

2 Richards MA, Baum M, Dowsett M, Maguire P, McPherson K, Morgan DAL, et al. Provision of breast services in the UK: the advantages of specialist breast units. Report of a working party of the British Breast Group. *The breast*. Edinburgh: Churchill, 1995.

3 Sainsbury R, Haward R, Rider L, Johnston C, Round C. Influence of clinician workload and patterns of treatment on survival from breast cancer. *Lancet* 1995;345:1265-70.

More centralisation of services is not needed

EDITOR,—Charles R Gillis and David J Hole may have found evidence that survival of patients with breast cancer is improved if they are treated by specialist breast surgeons, but there is little scientific evidence that surgery influences survival from breast cancer to any significant extent and they collected no information on the details of treatment received.¹ There is considerable evidence, however, to support the survival benefit of adjuvant hormone therapy and chemotherapy² and of long term benefit from adjuvant radiotherapy.³ Correlation does not prove causation. If encouraging surgeons to work more closely with oncologists can achieve better access to adjuvant treatment and produce improved survival, this would be a much cheaper solution than to create large numbers of specialist breast units. The latter solution should be subjected to a full health technology assessment before being widely adopted.

The gain in treatment benefit of referral to so called specialists over and above the application of clearly defined protocols is unclear. There is evidence of the slow adoption of novel therapies into clinical practice, both within⁴ and outside oncology. The faculty of clinical oncology of the Royal College of Radiologists is trying to address the problem of medical practice variation through the clinical oncology information network (COIN) project, a major strand of which is national comparative audit in oncology against professionally agreed guidelines of best practice.⁵

While Gillis and Hole are correct in asserting "that there is a need to improve equity in the treatment of breast cancer" we do not need more centralisation of services leading to less equity; we do need timely protocols and guidelines widely and rapidly disseminated by using modern information technology. Recommendations from the Royal College of Radiologists on cancer management will soon be appearing on the worldwide web, and there can be no doubt that in future many cancer specialists will be using computer based information services to bring a high level of care to cancer patients irrespective of where they live

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1 Gillis CR, Hole DJ. Survival outcome of care by specialist surgeons in breast cancer: a study of 3786 patients in the west of Scotland. *BMJ* 1996;312:145-8. (20 January.)

2 Early Breast Trialists Collaborative Group. Systemic treatment of early breast cancer by hormonal, cytotoxic, or immune therapy. *Lancet* 1992;339:1-15, 71-85.

3 Cuzick J, Stewart H, Rutquist L, Houghton J, Edwards R, Redmond C. Cause-specific mortality in long term survivors of breast cancer who participated in trials of radiotherapy. *J Clin Oncol* 1994;12:447-63.

4 Basnett I, Gill M, Tobias J. Variations in breast cancer management between a teaching and a non-teaching district. *Eur J Cancer* 1992;28A:1945-50.

5 Karp A, Squire CJ, Sizer B. National comparative audit in clinical oncology. The Royal College of Radiologists' COIN project. *Eur J Cancer* 1995;31A(suppl 5):S38.

Case selection bias affected results

EDITOR,—Charles R Gillis and David J Hole provide clear evidence that patients of specialist sur-

geons have a higher survival rate from breast cancer than those of non-specialist surgeons.¹ However, they go on to conclude that this association is one of cause and effect, rather than due to differences in the cases referred to the two groups of surgeons (case selection bias). Their reason is that the difference in outcome persisted after adjustment for some prognostic factors; but statistical techniques can correct for case selection bias under only three conditions, none of which held in the study reported.

Firstly, the correction must take account of all prognostic factors, but Gillis and Hole did not include whether metastatic disease was present, and information on histological grade was available in only a minority of patients. Furthermore, the difference in prognosis between breast cancer patients is only partially explained by the known prognostic factors, and by definition, Gillis and Hole could not correct for factors not yet identified.

Secondly, the formula used for correction for prognostic factors must be the correct one for the situation. Gillis and Hole used Cox's proportional hazards model, but they do not comment on how well it fitted the data. Other data suggest that Cox's model is not in fact a good fit to breast cancer mortality data.²

Thirdly, when adjusting outcome for variation in tumour size, Gillis and Hole did not use the actual tumour size but merely three categories of size. Full adjustment for a prognostic factor requires the actual value of the factor, not values combined into a few large categories.

So the adjustment for case selection bias can only have been partial, and it remains unknown whether a difference in outcome would persist after complete adjustment. In fact, the three above conditions will rarely if ever be met, and this is why randomised prospective studies are necessary to eliminate case selection bias altogether.

The association between specialists and outcome is an important finding, but we must not jump to the conclusion that the linkage is one of cause and effect. If we really want to find out if specialisation improves outcome, it can only be through a prospective randomised trial—difficult to set up perhaps, but studies of equal difficulty have already been completed. The potential gains (if specialisation really does improve outcome) and the certain drawbacks (from disruption to the organisation of surgical services) surely justify serious consideration of such a trial.

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1 Gillis CR, Hole DJ. Survival outcome of care by specialist surgeons in breast cancer: a study of 3786 patients in the west of Scotland. *BMJ* 1996;312:145-8. (20 January.)

2 Gore SM, Pocock SJ, Kerr GR. Regression models and non-proportional hazards in the analysis of breast cancer survival. *Appl Statist* 1984;33:176-95.

Protocols are important

EDITOR,—The results of Charles R Gillis and David J Hole's study are interesting, but I feel their conclusion is extremely misleading.¹ While it seems that the survival rate was higher for those patients treated by specialist surgeons, the paper does not answer the more vital question as to why this should be so—it merely postulates the causes of the difference seen.

The conclusion that the future care of patients with breast cancer should be provided through specialist units cannot be supported by the results of the study. What is needed is an understanding of why there was a difference in survival, leading to recommendations in a protocol for treating breast cancer. Other authors have shown that it is protocols that are the most

important factor in determining patients' outcome in breast cancer, not the building in which they receive treatment.²

My fear as a lead clinician in cancer services in a small hospital is that those who are bent on the myth that big is beautiful will use this report to try and concentrate medical care in big centres, with total disregard for the public's desire to have services of acceptable standard based locally.

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1 Gillis CR, Hole DJ. Survival outcome of care by specialist surgeons in breast cancer: a study of 3786 patients in the west of Scotland. *BMJ* 1996;312:145-8. (20 January.)

2 Winstanley JHR, Leinster SJ, Wake PN, Copeland GP. The value of guidelines in a breast screening service. *Eur J Surg Oncol* 1995;21:140-2.

Health services must develop services to reduce crime and violence

EDITOR,—We welcome recent editorials on the impact of violence on public health.¹⁻³ In the annual report of the director of public health for the borough of Sandwell, *Safer Sandwell*, we have tried to explore the relation between crime and the fear of crime and public health.⁴

The roots of crime and public health are frequently the same. Our interpretation of crime statistics by police beat showed highly significant correlations between all crimes and violence and non-ownership of a car and unemployment.

Nationally, crime increased by three quarters between 1983 and 1993. In the same period inequalities in health have widened and life expectancy in some groups has fallen. These are fundamental failures of public policy, which can be addressed only by reducing inequalities in income between the very poorest and richest people in society.

Social justice and the health of ethnic minorities are also key themes of public health policy. Ethnic minorities are at greater risk of crime and at greater risk of unfair treatment under the criminal justice system. Our report showed that the difference in previous offending between white and black male youths was not significantly different (39% v 41%), yet black Caribbean youths were far more likely to receive custodial sentences after their first offence than were white youths (80% v 70%).

We highlighted those areas in which the health service is a major force for prevention and early detection of crime and for responding to crime; these include child protection, adult protection in care services, and prevention of substance misuse. We estimated that 6000 crimes might be prevented by effective harm minimisation opiate substitution services (based on 20 injecting users with a £160 a day habit stealing videos valued at £30 on the street).

Doctors should familiarise themselves with the voluntary services available locally that can support victims of crime, including Victim Support, women's refuges, Rape Crisis, mediation schemes, neighbourhood watch, citizens' advice bureaux, community safety forums, and crime prevention projects. This may lead to more appropriate management of anxiety and depressive states and other manifestations of distress caused by crime and fear of crime.

Health services should also be involved in multidisciplinary planning initiatives that target local areas of poverty. These initiatives need genuine partnerships meeting local needs, not professional aspirations.

Health services must be involved in public health advocacy and partnerships to promote health and safety and must develop their own effective services