cancer units in district general hospitals.¹ It refers to the number of patients with common cancers whom surgeons need to treat to ensure adequate skill and suggests that figures regarded as adequate now will be revised upwards in the future.

At present no firm recommendations exist about the critical number of patients who are required to ensure adequate clinical skill, though 50-80 per specialist has been suggested by the British Association of Surgical Oncology and the British Breast Group. The only evidence currently available suggests that outcome is better when the annual caseload per consultant exceeds 30 compared with under 10.² Evidence from the same source showed a slightly worse (though not significant) outcome, with fewer patients receiving adjuvant treatments, when the caseload exceeded 50, but this has received no attention. The study concluded that improved survival could be explained by the introduction of a multidisciplinary approach to treatment and that the effect of patient numbers was probably a function of this and of clinical organisation.

A recent paper suggested that the prognosis of patients with breast cancer is improved by specialist care.³ A specialist interest was defined on the basis of four criteria: having a dedicated breast clinic; having a defined association with pathologists and oncologists, organising and facilitating clinical trials, and maintaining a separate record of all patients. The paper received some criticism (though general support for specialist care),^{4,5} but, interestingly, the number of patients treated was not a criterion.

It is nonsense to assume that the quality of a clinical service bears a linear relation to the number of patients treated. Just as a minimum number of patients is necessary to maintain skill, there is probably a maximum number (still to be determined) above which the service becomes overwhelmed. For every new patient seen with breast cancer, up to 15 are now referred with benign disease, implying a total of 1000-1500 new referrals in a practice seeing 60-100 new cancers a year; this is quite enough to ensure continuing skill in a district general hospital committed to subspecialisation.

The management of cancer is not simply a matter of number crunching: 200 patients can be treated just as badly as 20. The quality of a cancer unit should be measured chiefly by the commitment of its staff to subspecialisation; multidisciplinary consensus management; and participation in continuing medical education, audit, and clinical trials—and ultimately by its results.

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Authors' reply

EDITOR,—We wish to respond to several points raised in the previously published letters¹ and the above letters about our paper.² None of Ian Campbell's points¹ change our results or their interpretation. We considered selective bias by

analysing our data on the basis of hospital catchment areas. Specialists and non-specialists worked in the same hospital serving the same catchment areas. There was a 4.6% advantage in five year survival for those catchment areas where the specialists saw 44% of patients compared with those where the specialists saw only 9% of patients. As both analyses showed an advantage for specialist care, selection bias is an unlikely explanation of the differences seen.

We relied heavily on tumour size as the main prognostic factor because of our stated concerns about the accuracy of nodal assessment. Using actual tumour size, or six rather than three categories, as a covariate in the survival analysis leaves the hazard ratio for specialists relative to non-specialists unaltered at 0.83.

Our data fit the proportional hazards model well. Analysis of the data in two separate periods of follow up (0-5 and 5-10 years) produced ratios of 0.81 (95% confidence interval 0.70 to 0.93) and 0.89 (0.71 to 1.11) respectively for specialists compared with non-specialists.

To say that our study was biased because we did not take all prognostic factors into account is to say that all non-randomised studies of disease are biased. While randomised controlled trials give an indication of efficacy in a selected population, observational studies show how effective findings are in the general population. Also, when there are difficulties in carrying out a randomised trial, observational studies are the only means of proceeding.

We agree with Michael Baum¹ that the maximum difference that could be attributed to the application of optimal adjuvant treatment is 4%, compared with the 11% advantage that we observed for specialists in patients aged 50-64. We present no evidence to explain this observation. We believe that the only way to test the validity of our findings is to extend the period of the study to the present, with the cooperation of the specialists. This is now being done.

We agree with Adrian Ball, in the letter above, that the number of patients treated should never be the sole criterion for designating a service as a specialist service. The ultimate assessment of survival will come from prospective audit. This will give precise meaning to the term "specialist."

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Anaesthesia in the United States

Anaesthesia in Britain is as bad as in the United States

EDITOR,—I am a registrar and, like Peter Hambly¹, on an exchange—but from the Groote Schuur Hospital, Cape Town, to a similar post in Kent. In Britain, as in the United States, anaesthesiologists do not warrant the time of day. Surgeons do not inform us of when they are about to make the incision, dilate the cervix, or stretch the anus; nor do they keep us informed of their progression or imminent termination of the operative procedure. Surgeons do not inform us that they are going to inject adrenaline (into patients with heart disease) or pump the abdomen full of carbon dioxide. We are just there to deal with the consequences. Similarly, we are

expected somehow to know which antibiotics are favoured in particular situations by every surgeon.

Surgeons do not discuss with the anaesthetist planned major surgery, changes to their lists, or variations from the scheduled starting times (I can count on one hand the number of operating sessions that have started on time in the past year). They post their out of hours operating list on the board and expect the anaesthetists to assimilate it by osmosis or extrasensory perception. They would not think of telephoning me to discuss preoperative care and preparations; this results in money being wasted on unnecessary investigations, while patients most in need of specialised investigations do not have them, which results in delayed surgery.

Anaesthetists are seen as dispensable technicians, great for looking after central venous lines and for making frequent adjustments to the light but not to be consulted in greater matters of clinical state. I was also astounded to learn that in Britain anaesthetists seem to have a monopoly on the airway and that doctors who spend their entire working lives in accident and emergency medicine either cannot or will not intubate patients.

Surgeons also fail to realise their responsibilities in transferring patients from the bed to the operating table, since they are never in theatre when this takes place. A case heard in Windhoek (Namibia) Supreme Court found that the surgeon and anaesthetist had to be in the operating room when such a transfer was made.

The training that I received in Cape Town could not have been bettered in any way, either in the variety of clinical experiences or in the many skills imparted. The new, seamless modular training proposed by Calman will produce anaesthetists without this wide range of clinical experiences. Hambly misses British surgeons; I miss the Cape Town surgeons for their unfailing courtesy and their communication skills.

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- 1 Hambly P. Visions of anaesthetic hell. *BMJ* 1996;312:1045. (20 April.)

Anaesthesia is an unpopular specialty in the United States

EDITOR,—Peter Hambly's visions of anaesthesia hell accurately describe the relationship between anaesthetists and surgeons in one of the more aggressive surgical institutions in the United States.¹ A more positive professional ambience is normal in private practice and in my own experience at the University of Virginia. The reasons that Hambly gives for this unfortunate relationship echo my own, but recently issued American training statistics for the specialty paint a dismal picture.

Over the past five years the number of residency positions available each year has fallen from over 1300 to 712 for July 1997. Of those 712 positions offered, only 211 (30%) have been filled. These positions were offered across the country by 118 training programmes, only six of which filled all their positions. Last year saw similarly dismal figures, with only 44% of positions being filled.

Hambly's article goes some way towards explaining why the number of people entering the specialty has fallen so dramatically. Discussions in coffee rooms here suggest that the availability of jobs at the end of training and financial reward have a more pivotal role in attracting new residents. It is now well recognised that hospital