for both medical care and audit. With an increasing emphasis on accountability and in an age of multidisciplinary care everyone must be aware of the need to ensure the continuing availability of records to those who need them.

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1 Gulliford MC, Petruckevitch A, Burney PGJ. Hospital case notes and medical audit: evaluation of non-response. *BMJ* 1991;**302**: 1128-9. (11 May.)

General practitioners' response to a postal questionnaire survey

SIR,—I was interested in Mr Niru Burchett's letter concerning responses to a postal questionnaire survey.[1]

I have been reviewing outcome after subarachnoid haemorrhage, as assessed by patients' general practitioners, for almost 12 months. Until April this year the response of general practitioners was excellent, with 98% responding. Since 1 April six out of 43 inquiries have been returned unanswered with comments about the increased paperwork introduced with the new contract. Inquiries among colleagues in general practice testify to the increased workload.

It is a great pity in this new era of "putting patients first" and audit that this simple method of assessing outcome may be lost. I hope that general practitioners' good will can be maintained as they are increasingly burdened by an imposed bureaucracy.

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1 Burchett N. Charging for responding to a postal questionnaire survey. *BMJ* 1991;**302**:1406. (8 June.)

Screening in general practice

SIR,—Professor D C Morrell points out that the south east London screening survey showed that half the abnormalities found on general health screening were already known and that 95% of the newly found abnormalities were minor.[1]

The table shows the results of general health screening of 505 patients in my singlehanded practice. Screening identified almost three times as many previously unknown risk factors as known ones, and these factors are important and (with the exception of family history) modifiable.

Professor Morrell states that screening should be able to alter the natural course of the disease in an appreciable proportion of those screened. It has been shown that patients heed advice from general practitioners on smoking[2] and alcohol consumption.[3] Similarly, treatment of hypertension reduces the risks of heart attacks and strokes.

Risk factors elicited by general health screening of 505 patients in general practice

	Previously known findings	New findings
Stress	2	15
Family history	1	20
Overweight		73
High blood pressure	44	29
Smoker	4	37
Ischaemic heart disease	14	
Diabetes	2	2
Raised cholesterol	1	8
Excess alcohol consumption	4	11
Total	72	195

All these risk factors may occur in patients under 35 years old: using this age as a cut off for screening for hypertension therefore seems arbitrary. If the natural course of ischaemic heart disease is going to be altered it seems sensible to try to do so at as early an age as possible.

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1 Morrell DC. Role of research in development of organisation and structure of general practice. *BMJ* 1991;**302**:1313-6. (1 June.)
2 Russell MAH, Wilson C, Taylor C, Baker CD. Effect of general practitioners' advice against smoking. *BMJ* 1979;ii:231-5.
3 Wallace P, Cutler S, Haines A. Randomised controlled trial of general practitioner intervention in patients with excessive alcohol consumption. *BMJ* 1988;**297**:663-5.

Cost effectiveness of cardiac defibrillation by general practitioners

SIR,—A recent letter to general practitioners from the Royal College of General Practitioners invited doctors to participate in a study of thrombolytic treatment in the community. An accompanying memorandum suggested that it was not cost effective for general practitioners to have their own defibrillators; rather, they should look to the ambulance service to provide this lifesaving equipment. Experience in Grampian leads to the opposite conclusion and recommendation.

General practitioners with a list of 2000 patients might see as many as 10 patients with heart attacks a year, or 100 per decade, assuming an attack rate of five per 1000 per year.[1] In about 5% of calls for a heart attack the general practitioners will be faced with a cardiac arrest—five per decade—and can expect to resuscitate 20-30% if they are properly prepared and equipped.[2] One such patient per decade will therefore leave hospital alive—3000 a year in the United Kingdom. If the cost of a defibrillator (£3000-5000 for one with a monitor, £1500 for one without) is written off after 10 years the cost per life saved will be £5000. In a group practice organised so that a duty doctor answers emergency calls one defibrillator will suffice for four or five doctors, reducing the cost per life saved to £1000-1200. Seldom will a practice have to bear the full cost of a defibrillator as local charities, benefactors, or the British Heart Foundation are only too pleased to donate lifesaving equipment provided the recipients are committed to putting it to good use. The financial cost to the practice per life saved is then negligible, and it is much easier to keep a defibrillator in good working order than it is a doctor's car.

The "worst case" cost per life saved of £5000 should be contrasted with the costs of other lifesaving treatments: £300 000 per life saved by screening for and treatment of carcinoma of the cervix[3]; £144 000 per coronary bypass graft prevented by lipid screening and treatment[4]; and £10 000 a year for home dialysis for chronic renal failure.

Of the causes of death, ventricular fibrillation is the most common, the most sudden, and the most treatable. Defibrillators used by general practitioners must be the most cost effective of any lifesaving treatment.

In the Grampian region's early anistreplase trial general practitioners are evaluating thrombolytic treatment in the community. Each of 30 participating practices has a defibrillator. In the first 250 patients studied seven cardiac arrests occurred after entry to the trial and before transfer to hospital. Four of the victims of these cardiac arrests out of hospital were discharged from hospital, having been resuscitated by their general practitioners. Two patients whose condition was stable when they entered the ambulance died in transit when the hard pressed ambulance service was unable to provide an attendant, although defibrillators are now provided in all emergency vehicles through the Heart Start Scotland initiative of the British Heart Foundation. The general practitioners have also used their defibrillators successfully when subsequent entry to the trial has been precluded. Looking at all events, both those included in the trial and those not, cardiac arrests constitute about 5% of calls for a heart attack and survival is better than 50%.

The success rate of resuscitation by general practitioners confirms the importance of defibrillation at the first opportunity. When every second counts it is simply not good enough for a general practitioner to depend on the ambulance service to bring lifesaving equipment to the scene of an arrest.

In Grampian the number of lives saved by general practitioners' use of defibrillators will undoubtedly exceed by far the number saved by earlier thrombolytic treatment.

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1 Colling A, Dellipiani AW, Donaldson RJ, MacCormack P. Teesside coronary survey: an epidemiological study of acute attacks of myocardial infarction. *BMJ* 1976;2:1169-72.
2 Pai GR, Haites NE, Rawles JM. One thousand heart attacks in Grampian: the place of cardiopulmonary resuscitation in general practice. *BMJ* 1987;**294**:352-4.
3 Roberts CJ, Farrow SC, Charney MC. Cost of saving a life by cervical screening. *Lancet* 1985;2:950.
4 Laker MF. What should we be doing about lipids? Presented at the Royal College of General Practitioners, December 1989.

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We sent Dr Rawles's letter to the director of the Manchester research unit of the Royal College of General Practitioners, who replied as follows:

Dr Rawles and I agree completely about the ends but differ in our opinions on the means. In considering cost effectiveness Dr Rawles concentrates on the cost whereas the memorandum to which he refers is much more concerned with effectiveness.

No one would wish to discourage any practice that wishes to acquire its own defibrillator, but in my view, which was expressed in the memorandum, any piece of equipment that is used infrequently is likely, in practice, to be inadequately maintained, and there is a substantial risk that it is not immediately available when it is needed.

It is not certain how often a defibrillator would be used. Ironically, in calculating our own logistics, we used data from Dr Rawles's study in Grampian region, which indicated that cardiac arrests would occur in about 5% of patients with myocardial infarction attended by general practitioners. Where we might disagree, however, is on the number of such patients whom the average general practitioner would encounter each year. Doctors in Grampian region generally work in rural areas and attend nearly all the cases of myocardial infarction occurring in their practices. This does not occur to the same extent in urban and metropolitan areas, where, for example, many patients go direct to hospital and others may be attended at home by deputising services. As a result we believe that two cases per doctor each year is a more accurate estimate of frequency than the 10 per year suggested by Dr Rawles. This means that a defibrillator would be used by a general practitioner only once in 10 years. To compare its maintenance with that of a car used every day is unrealistic.

What matters is that a functioning machine is available when it is required. It would be a tragedy for the doctor and the family if a defibrillator failed to work when it was needed. If a practice's machine can be properly maintained and reliably passed from duty doctor to duty doctor year in and year