Madhok that population bone screening is not an issue is incorrect. Understandably, there is considerable interest in such programmes, fuelled by advice in women's magazines and from some clinicians and pressure from drug companies. For example, a statement from the director of the Guy's Hospital osteoporosis screening unit (and a member of the National Osteoporosis Society's council of management) says: "It therefore seems reasonable to suggest that all women should have a bone mass measurement, ideally at the time of the menopause . . . Those 30% who have the lowest bone mass in the population should be advised to consider HRT."⁶ Professor Nordin, a former director of the MRC Mineral Metabolism Unit, in a statement to the *Yorkshire Post* on 21 May, called for mass bone screening, and some health authorities have started pilot population bone screening programmes.⁷

Screening often seems an attractive option for preventing disease; only rarely, however, have initial hopes been justified, most are relatively ineffective and cause unnecessary anxiety.⁸ Therefore it is essential that population bone screening (which would result in over a quarter of well women aged over 50 being recommended long term treatment) is thoroughly evaluated before it is introduced. Audit is no refuge from these questions which can only be answered by scientifically conducted trials of the programme or at least its constituent parts. Cohorts in the Hull and Aberdeen

studies have only recently been recruited, and it will be several years before the effectiveness of the bone screening programmes can be reliably estimated.

TREVOR A SHELTON
for the Effective Health Care Team
School of Public Health
University of Leeds
Leeds LS2 8LN

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Assessing short term outcome

We were pleased to read the considered evaluation of the Nottingham health profile (NHP) by Bardsley *et al*¹ and impressed with the methodological care which alerted them to the possibility of raised NHP scores resulting from completion of the questionnaire in hospital. The potential for such confounding effects exists in the many research designs which include a comparison of assessments of hospital inpatients and outpatients. Our own longitudinal study of 100 patients with rheumatoid arthritis, which includes 36% who were first interviewed while hospital inpatients, supports the conclusion of Bardsley *et al* that the NHP does not seem to be subject to this contamination by a hospital setting. However, we emphasise that this was not the case in our study with another widely used generic questionnaire, the functional limitations profile (FLP).²

Factors such as the adoption of a sick role, anxiety about the operation, or the unsettling nature of the environment were cited as potential elevators of NHP scores. Classic psychological literature also indicates that there may be many ways in which setting may influence responses. However, without recourse to sophisticated analysis, we suggest that the impact of hospitalisation on the following selection of items from the FLP is clear: respondents are requested to affirm those statements which apply to them "today" and which are due to their health.

I go out to enjoy myself less often
I lie down to rest more often during the day