infarction in 1988. For the 109 patients whose notes were available (less than half the number of patients identified from the coronary care unit's records), the median delay in attending the accident and emergency department was 240 minutes. The median delay in hospital was 84 minutes.

Homerton Hospital serves a deprived inner city population, whose access to hospital facilities is likely to be poor and awareness of medical need low. Patient delay has been identified as the most important factor in the overall delay to receipt of coronary care.^{2,3} In these and other studies the delay between the onset of symptoms and arrival at hospital ranges from 91 to 135 minutes. The prolonged delay in our patients suggests that in this setting at least "fast track" admission, or direct admission to the coronary care unit, would have little impact on overall delay.

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Acute medical beds could be cut

SIR,—The Audit Commission's report on the use of medical beds in acute hospitals points to variations in average length of stay of between four and 15 days for similar patients and recommends regular examination of the average length of stay for similar conditions.^{1,2} Given the present market oriented approach to resource allocation, the report raises the spectre of a finance driven "capping" of patient costs. How are doctors to face this challenge?

Both managers and doctors in the health service want efficiency. A clinically led approach to the challenge of the Audit Commission, acknowledging the need for effective spending, provides the route towards better care of patients.

One approach to reduce unnecessary stay in hospital is to attempt to shift the entire distribution curve for inpatient stays to the left. Mozes *et al* attempted this by discharging patients who did not fit strict preset criteria for continuing inpatient care unless the consultant in charge gave written instructions to the contrary.³ This achieved a 52.6% reduction in "unjustified" days on a medical ward, reducing the average length of stay from 6.3 to 4.6 days. At one month there was no difference in subjective ratings of health or readmission or death rates. A standardised approach could, however, affect clinical freedom and bring financial pressure to end the stay of non-standard patients.

A different approach is to concentrate on the few excessively expensive patients who place major demands on acute medical beds. Our own interest is somatisation, an abnormal illness behaviour in which the patient repeatedly presents to doctors with multiple and unexplained physical complaints. The recent debate on the financial aspects of reform of the NHS has dwelt on the costs of the "average" patient and ignored the disproportionate demands placed on the service by this subgroup of patients.⁴ Smith *et al* found that the cost of health care per patient with somatisation disorder may be up to nine times the average.⁵ By improving communication between health care professionals and adopting a consistent clinical approach they reduced these costs by over half without changing

patients' health status or their satisfaction with their care.

We believe that audit is important and that its lessons should be viewed primarily in a clinical rather than a financial light. The complexities of evaluating clinical services make it difficult to say that changes in care as recommended by the Audit Commission can save 30% of all beds.

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SIR,—The Audit Commission's recent report on the use of medical beds in acute hospitals recommends that hospitals should examine their working practices and monitor the appropriateness of bed use.^{1,2} Though I agree with the desired objective, I believe that the commission has relied excessively on length of stay as a measure of appropriateness and has failed to address how objective and meaningful assessments of appropriateness can be obtained.

Profiles of length of stay have several limitations, including the lack of a clear relation between diagnosis, length of stay, and appropriateness. Patients with average or short stays may have been admitted inappropriately or may have stays that are unnecessarily long. Therefore methods that target patients with unusually long stays will miss inappropriate use of beds among other patients.

Financial constraints in the United States have led to the development of utilisation review instruments designed to increase the objectivity of review and to facilitate quantification of inappropriate use of hospitals.³ Utilisation review instruments use predetermined criteria, independent of the diagnosis, to evaluate appropriateness of use and have been shown to be much more reliable for this purpose than clinicians' unstructured and subjective opinions. They have the added advantage of identifying the reason(s) for inappropriate admission or stay and can provide a list of people, institutions, or factors considered to be responsible for inappropriate use. This information can then be used to plan service developments to improve the provision and use of services.

These tools have yet to be field tested in the United Kingdom but have been successfully used outside the United States, including in Canada and France (H E Smith *et al* and I Nicoulet *et al*, 3rd European health services research meeting, London, December 1991). As we develop strategies for improving the efficiency of use of hospitals we should not ignore the experience of our North American colleagues in monitoring appropriate use.

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SIR,—Those responsible for medical and surgical emergencies will have read with astonishment and dismay the Audit Commission's recommendations to reduce the numbers of acute hospital beds.^{1,2}

It is unfortunate that these recommendations were published at a time of year when resources are stretched to the limit and many hospitals are having to turn away deserving cases and to cancel routine work because of shortages of beds. Since Christmas the two teaching hospitals in Nottingham have been taking in 30-70 acute medical admissions daily. At the beginning of the year my ward was full and, in addition, my firm had patients in 14 other wards, including gynaecology and dermatology wards. This hectic and disorganised activity is not unusual during winter months, and we are short of medical beds throughout the year. Colleagues in other district general hospitals in the midlands report similar problems.

Though I appreciate some of the commission's proposals, such as the greater use of cheaper convalescent beds and scrutiny of discharge procedures, I do not believe that medical economists and statisticians fully grasp the practical implications of busy hospitals managing unpredictable surges of admissions into wards that are already uncomfortably full.

Over the years physicians have been admitting more patients into fewer beds and shortening their stays, so that their wards are always "economically and efficiently" filled. This tight bed state has inevitable consequences: patients waiting for hours on trolleys in the accident and emergency department, patients in unsuitable wards, inappropriate discharges, and time wasted on the telephone searching for empty beds. In Nottingham, where 80-90% of our medical admissions are emergencies, we have to send home many patients dangerously early to inadequate domestic circumstances or poorly supervised care. Many are readmitted within days. This ludicrous method of dealing with emergency admissions is standard practice in many overburdened hospitals and has been forced on us by financial stringencies, bed closures, and an obsession with statistics. It is medically unsafe and legally indefensible, and our young doctors receive no sympathy from politicians or the media when things go wrong as a result.

It is time we killed the myth that rapid turnover and high occupancy of beds equate with efficiency and that empty beds indicate profligacy. In busy hospitals there needs to be much more flexibility and acceptance that a buffer pool of empty beds is necessary for crises. Though this would be more expensive, it would ease the burden on staff, be more comfortable for patients, and, most of all, be safer. Such a proposal is no more wasteful than having a fire engine on standby duty.

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Confidence intervals: enlightening or mystifying?

SIR,—As a result of pressure by medical statisticians the *BMJ*'s editorial policy requires confidence intervals to be given for the main results of a study. Confidence intervals are more informative than significance levels as a method of presenting results, being on the same scale of measurement (for example, mm Hg or incidence expressed per 1000) as the main summary statistics and being intervals within which the corresponding true population variable is likely to lie. The *BMJ* also requires that analyses should be appropriate and presented in a satisfactory manner.

It is therefore disquieting that manifestly inappropriate confidence intervals, presented by Paul J Turnbull and colleagues in their paper on the prevalence of HIV infection among ex-prisoners, passed the editorial process.¹ The usual asymptotic formula of $p \pm 1.96 \text{ SE}$, which produces a symmetric interval, yields inappropriate limits for proportions such as prevalences when the number of positive results is low: a negative lower limit can occur, uninterpretable as a "margin of error." When the observed proportion is 0 the symmetric method produces the interval 0 to 0, irrespective of the preset confidence interval; Turnbull and colleagues have shied away from quoting this degenerate interval for the prevalence in homosexual/bisexual men (0 out of 20 sampled), for which an upper limit of zero is singularly inappropriate.

An "exact" but more complex method is recommended for small samples and proportions away from 0.5.² For sample sizes up to 100 this method is used by the program CIA,³ and tabulations are available.⁴ For sample sizes above 100 when the number of positive results is low an approximate method uses tables for the Poisson distribution.⁴ Thus for the "Others" group in the authors' table, with an observed prevalence of HIV positive samples of 3/188, the 95% confidence interval is (0.6187 to 8.7673)/188—that is, 0.3 to 4.7%. Accordingly, the published table should be replaced by the one given here. For the first few rows

Ex-prisoners in England: results of testing saliva samples for HIV antibodies

Group	HIV antibody positive		
	No tested	No (%)	95% Confidence interval (%)
Total sample	385	19 (4.9)	3.0 to 7.7
Injectors:	148	15 (10.1)	5.7 to 16.7
Men	103	8 (7.8)	3.3 to 15.3
Women	45	7 (15.6)	6.5 to 29.5
Non-injecting women	29	1 (3.4)	0.1 to 17.8
Homosexual/bisexual men	20	0	0.0 to 16.8
Others	188	3 (1.6)	0.3 to 4.7

of the table the symmetric method gives a reasonable approximation to the exact interval, but for the last three it does not. In every instance the symmetric method gives an interval that is shifted to the left compared with the interval produced by the exact or Poisson method; hence it gives a falsely reassuring upper limit for the prevalence.

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Carpal tunnel syndrome and hormone replacement therapy

SIR,—Ronit Confino-Cohen and colleagues report on two women in whom the carpal tunnel syndrome resolved with hormone replacement therapy.¹ We have found that the syndrome is one of many musculoskeletal conditions seen at the menopause that may respond to hormone replacement therapy.

We examined 42 perimenopausal women (≤ 3 years since their last menstrual period) attending a menopause clinic to identify rheumatological

disorders and to assess the response to hormone replacement therapy. For each patient 10 somatic and psychosomatic menopausal symptoms were graded 0-3 (0=none, 3=severe). The pain scores (graded 0-3 for each joint) that had been symptomatic for three months within the past three years were totalled. Patients completed visual analogue scales for pain (0-10 cm) and were examined by the same observer for evidence of rheumatic disorders. Joints were scored for tenderness (0-3). The carpal tunnel syndrome was diagnosed according to the criteria of the American State Health Department,² and one point was scored for the presence of each of Tinel's and Phalen's signs and median nerve sensory loss in each arm (maximum 6). Modified criteria of Yunus *et al* were used to diagnose fibromyalgia³ and a count of tender points used (0-14). Patients were then assessed by a gynaecologist, and oestrogens (subcutaneous implant, transdermal patch or cream, or oral treatment) were started. Progestogens were prescribed when appropriate. Patients were reassessed after six months with the same clinical evaluation, and a visual improvement scale was used to score musculoskeletal symptoms and general wellbeing.

The table shows the diagnoses and response to hormone replacement therapy. Twenty eight patients complained of rheumatic symptoms and 34 diagnoses were made (six women had more than one diagnosis). Five patients reported a non-specific arthralgia affecting the hands with digital swelling, but examination and investigations yielded normal results. Other diagnoses included spondylosis (three patients) and tendonitis (two). A further two women had symptoms of the carpal tunnel syndrome but not signs. Overall, psychosomatic scores correlated with pain ($r=0.33$, $p=0.03$). Thirty seven women were reassessed after six months. Somatic scores ($p<0.001$), psychosomatic scores ($p<0.001$), and pain scores on the visual analogue scale ($p=0.02$) had improved significantly. Improvement scores for general wellbeing and musculoskeletal symptoms correlated strongly ($r=0.66$, $p<0.001$).

Previous authors have noted musculoskeletal symptoms at the menopause but have not detailed specific rheumatological disorders.^{4,5} Surprisingly, 17% of our 42 women had the carpal tunnel syndrome and a further 5% had symptoms without signs. A recent study found evidence of the carpal tunnel syndrome in 32% of women after oophorectomy.⁶ Changes in forearm fat content that occur at the menopause, which are prevented by hormone replacement therapy,⁷ may explain these findings and the impressive response to hormone replacement therapy seen in our group and the women reported on by Confino-Cohen and colleagues.

Commoner rheumatological diagnoses and response to hormone replacement therapy (HRT) over six months in 42 perimenopausal women

	Osteoarthritis	Carpal tunnel syndrome	Fibromyalgia
No of patients	8	7	6
Mean age (years)	48.5	49.5	46.3
No treated with HRT	7	6	4
Mean menopausal symptoms score (0-10):			
Somatic:			
At entry	4.9	4.7	6.8
At 6 months	1.7	1.3	0.8
Psychosomatic:			
At entry	8.0	6.8	7.5
At 6 months	3.0	1.0	3.3
Mean pain score:			
At entry	6.4	NA	24.5
At 6 months	5.4		6.25
Mean visual analogue pain scale (0-10 cm):			
At entry	3.6	NA	5.4
At 6 months	3.3		4.6
Mean visual analogue improvement scale (-5 to +5 cm):			
General wellbeing	3.7	3.3	3.2
Musculoskeletal pain	1.7	NA	2.4
Mean examination score:			
At entry	4.0	3.0	12.9
At 6 months	2.3	0.5	4.5

NA=Not applicable.

We found that 14% of our patients had fibromyalgia, and low oestrogen concentrations were seen in those with persistent symptoms. Oestrogen withdrawal lessens rapid eye movement sleep and heightens depression,⁸ both of which are associated with fibromyalgia, and hormone replacement therapy seems a logical option in this group. Although there is undoubtedly a strong placebo effect with hormone replacement therapy⁹ and our study was uncontrolled with few patients, hormone replacement therapy seemed to be highly efficacious in many patients, suggesting the need for further randomised studies. Many common rheumatological disorders, including the carpal tunnel syndrome, seen in middle aged women may be part of the climacteric syndrome, for which hormone replacement therapy should be encouraged.

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Passive smoking and otitis media with effusion

SIR,—Several points arise from Anthony Hinton's letter¹ commenting on my and A P Coatesworth's paper.² The difference in findings between our survey² and his³ may result from differences in