in efficiency can be achieved in large clinics within a department, although more work is required to identify potential improvements and implement them.

During one week in 1981 the rheumatology department at The London Hospital measured the waiting times for patients in its seven clinics, each staffed by a consultant and three trainees or clinical assistants. Six medical students were enlisted to help as part of a project for their epidemiology and statistics course. At each clinic two students observed the time of arrival of patients and made a note of their booked appointment time, their method of arrival, the time they were actually seen, the time they left the consultation room, and any specific points that may have contributed to that patient's consultation or waiting time. The times at which the doctors arrived at the clinic and left were also noted, and as an adjunct to the survey the students observed the procedures at the registration desk.

In all, 159 patients being followed up and 39 new patients were seen in the week of the survey. The table shows the mean patient waiting time, number of patients seen, and consultation time. The waiting was related in part to the appointment times used, in part to the late arrival of doctors, and in part to the distribution of new and follow up patients during the clinic.

Changes introduced to the clinic included rescheduling appointment times, placing appointments for new patients into the middle hour of the clinic, allocating more time for each new patient, and seeing patients in strict appointment order. After these had been fully incorporated the survey was repeated with the same methods. The results showed that patient waiting time was reduced by about 20%, that more patients were seen in each clinic, that consultation times increased by 15% for follow up patients and 28% for new patients, and that the number of clinics with delayed start times was reduced (table).

Mean patient waiting time, number of patients seen, and consultation time

	Initial survey	Repeat survey
Mean patient waiting time (mins)	31	26
Mean No of patients per doctor per clinic	9	10
Mean consultation time (mins):		
New patients	26	33
Follow up patients	13	15
Clinics with delayed start (%):		
0-10 min	45	71
10-20 min	9	14
20-30 min	27	7
30-40 min	18	
>40 min		7
Mean time morning clinic finished	1247	1301

This audit exercise clearly resulted in a variety of improvements in the service offered to patients. It also occurred eight years before the publication of the white paper *Working for Patients*. It shows that audit can be rewarding and has long been part of medical practice.

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1 Jennings M. Audit of a new appointments system in a hospital outpatient clinic. *BMJ* 1991;302:148-9. (19 January.)

Laparoscopic cholecystectomy

SIR,—Professor C Wastell gives a balanced review of the present knowledge of this new technique and points out the lack of appropriately controlled data but ends with the extraordinary statement that this method will “inevitably become the only method for routine cholecystectomy.”¹ Laparoscopic cholecystectomy is relatively easy in a functioning gall bladder with thin walls

but is difficult and dangerous in one with a wall 1 cm thick and densely adherent to the colon, duodenum, or common bile duct. It is also contraindicated in the many patients who have had previous upper abdominal surgery.

Although the laparoscopic method may nearly eliminate complications related to wounds, it does not avoid a general anaesthetic, and there are other complications besides the wound that keep the increasingly elderly population in hospital. The postoperative stay for young, fit patients after a standard cholecystectomy is now down to two or three days because patients' and surgeons' attitudes to this operation have changed, as they have to others such as hernia repairs.

Future research will concentrate on preventing the formation and recurrence of gall stones by diet or simple drugs, or both, and then there will be a strong move in young patients towards just removing the stones and leaving the thin walled gall bladder to function normally.

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SIR,—There is no doubt, as Professor C Wastell says, that laparoscopic cholecystectomy will inevitably become the only method for routine cholecystectomy in this country.¹ Indeed, the process is already well advanced and seems irreversible. There is also no doubt for those of us who have performed this procedure that it is better for most patients and results in a saving of hospital bed days.

In our understandable enthusiasm for the technique of laparoscopic cholecystectomy it is important that we do not minimise or overlook the problem of ductal stones. The surgical literature on gall stone surgery has for years been preoccupied with the identification of and optimal treatment for ductal stones, but these are now dismissed as almost an irrelevance because of the “ready availability of endoscopic retrograde cholangiopancreatography and sphincterotomy.”²

Even in expert hands there is an 8% to 10% morbidity and 1% to 2% mortality from endoscopic removal of ductal stones.² This morbidity and mortality is related predominantly to acute pancreatitis, bleeding, and perforation. Although these complication rates are comparable with those after repeat surgery to remove retained or recurrent ductal stones,³ they represent an additional morbidity and mortality for patients undergoing laparoscopic cholecystectomy. What is more, the complications of endoscopic treatment are fairly independent of age, affecting the young and fit as well as the old and frail. This contrasts with the complications of surgery for ductal calculi, when the complications are largely seen in the elderly and unfit. A recent randomised study of endoscopic duct clearance before surgery has shown the hazards of combined procedures.⁴

We need carefully to reconsider our attitude to patients with gall bladder stones and ductal stones, and clinical protocols need to be designed for the optimal investigation and management of these patients. Only in this way will we avoid increasing the overall morbidity of the minority of patients who have ductal stones.

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1 Wastell C. Laparoscopic cholecystectomy. *BMJ* 1991;302:303-4. (9 February.)

2 Cotton BB. Endoscopic management of bile duct stones (apples and oranges). *Gut* 1984;25:587-97.

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SIR,—Professor C Wastell has already decided that laparoscopic cholecystectomy is “advantageous for both the customer and the community.”¹ On what evidence—or is it because it “stands to reason”? Twenty or more years ago transurethral resection of the prostate was espoused without proper testing because it was “better” than open prostatectomy. Only now is it apparent that it is not as effective as, and is associated with greater long term mortality than, the open procedure.² Belatedly, and rather forlornly, randomised controlled trials are being proposed.

Uncritical attitudes towards any surgical (or other) interventions cannot be justified and in some cases are unethical. Proper evaluation of endoscopic surgical techniques is vital. In addition the annual saving of £21m suggested by Professor Wastell could be achieved only if beds were closed and staff sacked. In our experience with a randomised controlled trial of an endoscopic technique in gynaecology it is more likely that the beds will be filled rapidly by other patients with little real saving for the hospital. Reduction in the “cost” to the patient may, however, be real.

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1 Wastell C. Laparoscopic cholecystectomy. *BMJ* 1991;302:303-4. (9 February.)

2 Roos NP, Wennberg JE, Malenka DJ, et al. Mortality and reoperation after open and transurethral resection of the prostate for benign prostatic hyperplasia. *N Engl J Med* 1989;320:1120-4.

Sialic acid and cardiovascular mortality

SIR,—Dr Gunnar Lindberg and colleagues conclude that serum sialic acid concentration is a strong predictor of short, medium, and long term cardiovascular mortality.¹ We believe that sialic acid concentration may be an epiphenomenon related to known vascular risk markers rather than a new index of the existence or activity of the atherosclerotic process that is suggested by the authors in their conclusion.

Sialic acid is a component of numerous functionally important glycoproteins and glycolipids, such as fibrinogen, clotting factors, and lipoproteins.^{2,3} The method used to measure sialic acid in this study is a non-specific measure of total sialic acid, most of which is bound to serum proteins. The method has subsequently undergone modification to reduce interference from other substances.⁴ The reported increase in serum sialic acid is therefore related either to an increase in the amount of serum glycoprotein or to increased sialylation of normal amounts of protein.

The clearance of many glycoproteins from the plasma is related to the degree of desialylation by membrane sialidases.⁵ A reduction in desialylation may increase the half life and quantity of the glycoproteins in the circulation and will be reflected in an increased serum sialic acid concentration. Changes in sialylation can also influence the activity of glycoproteins and hormones, including platelet aggregation stimulated by fibrinogen, activation of clotting factors,⁶ and the uptake of lipoproteins into vessel walls.⁷

The authors express concern that the relation between serum sialic acid concentration and mortality may be due to a confounding factor. A strong potential candidate for this role is glucose intolerance. Serum sialic acid concentration is

increased in diabetic subjects.^{8,9} Non-insulin dependent diabetics have an increased risk of cardiovascular disease¹⁰ even when a correction is made for recognised cardiovascular risk factors.¹¹ An excess cardiovascular risk may also be associated with impaired glucose tolerance.¹² The prevalence of non-insulin dependent diabetes and impaired glucose tolerance may vary between populations but a combined prevalence of over 60% is reported for a Scandinavian population of men aged between 65-84.¹³ A similar prevalence of glucose intolerance in the study population would undoubtedly result in an increased number of deaths from cardiovascular and non-cardiovascular causes. An underestimate of diabetes as a cause of death in this population may be available from the Swedish mortality register.

The observation of the relation of serum sialic acid and mortality is of undoubted interest but warrants further detailed investigation before serum sialic acid concentration is accorded the status of a risk factor or predictor of mortality.

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Cord compression and lung cancer

SIR,—Dr P Watson discussed only one surgical technique for managing patients with spinal cord compression.¹ Such patients have a short life expectancy, but like the two patients described they can survive for several months and even more than a year. Nothing is more uncomfortable and distressing for them than to die in a protracted paraplegic state.

Spinal surgery has much to offer patients with metastatic cord compression, and it is exceptional for the cord to be compressed from the back. In most, if not all, patients with metastatic cord compression the pressure is from the front, either

by posterior extension of the vertebral body metastasis or through local angular kyphosis stretching the cord, or indeed both, as figure 3 of his article clearly showed. Yet he discussed only laminectomy, which is not only futile but dangerous as the anterior cord compression cannot be adequately dealt with by a posterior approach if the posterior elements are the only intact part of the spine locally and the anterior body has collapsed with metastasis.

In 1945 Shenkin *et al* reported bad results from laminectomy,² and this message was often reiterated.^{3,6} Hall and Mackay found worthwhile results in only 38 of 154 cases.³ Dickson reported 42 laminectomies, in 22 of which the patients did not improve or were made worse; only three resulted in improvements.⁶ Gilbert *et al* showed that laminectomy with radiotherapy was no more or less effective than radiotherapy alone.³ Findlay warned against attempted decompression by a posterior approach in 1984.⁷

Anterior surgical decompression is the best procedure^{8,11}; it allows complete clearance of vertebral body and tumour down to dura and free access to reconstruct the anterior spinal column with bone graft, methyl methacrylate cement, and instrumentation to provide subsequent stability. Sometimes additional posterior instrumentation is required for stability. With the anterior approach most patients make a useful and often complete neurological recovery even if the paraplegia is established, although the longer complete paraplegia has been present preoperatively the less successful is the result. The improvement rate of 1:2% after paraplegia is established quoted by Dr Watson applies only to laminectomy and should serve as another nail in the laminectomy coffin.

Surgery is indicated for intractable spinal pain or paralysis, or both, and if there are no symptoms but an isotope bone scan indicates spinal metastasis then Dr Watson is right that chemotherapy or radiotherapy appropriate to the histology should be started. But for those cases in which surgery is indicated anterior decompressive surgery is what is necessary.

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- 1 Watson P. Managing spinal cord compression in small cell lung cancer. *BMJ* 1991; **302**:103-4. (12 January.)
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SIR,—I accept that the discussion of the management of malignant spinal cord compression¹ was by necessity brief. I would like to take issue with the somewhat negative attitude to the role of surgery.

The figures quoted from my paper² are correct but represented only the global figures accumulated from a literature review of over 1800 cases. The fact that 51% of patients undergoing radiotherapy were ambulant after treatment as compared with

only 38% after laminectomy and radiotherapy was due to a higher percentage of patients in the radiotherapy group who were still ambulant at presentation. The harsh facts were that in patients who had become unable to stand but still retained leg movement only one third became ambulant after either treatment. The purpose of that paper was to show that the morbidity of laminectomy was highly significant, but it also concluded that the overall results of either treatment in terms of ambulation were most disappointing.

In a further paper I showed that the presence of vertebral collapse and severe paraparesis produced even worse results after either radiotherapy alone or laminectomy.³ Several papers^{4,6} have confirmed that a radical transthoracic excision of the collapsed metastatic body results in an ambulation rate of 80%.

In the discussion of Dr P Watson's presentation it was questioned whether surgery would have been better than radiotherapy. In case 2 the patient had a noticeably collapsed body of T10 with posterior extrusion of bone and tumour into the cord. Surgical treatment was dismissed on the incorrect grounds that such tumour often occludes a spinal artery. The patient had no neurological recovery after radiotherapy and steroids, whereas anterior resection would have had an 80% chance of resulting in successful ambulation.

Although there is no longer a case for injudicious and indiscriminate laminectomy in the management of metastatic spinal cord compression, appropriate aggressive surgical treatment is the treatment of choice for patients with vertebral collapse and major neurological deficit. Surgery is also appropriate in patients suffering severe pain due to tumour induced spinal instability. Broadly speaking radiotherapy is for the patient presenting without spinal instability who has either no neurological deficit or only a moderate one.

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- 1 Watson P. Royal Brompton grand rounds: managing spinal cord compression in small cell lung cancer. *BMJ* 1991; **302**:103-5. (12 January.)
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Laboratory costs and the NHS reforms

SIR,—The thrombosis prevention trial is a primary prevention trial of antithrombotic treatment in men at high risk of a first heart attack. It is being carried out through the MRC's general practice research framework. During the summer of 1990 we sent all 108 participating practices a brief questionnaire about the local availability and costs of routine blood counts to decide whether haemoglobin estimations would be carried out more cheaply locally or through our own laboratory. Of the 108 practices, 78 replied. Most were unsure of the costs, but 18 discovered the actual costs in their local hospitals and these ranged from £5 to £25, with a median value of £10.80. A further 11 practices gave provisional estimates, which varied from £1 to £15.

Regardless of the practices that did not provide figures, there seems to be considerable variation in the costs for one of the simplest laboratory tests in