Antibiotics prescribed before test*	Result of antigen detection test	Antibiotics prescribed after test result known	No of patients (% of total)	Results on culture†	
				Positive	Negative
Yes	Positive	Yes	203 (15)	183	20
Yes	Negative	Yes	83 (6)	4	79
Yes	Negative	No	81 (6)	4	77
No	Positive	Yes	159 (12)	144	15
No	Positive	No	1 (>1)	1	0
No	Negative	No	800 (60)	54	746
Total			1327 (100)	390	937

*On basis of clinical assessment.

†Values are numbers of patients.

of the test they decided whether to prescribe antibiotics or not. A throat swab was sent to the streptococcus laboratory in Copenhagen for culture.

A total of 1389 patients were included initially; 62 were subsequently excluded because their data were incomplete. Of the remaining 1327 patients, 390 (29%) had group A streptococci on culture. The overall sensitivity and specificity of the tests compared with culture were 84% and 94%, respectively. The table shows the distribution of patients according to the result of the antigen detection test and the general practitioner's decision whether to prescribe antibiotic before and after the test results. The table also shows the numbers of patients positive and negative for group A streptococci on culture. The use of antigen detection tests led to an increase in the prescribing rate for patients with positive results on culture (from 49% (191/390) to 85% (331/390)) but to a decrease in the prescribing rate for those with negative results (from 19% (176/937) to 12% (114/937)). Overall, the use of the tests led to an increase in the prescribing rate of antibiotics from 28% (307/1327) to 34% (440/1327) of patients with a sore throat ($P < 0.001$, McNemar's test). In 164 patients the result of the antigen detection test was negative and in disagreement with the pretest decision. Antibiotics were prescribed to 83 of them (51%), and culture revealed infection with group A streptococci in only four (5%). Of the remaining 81 patients, only four (5%) had group A streptococci on culture.

Thus, in our study the use of antigen detection tests led to a substantial increase in the prescribing of antibiotics to patients infected with group A streptococci but to only a modest decrease in prescribing to patients without such infection. Redd *et al* reported similar findings, but the sensitivity of their test was low (63%).³ In a study performed in a university family practice model office the use of an antigen detection test with a high sensitivity (82%) led to a more rational prescribing pattern and an overall reduction in the physicians' use of antibiotics.⁴ The discrepancy between the impact of using tests with comparable sensitivities in the university model office and in the general practice setting could be due to differences in the doctor-patient relationship. It may be more difficult for the general practitioners to withstand a demand for antibiotic treatment, thus leading them to ignore inappropriately a negative test result. The use of antigen detection tests could lead to a greater improvement in the quality of care in general practice if negative test results were adhered to as strictly as are positive test results.

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Should doctors charge doctors for medical services?

Tradition of not charging should remain

EDITOR,—Anthony Kenney suggests that doctors should continue to avoid charging other doctors and their immediate families unless asked by the patient to do so,¹ thus reinforcing the representative body's reminder that we should not bill each other.² He goes on to say, however, that if this became standard practice insurance companies might have to adjust their premiums accordingly. Unfortunately, British United Provident Association (BUPA), for one, has already done so, and its initially generous discounts in the BMA scheme have been steadily eroded over the years simply because doctors have continued to charge each other. It is not true to say that the Inland Revenue will not allow companies to finance gifts for the providing doctor; BUPA will do so under the BMA scheme when no charge is made unless the patient is already claiming tax relief on his or her premiums or has only the limited cover of the hospital scheme.

It would be a pity to allow ourselves to be influenced by the increasing pressure to change tradition. We might reach the situation in which I found myself when consulting a colleague in central London who suggested that if his fees were an embarrassment to me he would happily continue to see me—in his NHS clinic on the other side of London.

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Doctors should continue to choose NHS care

EDITOR,—The NHS is changing fast, but anyone reading Anthony Kenney's editorial on whether doctors should charge doctors for medical services would think that it had disappeared completely.¹ For most doctors, working in and committed to the NHS, the important issue is not how to negotiate a private arrangement but whether, when, and how to access health care—NHS health care—when they need it.

It can be difficult: 27% of general practitioners in a recent survey had borderline depression or were definitely likely to be depressed.² It takes

courage for a doctor who is exhausted, drained, or depressed to acknowledge that he or she needs help. In other circumstances, for a more physical complaint, a fast track for medical colleagues may be offered. This, as a recent personal view showed, can be risky: "Doctors and their wives should be treated as ordinary patients"; "they should not be involved in diagnosis and clinical decision making."³

There will inevitably be times in doctors' lives when they need to be patients. They have the right, as any citizen does, to NHS care. Most doctors, like most citizens, wish to ignore the propaganda of the private medical insurance companies and exercise that right.

If the general public is given the impression that doctors automatically choose the private route or that the usual system is not good enough for them, what message does that give about the system? It is indeed tempting to short circuit the system, to ask for special privileges. If, however, everyone else in the outpatient waiting room is waiting an hour and half to be seen why shouldn't I share that experience? Why should I, or the consultant who eventually sees me and apologises for not having seen me ahead of my turn, assume that the time of the people in front of me is less valuable than mine? Why should any of us have been waiting an hour and a half?

The more it is assumed that ordinary NHS care (which is often extraordinary) is not good enough for doctors the more we are removed from the opportunity to benefit from, and to fight for, our health service.

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Future of purchasing

Health authorities will have little power to implement strategies

EDITOR,—I cannot share Chris Ham's optimism that "reports of the death of health authorities may be premature."¹ Following the announcement by the secretary of state for health of the extension of the general practice fundholding scheme and the latest letter and accompanying booklet on the development of NHS purchasing from the NHS Executive,² I am concerned that the death of health authorities seems fairly imminent.

The extension of the general practice fundholding scheme in terms of both the number of general practices that can elect to become fundholders and the type of fundholding will reduce the role of health authorities as purchasers of health care and therefore their leverage with providers. Ham argues that this will mean that health authorities will be less bothered by purchasing and will be able to place greater emphasis on strategic commissioning. This view is shared by the government, which envisages three roles for the new single health authorities replacing district health authorities and family health services authorities: strategy, monitoring, and support. In this new phase of the reforms fundholders become "increasingly important as purchasers in their own right" while health authorities will be responsible for "implementing national health policy."³

What is the point of health authorities having responsibility for strategy if their power to purchase services is severely curtailed? In this vision health authorities can carry on producing

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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- 1 Ham C. The future of purchasing. *BMJ* 1994;309:1032-3. (22 October.)

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