strategies but have little or no leverage with general practice fundholders to implement them.

The emphasis on general practice fundholders as purchasers is a move away from population based purchasing, which took into account the major influences on health.³ It is not clear how a local population perspective of health and health care needs developed by health authorities will be able to influence general practice fundholders. Furthermore, if health authorities are to become the new "regulators" of general practice fundholders⁴ all their resources will be taken up with this time consuming task, which will increase the transaction costs inherent in the internal market.

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Contracting is a recipe for inefficiency

EDITOR,—Chris Ham's view of the future of contracting disregards any role for hospital consultants in the purchasing process.¹ This remains a major obstacle to the effectiveness of purchasing. Often directors of contracting are engaged in negotiations to determine the fate of a clinical unit when they have only rudimentary knowledge of the unit and little if any understanding of the interrelation that it may have with others. Moreover, Ham's model of tolerance towards haphazard purchasing, with the NHS trusts negotiating with a variety of different sized purchasers, can hardly be efficient. The only likely outcome is the production of enormous trust contracting units.

I am also sceptical about Ham's suggestion that most general practitioners have not become fundholders because of strongly held political beliefs or ethical objections. Surely their lack of interest is because they have always had control over referral of their own patients to secondary care units. Why do they need to bother with negotiating about where their patients are treated when it is the patient's general practitioner who has always determined this anyway?

The plain truth is that contracting is irrelevant to the health care that most patients receive. General practitioners will continue to refer patients for treatment to the units that they believe will be best suited to treat those particular patients. The present annual rounds of negotiations with an ever increasing variety of purchasers will lead only to more inefficiency with the ever increasing need for more contracting staff.

Although essential to the maintenance of the internal market, contracting as it stands is unlikely to be effective so far as improving health care is concerned. For the contracting process to influence the provision of health care effectively, three main areas must be addressed: the control of the introduction of new treatments, the phasing out of outmoded or ineffective treatments, and the need for all provider units to provide health care relevant to the demographic make up of the population they serve. To do this effectively requires direct negotiation between the health authorities with their local demographic knowledge and public health skills and those doctors—both hospital consultants and general practitioners—who are directly affected by or the instigators of proposed changes.

There can be no justification for the present annual contracting rounds, which are both an inefficient use of scarce resources and an in-

effective way of making necessary adjustments to health care.

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Coronary artery disease in women

EDITOR,—Graham Jackson addresses the value of exercise electrocardiography in the diagnosis of coronary artery disease in women.¹ He points out that the false positive rate is higher in women aged under 65 than in those aged 65 and over. This is true if a single cut off point of 1 mm of ST segment depression is used to define whether the result of an exercise test is normal. It has long been known, however, that for a given degree of ST segment depression on exercise electrocardiography women

Probability of men and women with ST segment depression of 1.0-1.49 mm Hg on exercise electrocardiography and various symptoms having important coronary artery disease (data from Diamond and Forrester's paper)³

have less severe coronary artery disease than men.²

The figure depicts some of the data given in table 5 of a paper by Diamond and Forrester.³ It shows that the probability of a person having important coronary artery disease with ST segment depression of between 1.0 and 1.49 mm depends on age, gender, and symptoms. In particular, it shows that a man aged 50-59 with atypical angina has a probability of having important coronary artery disease of 75% whereas a woman of the same age with atypical angina has only a 50% chance of having important coronary artery disease. The remainder of table 5 in Diamond and Forrester's paper shows that for each of the 32 groups shown in the figure the probability of important coronary artery disease increases with increasing ST segment depression on exercise electrocardiography. Consequently, using a single cut off point to define abnormality does not do justice to the clinical information in the exercise electrocardiogram.

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- 2 Barolsky SM, Gilbert CA, Faruqi A, Nutter DO, Schlant RC. Differences in electrocardiographic response to exercise of women and men; a non-Bayesian factor. *Circulation* 1979;60: 1021-7.
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Treatment of myocardial infarction

EDITOR,—John McMurray and Andrew Rankin's article on the treatment of myocardial infarction and angina supports the decision made by the rural practice in which I work to provide domiciliary thrombolysis for acute myocardial infarction. In particular, the data presented in figure 1 suggests that the absolute benefit gained for each hour saved by early intervention does not become zero until between 18 and 24 hours after the onset. Intuition suggests that as one approaches the magic 12 hour mark the time gained by home treatment as a proportion of the total time elapsed becomes less and so should the benefit. Not so, apparently.

I am, however, puzzled by an apparent discrepancy between the figure and the text of the article. The text states that 30-60 minutes gained saves about 15 lives/1000 patients, yet the slope of the graph cannot be interpreted as indicating a saving of more than two lives/1000 per hour gained. If the graph is correct this throws doubt on the cost effectiveness of our treatment, requiring as it does the use of expensive anistreplase as opposed to the streptokinase given in hospital.

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Agism and provision of thrombolysis

EDITOR,—Philip C Hannaford and colleagues reported that age (but not sex) is an important determinant in the provision of thrombolysis, with a significant trend against thrombolysis with advancing age.

As part of the European secondary prevention study funded by the Commission of the European Communities we examined the clinical management of a random sample of all patients admitted to hospitals in the Trent region with acute myocardial infarction. The population of Trent is representative of the United Kingdom. The sample included 420 patients treated during February-April 1993. To examine the effect of age, our analysis of thrombolysis was restricted to patients admitted within 12 hours of onset of symptoms who had ST elevation in their initial electrocardiogram and no history of stroke or recent symptoms of peptic ulcer. When patients under 65 were used as the reference group, the odds ratios for treatment were 0.62 (95% confidence interval 0.16 to 2.30) for those aged 65-74 and 0.17 (0.05 to 0.51) for those over 74 (χ^2 for trend, $P < 0.001$). The age adjusted treatment odds ratio for women was 0.45 (0.16 to 1.28) relative to men ($P = 0.16$).

These data support the findings of Hannaford and colleagues in their non-random sample provided by the Royal College of General Practitioners' myocardial infarction study.¹ Random sampling has the advantage of providing an accurate description of the demographic and clinical characteristics of patients currently admitted to British hospitals with acute myocardial infarction. Patients over 74 formed 33% of our sample but only 10% of subjects recruited into the major trials of thrombolysis.² The direct evidence for reduction in mortality by thrombolysis in this age group is therefore equivocal since the estimate of treatment effect is imprecise. There is, however, a strong case for the view that the use of a thrombolytic drug should not be influenced by the patient's age.^{3,4} Part of the explanation for the lower use of thrombolysis in