in the period. No one has requested more than nine scans. The waiting time for an appointment for scanning as an outpatient is one week, regardless of the source of the referral.

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1 Hampton JR, Barlow AR. Open access. *BMJ* 1995;310:611-2. (11 March.)

Service is valuable for evaluating murmurs too

EDITOR,—For the past 10 months we have been offering general practitioners in the Brighton area an open access echocardiography service similar to those in Edinburgh[1] and Nottingham.[2] Ours differs principally in that we encourage referral for the evaluation of murmurs as well as heart failure.

In total, 106 patients (43 male, 63 female), have been referred: 49 with heart failure with or without murmurs (mean age 72), 46 with murmurs alone (mean age 55), and 11 for other reasons. In those with murmurs alone no abnormality was found in 25 and we were able to reassure the patients and general practitioners and avoid unnecessary referral to a cardiologist. Not surprisingly, given the selection criteria for referral, we found a higher incidence of valve disease than that reported by Francis and colleagues.[1] Overall eight patients had appreciable aortic stenosis (which was severe in two cases, with a gradient >70 mm Hg). Other findings were mitral stenosis (two cases, both mild); aortic (13), mitral (19), and tricuspid regurgitation (five); and mitral prolapse (two). Of the 49 patients with suspected heart failure, only 26 had heart failure confirmed by a low ejection fraction. Five of these were already taking angiotensin converting enzyme inhibitors, which were recommended in the remainder. The general practitioners subsequently reported that all but five were started on these drugs.

Unlike in Edinburgh and Nottingham, which have similar populations, the uptake of our service by general practitioners has not been great, even though we publicised it widely in a newsletter, by direct contact, and at meetings. Nevertheless, in a brief audit questionnaire 92% thought that the examination had been helpful in the management of both heart failure and murmurs, and only nine cases were subsequently referred on for assessment by a cardiologist.

It is difficult to know from this brief experience whether this service is cost effective and identifies patients with important disease who would otherwise slip through the net. Whatever the perceptions of those who work in hospitals, this service seems likely to be continued by fundholding practices.

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2 Hampton JR, Barlow AR. Open access. *BMJ* 1995;310:811-2. (11 March.)

Hospital patients need open access echocardiography

EDITOR,—We agree with C M Francis and colleagues that echocardiography is useful in patients with heart failure and that an open access service may be used successfully by general practitioners.[1] Heart failure is also common among patients admitted to hospital,[2] but we have noted a reluctance to use echocardiography in such patients.

To investigate this further we recently conducted a prospective audit of all patients acutely admitted to our district general hospital with heart failure to assess current strategies in the investigation and management of this condition. Over six months (March to August 1994) we identified 348 patients (178 female and 170 male; mean (SD) age 73·2 (11·2) years) who were admitted with heart failure.

Complete data were available for 260 of these patients (75%). Only 60 patients had echocardiography during the admission, a further 20 had had it within the six months before their admission, and nine were to have it arranged at a future date on an outpatient basis. Thus only 89 patients would have had echocardiography despite their acute admission with heart failure. Echocardiography showed poor left ventricular function (global) in 43 patients, left ventricular hypertrophy in six, mitral valve disease in six, and other disease in eight; no abnormalities were present in three patients, and in 14 cases the echocardiogram was uninformative. These results suggest that treatment would have been influenced in most cases, with, for example, the introduction of angiotensin converting enzyme inhibitors in patients with poor left ventricular function.

We suggest that despite the usefulness of open access echocardiography for general practitioners, many hospital inpatients who are admitted with heart failure should also be considered for echocardiography as useful information would be obtained. The availability of this service to hospital patients should not be neglected while echocardiography services in the community are developed.

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2 Parameshwar J, Poole-Wilson PA, Sutton GC. Heart failure in a district general hospital. *J R Coll Physicians Lond* 1992;26: 139-42.

Open access to specialist opinion is preferable

EDITOR,—C M Francis and colleagues' report on open access echocardiography[1] highlights the fears of many cardiologists about open access services.[2] The principal aim of the authors' service—the identification of patients with left ventricular dysfunction so that treatment with an angiotensin converting enzyme inhibitor could be started—occurred in only 50 (19%) of 259 patients, while valve disease was identified in 12. In a similar study of an open access exercise electrocardiography service McClements *et al* identified ischaemic heart disease in only 18% of the 192 patients tested.[3] It is argued that a negative result of the test is reassuring, but many patients remain symptomatic despite reassurance.[4] Furthermore, screening a low risk population will result in a much higher proportion of false negative results. It remains to be seen whether open access to investigations represents an effective use of expensive and scarce resources. Hampton and Barlow argue that specialists are most useful in giving an interpretation of the clinical problem with the aid of results of appropriately selected investigations.[5] Another approach to general practitioners having improved access to cardiology services is to offer rapid open access to specialist clinical assessment and opinion.

We have over 18 months' experience of a same day open access cardiology clinical service for patients with chest pain or palpitation of less than 48 hours' duration. On three afternoons a week this fast track outpatient service is incorporated into the routine cardiology clinic, and on two afternoons patients are seen by a trainee in cardiology. Patients are assessed clinically by electrocardiography, and further investigations are ordered as indicated. After investigations have been performed the patient is seen at a dedicated follow up clinic by a consultant cardiologist. Activity in the clinic took only four months to reach a steady state, and an average of 51 (range 43-63) patients per month have been referred over the past six months. Initially 97 of the first 100 patients referred had symptoms in the prespecified categories, and this was the case for 87 of the last 100 patients referred.

Our experience does not suggest that general practitioners are indiscriminate in their referrals or that an unmanageable increase in workload has occurred. When the first 100 patients referred to the fast track service were compared with 100 patients referred to the routine clinic over the same period, a higher proportion of patients with chest pain were diagnosed as having ischaemic heart disease (42% (25/60) *v* 33% (14/43)) and a higher proportion of patients with palpitations were thought to have a clinically important arrhythmia (54% (20/37) *v* 39% (9/23)) in the open access clinic. Overall 78% of the 100 patients referred to the fast track clinic had their drug treatment changed at the first or second clinic visit, compared with 63% (54/86) in the routine clinic. Because the cardiologist acts as gatekeeper to investigations, 55 of 106 echocardiograms obtained in the fast track clinic showed a clinically important abnormality (18 showed appreciable valve disease, 26 left ventricular impairment, and 11 left ventricular hypertrophy); a further 21 showed an echocardiographic abnormality; and only 30 were reported as normal. Similarly, 46% (16/35) of the exercise electrocardiograms obtained in patients seen in the fast track clinic showed an abnormality.

Overall, the service seems to be popular with our local general practitioners. We believe that rapid access to clinical assessment by specialists constitutes a more effective service and overcomes some of the problems associated with direct access to clinical investigations.

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Study's conclusion is misleading and cannot be generalised

EDITOR,—C M Francis and colleagues' conclusion that echocardiography led to advice about a change in management in 70% of patients with established or suspected heart failure as diagnosed by their general practitioners is misleading.[1] Their 70% represented 82 of 119 patients receiving treatment at the time of referral, 53 of whom, they concluded, were taking unnecessary diuretics. But the actual figure should also include those in the group with suspected heart failure for whom the authors advised a change in management (14/99). Therefore

the true proportion of echocardiograms resulting in advice was 96/218 (44%).

We find it difficult to accept that the authors could advise on the appropriateness of prescribing by general practitioners when guided only by patients' self reported symptoms. We believe that, in the absence of additional clinical information provided by the general practitioners, the authors were not in a position to advise on changes in treatment. Input for general practitioners when the study was being designed might have avoided this pitfall.

Lastly, the poor uptake rate among general practitioners (93/550 (17%)) limits extrapolation of the results.

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Service should be reserved for equivocal cases

EDITOR,—C M Francis and colleagues claim that their open access echocardiography service was "well used" and led to advice being given to change management for nearly 70% of patients.[1] I fear that they have been unsuccessful if they were trying to increase the currently low rates of prescription of angiotensin converting enzyme inhibitors in heart failure: the number of patients referred for echocardiography was small compared with the numbers of patients with known and unknown left ventricular dysfunction in the study population. The study population can be assumed to be roughly 1·1 million (assuming average practice lists for the 550 general practitioners canvassed). Among these patients up to 2% may already have left ventricular dysfunction[2] (that is, over 22 000) and an annual incidence of left ventricular dysfunction of 0·1 to −0·2% (that is, 1100-2200 patients) coud be expected. So the referral of 259 patients for echocardiography over five months is a drop in the ocean, even if it is argued that echocardiography is unnecessary to diagnose left ventricular dysfunction in all cases.

The key difficulty in increasing the use of angiotensin converting enzyme inhibitors may be the reluctance of general practitioners to alter the treatment of patients who do not pose a clinical problem. It is time consuming to explain the reason for echocardiography in hospital to asymptomatic patients and even more time consuming to convert to treatment with an angiotensin converting enzyme inhibitor, with all the blood tests required before and after.

For this reason, in the Southend area we are focusing on the interface between general practitioners and hospitals in a pilot study for a larger audit project. Patients are being identified in a paper exercise at the general practice, and only those with equivocal disease are referred for echocardiography. The question remains whether general practitioners will act on the information given on their patients' cardiac status and alter their drug treatment, but help with sessional provision of additional medical and nursing staff may be required to achieve the desired result.

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Single assessment may be dangerous

EDITOR,—Both the paper by C M Francis and colleagues[1] and the accompanying editorial[2] regarding open access echocardiography for heart failure might be interpreted as suggesting that a key role of such a service is the withdrawal of "inappropriate" drug treatment. It is suggested that this decision should be based on one echocardiographic examination per subject, with what might be regarded as a higher than average rate of non-quantitative study (42% quoted). If it is assumed, as is implied, that there was no corroborative history nor examination performed to assess patients further, might an alternative interpretation be that the echocardiographic appearances simply reflected effective treatment?

Secondly, for some patients loop diuretics and angiotensin converting enzyme inhibitors may restore an appearance of normal contractility and wall thickness or luminal dimensions. As left ventricular function is not static regardless of pharmacological treatments, is not one examination in isolation and at rest inadequate to insure against important left ventricular dysfunction being present?

Thirdly, Francis and colleagues make no comment on the assessment of indices of diastolic function in their series. However controversial or imprecise the range of echocardiographic indices of diastolic function may be, did they ignore this as a possible cause of symptoms?

It would be useful to know how general practitioners and patients responded to the recommendation to stop treatment, what arrangements were made for subsequent re-examination, and whether another disease emerged in this subgroup.

In our experience of using transthoracic echocardiography after screening by general practitioners to identify patients with systolic heart failure we identified 183 patients being treated with loop diuretics who had a normal echocardiogram (fractional shortening >25%, left ventricular end diastolic diameter <5·2 cm) between January 1992 and December 1993. Of these patients, 33 had been admitted to hospital with left ventricular failure in the previous five years, 29 with no evidence of myocardial infarction. Additionally, 19 patients had had a documented acute anterior myocardial infarction. In addition to these patients admitted to hospital some symptomatic patients are likely to have been managed in the community.

In a separate project offering true open access echocardiography (that is, not restricted to assessment of heart failure) we found 304 subjects with a quantitatively normal echocardiogram and 84 with a qualitatively normal echocardiogram. Eighteen and three patients in each group, respectively, had been admitted with heart failure complicating myocardial infarction. There had also been 14 admissions for uncomplicated myocardial infarction, 24 for ischaemic heart disease, and four for atrial fibrillation in the same period.

Despite the relatively small numbers of events we believe that these data serve to show a reservoir of cardiac disease in patients with intermittent decompensation of ventricular function and a normal resting echocardiogram. We are concerned that an angiotensin converting enzyme inhibitor or a diuretic might be erroneously withdrawn.

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Study's design leaves cost effectiveness and "therapeutic impact" in doubt

EDITOR,—Evaluation of diagnostic technology is generally more difficult than evaluation of therapeutic technology and is often omitted. C M Francis and colleagues' study of the use made by general practitioners of an open access echocardiography service is therefore welcome.[1] The descriptive design of the study, however, limits the conclusions that may be drawn from the findings. A comparative study (for example, with a randomised design) would have been more complex but would have yielded additional important information. For example, how would the referring general practitioners have managed these patients in the absence of open access to an echocardiography service? A comparative study would also have permitted a more comprehensive formal economic assessment of the service. We question the authors' conclusion that the study "shows that open access echocardiography is a popular and cost effective service for general practitioners." The effectiveness of the investigation (in terms of health gain for the patient) was not measured. Hence the relative cost effectiveness of an open access service and the previous system of consultant only access to echocardiography cannot be judged.

Important therapeutic changes were recommended in nearly 70% of patients referred for open access echocardiography who were already receiving treatment for presumed heart failure. It is important to ascertain whether such advice was accepted by the general practitioners and patients concerned. In how many cases was treatment changed as a consequence of the echocardiography report? This measure of the effect of an investigation was termed "therapeutic impact" by Fineberg *et al*, who described a useful hierarchy of assessment for diagnostic technologies.[2]

We commend the authors on providing an information pack and a meeting for general practitioners in advance of the launch of the service. The availability of training to facilitate appropriate referral practice is an important component of any new open access diagnostic service. In the interest of cost effective use of resources it may be appropriate to restrict access to some open access diagnostic facilities to those doctors who have attended such training.

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Author's reply

EDITOR,—Laurence O'Toole and colleagues are missing the point. Rapid access and direct access services are complementary rather than mutually exclusive. A patient with suspected heart failure needs echocardiography, and rapid access to a specialist is not going to alter that. The clinical diagnosis in such patients is difficult for both specialists and generalists, as is borne out by the fact that O'Toole and colleagues found left ventricular impairment in only a quarter of their