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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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

elderly people may be the unrepresentativeness of patients enrolled in the major trials.

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Secondary prophylaxis after myocardial infarction

EDITOR.—In writing about secondary prophylaxis after myocardial infarction D L Whitford and A J Southern state that "β blockers should be given to all patients except those with active reversible airways disease, heart block, or heart failure, and treatment should be continued for at least one year and up to six years in the community."¹ Such dogmatism is not justified, and it would be alarming if such authoritarian statements were used as a criterion on which to evaluate the quality of care given by physicians. The opinions expressed are based on the interpretation of clinical trials. While these trials have clearly shown the prophylactic benefit of this treatment in the subjects recruited, they have included only a minority of the potential patients after infarction. Furthermore, many of those included in the trials had such a good prognosis that one can question the need for β blockade in similar cases.² As Chamberlain wrote recently, "In addition to the 30% of patients after infarction who may not tolerate β blockade, it may be reasonable to define another group of approximately similar size for whom β blockade is not indicated on grounds of good prognosis."³

Practice should certainly be based, when possible, on the results of good clinical trials. Interpretations, however, are not straightforward. One should be cautious about elaborating rigid rules on treatment and incorporating them into local protocols. It would be unfortunate if those physicians who believe that one can be selective about the use of β blockade after infarction were criticised or even penalised for not having achieved a questionable standard.

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Smoking in China

EDITOR.—I was heartened by the titles of the Editor's Choice and Ronald M Davis's editorial¹ in the issue of 8 October, which is dominated by articles on smoking. I wish to point out, however, that it is not enough just to slow the march of the Marlboro man; we should eliminate him

Antismoking slogan on packet of cigarettes

altogether. After a letter that I wrote, entitled "Marlboro man,"² was published in the *Medical Journal of Australia*³ I received quite a bit of hate mail.

During my latest visit to China, last June, I saw a photograph on the wall of the observatory opposite the tall television tower in Wuhan of the tower with a conspicuous sign advertising KENT painted on it. But when I looked at the tower itself the sign had disappeared. Apparently, a month earlier Dr M Z Chen, minister of public health in China, had visited Wuhan, seen the sign, and ordered its immediate removal.

Although we bemoan the deplorable statistics cited by Peto that one of every three cigarettes manufactured in the world is consumed by people in China,⁴ we can take pride in the strong antismoking campaign that Minister Chen has been waging.⁴ He is, however, fighting an uphill battle, because Mao Zedong was, and Deng Xiaoping is, a heavy cigarette smoker. But I was interested to note that in a newspaper that published a photograph of Deng smoking there was an equally prominent antismoking slogan printed on the next page, which said in Chinese, "Every time you smoke a cigarette you shorten your life by five minutes." Nowadays, all the cigarettes in China have to carry the same health hazard warning, whether in English or in Chinese, on their packaging (figure). So there is hope that "a smoke-free hospital can be achieved in China by year 2000."⁵

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Vaccination against hepatitis A for travellers

Will alter the dynamics of transmission in Britain

EDITOR.—R H Behrens and J A Roberts suggest that vaccination against hepatitis A is not cost effective and recommend that travellers should contribute more to the true cost.¹ This requires debate, but their work also raises several public health issues. Hepatitis A is endemic in Britain,^{2,3} and on average each case of infection results in one secondary case⁴; this is a feature common to infectious diseases, which allows them to persist. Hepatitis A associated with travel may cause few outbreaks because those most at risk (family and household members⁵) may have been protected against hepatitis A as they travelled at the same time. Not preventing hepatitis A would lead to an increase in secondary cases.

Mortality from hepatitis A increases with age,⁶ with the death rate per notified case in 55-64 year olds being 30 times higher than that in 15-34 year olds. Vaccination of susceptible elderly people is particularly important, and prior antibody screening makes this cost effective. Although nearly all elderly people were immune to hepatitis A some years ago, for new cohorts of this age group this will not be the case: 20-25% of 50-60 year olds are currently at risk of infection.⁷

Two and a half million people—more than 4% of the total British population—travel annually to areas where protection against hepatitis A could be warranted.⁸ Over five years this percentage would be greater. If large numbers of the population were vaccinated herd immunity would increase, with a subsequent reduction in the transmission of hepatitis A virus in Britain⁹; there would also, however, be an increase in the average age at infection and, more importantly, in the number of elderly people becoming infected, with a worse prognosis.¹⁰ Because of the low basic reproductive rate of hepatitis A⁴ (about 2¹¹) herd immunity needs to be increased by only a small amount to reduce endemic transmission in Britain appreciably. Because hepatitis A virus is commonly spread from child to child¹² protection of adults by vaccination as the only measure would not eliminate transmission.

Protection for foreign travel is unlikely to be withdrawn because the government could be accused of privatising the NHS. Whatever funding arrangements exist, vaccination will increase immunity to hepatitis A, which will alter the dynamics of transmission. The current policy has the potential to increase mortality and morbidity, and a full assessment of the implications of measures to control hepatitis A is required.

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All relevant costs and consequences should be measured

EDITOR.—On the basis of a comprehensive economic evaluation R H Behrens and J A Roberts conclude that "a national policy of immunising all travellers against typhoid and hepatitis A does not seem to be cost beneficial to the community."¹ While in principle such evaluations should help guide public health policy, considerable uncertainty surrounds many of the estimates used, and their conclusion should not compromise public health advice on the need for vaccination for certain categories of travellers.

Certain costs and consequences were not identified in the evaluation. The authors acknowledge the potential for outbreaks of typhoid and hepatitis A to occur but state that, on the basis of published data, there is no evidence to suggest that either infection is transmitted from returning travellers to the community. A lack of published evidence for such transmission does not, however, exclude its occurrence. Furthermore, many potential out-