least, more than one symptom could be scored and perhaps more attention could be paid to the patients' experience of their illness,³ including how they explain their illness and its course, what effect it has, how they feel about it, and what they expect of treatment (this is relatively easily done in an n of 1 trial). The n of 1 trial could indeed be used more in everyday clinical practice with good instruments, generic diaries, and a patient centred approach.

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Blood donation

Britain's blood service is committed to spirit of altruism among donors

EDITOR,—Ann Oakley raises a moot academic point in her editorial about whether Titmuss's survey of people's reasons for donating blood needs to be repeated.¹ Unfortunately, her superficially interesting hypothesis is undermined by its construction around a series of allegations that do not stand up to even minimal analysis.

Not all blood services are "in a mess." The National Blood Service in Britain, which is recognised as among the finest and the safest in the world, goes from strength to strength, meeting hospitals' ever increasing demand for its products and services thanks to the increasing number of volunteer unpaid donors. Blood services worldwide have had to face the challenges of HIV infection and hepatitis C, and in Britain this has resulted in increasingly safe products. In common with most medical interventions, however, a blood transfusion is not free of risk. The decision to transfuse blood will remain what it has always been: a balanced judgment about the clinical risk of the alternatives to the patient.

The National Blood Authority has not recommended replacing the 14 blood centres with three zonal management teams. The document issued by the secretary of state, Stephen Dorrell, when he approved our proposals makes it clear that all blood centres are to remain open. The proposals are not a cost cutting exercise but rather a cohesive plan for the future that will improve quality, efficiency, and effectiveness to the benefit of patients and donors. There is no profit motive in the British blood supply; the amount of blood collected is determined by hospitals' need for red cells. Plasma based products for use in the NHS are made from the plasma separated from the red cells. Only if a surplus of such products remains after NHS demand has been satisfied is this surplus offered for sale abroad, at prices that only cover the cost of production. This has been practice for many years.

We are fortunate in Britain that the spirit of altruism that underpins our unpaid, volunteer donor base continues to prevail. It is a spirit to which the National Blood Service is committed. If Oakley is arguing for the increased input of donors' views in a service that depends on their gift, I do not necessarily disagree. She may wish to know that the service has already started such a process with, for example, the publication of a donors' charter and a range of other initiatives. It

is a pity that she bases her contention on such a catalogue of false premises.

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- 1 Oakley A. Blood donation—altruism or profit? *BMJ* 1996;312:1114. (4 May.)

Age limit should be reviewed

EDITOR,—In her editorial on blood donation Ann Oakley mentions that New Zealand is experiencing a fall in blood donation in the face of increasing demand.¹ As I have family in New Zealand, this gave me cause for thought. It also reminded me that, along with countless other pensioners, I am no longer a blood donor, although this is not of my choice. With the number of pensioners increasing annually, I wonder whether it is possible, with due regard to safety, to review the age limits up to which it is permissible to donate blood. I, like many others, would continue to donate if given the chance.

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- 1 Oakley A. Blood donation—altruism or profit? *BMJ* 1996;312:1114. (4 May.)

Relation of C reactive protein to cardiovascular risk factors

Assays would have to be developed to measure C reactive protein

EDITOR,—M A Mendall and colleagues' paper raises the question of the role of the inflammatory response in cardiovascular disease.¹ To avoid immunology and other laboratories being swamped with inappropriate requests for measurements of C reactive protein concentrations it is important to emphasise that the authors' study looked at measurements that are within the conventional normal range. Many laboratories use nephelometric methods designed to measure abnormally raised C reactive protein concentrations and do not detect differences within the normal range—that is, <10 mg/l. Mendall and colleagues used a specially designed, in house enzyme linked immunosorbent assay (ELISA) with a quoted coefficient of variation of 14%. This is a large coefficient of variation for an assay attempting to distinguish between two groups of patients on the basis of a small absolute difference in a measurement.

Fig 1—Shewhart plot showing variation in possible values of C reactive protein when one specimen of known concentration (12.5 mg/l) is analysed with routine automated nephelometer several times a day for several days

Measurements of C reactive protein are currently used to quantify the scale of an inflammatory response associated with infection and other inflammatory disorders. The technique is therefore calibrated to distinguish a wide range of values between 1 mg/l and 500 mg/l. It is not, however, sensitive enough to reliably differentiate small differences in the low concentrations described in this paper. Figure 1 shows the daily variation and the variation over time in results obtained from repeatedly analysing a single quality control specimen of known C reactive protein concentration with our routine nephelometer.

If further studies show the C reactive protein concentration to be useful in the acute management of cardiovascular disease then appropriate assays will have to be made available that do not use techniques currently used in routine laboratories.

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- 1 Mendall MA, Pate P, Ballam L, Strachan D, Northfield TC. C reactive protein and its relation to cardiovascular risk factors: a population based cross sectional study. *BMJ* 1996;312:1061-5. (27 April.)

H pylori and C pneumoniae infections may account for most acute coronary syndromes

EDITOR,—M A Mendall and colleagues provide data showing a strong association between C reactive protein concentration (a sensitive marker of systemic inflammation) and coronary heart disease.¹ This finding draws attention to the inflammation as a mechanism underlying the progression of ischaemic heart disease. The same authors have previously shown a greatly increased cardiovascular risk in subjects with *Helicobacter pylori* and *Chlamydia pneumoniae* infections.²

Recently we measured serum levels of antibody to *H pylori* and *C pneumoniae* in patients admitted to an intensive care unit with clinical, electrocardiographic, and biochemical evidence of acute myocardial infarction. We collected serum samples from 37 subjects (28 men, 9 women; mean (SD) age 63 (8) years (range 44-77)). Serum samples from 60 healthy subjects matched for sex and age served as controls. Titres of IgG antibody to *H pylori* were measured with an enzyme linked immunosorbent assay (ELISA; Bio-Rad, Hercules, California) and titres of IgG antibody to *C pneumoniae* were measured with an indirect immunofluorescence test (MRL, California). Cross reactions with *C trachomatis* and *C psittaci* were assessed. IgG titres of ≥ 64 were regarded as positive.

Table 1 shows that a high prevalence of *H pylori* and *C pneumoniae* infections was present in patients with acute myocardial infarction. Thirty two of the 37 patients had antibodies to *H pylori*, 31 had antibodies to *C pneumoniae*, and 28 had antibodies to both; these proportions were significantly higher than those in the control subjects (Mantel-Haenszel χ^2 test: $df=1$, $P<0.001$; odds ratio 5.24 (95% confidence interval 1.97 to 13.90)).

Our data suggest that infection by these two bacteria may have an important role in inducing and sustaining inflammation. The production of C reactive protein is regulated by cytokines, principally interleukin 6. Fibroblasts, T cells, endothelial cells, and monocytes produce interleukin 6; mast cells also synthesise and release this cytokine. We have previously shown that *H pylori* can elicit an IgE specific response.³ Recently it has been found that *C pneumoniae* infection triggers production of IgE specific to *C pneumoniae*.⁴ Thus mast cell activation by these