I was surprised to see that Mr Sherlock and others considered that none of the appendicectomies could safely have been deferred to the next day. Except for the very occasional case operated on at night for convenience, my practice is not to remove appendices during the night, and in over 400 cases I have not had cause to regret this policy. While we rightly deprecate the use of antibiotics in undiagnosed acute abdominal pain, I start treatment with metronidazole (as well as analgesia) once I have diagnosed appendicitis, and my decision to remove the appendix is not swayed by the—often dramatic—overnight response to treatment.

Most cases of intestinal obstruction and gastrointestinal bleeding, all cases of "biliary conditions," and even cases of perforated peptic ulcer may not only safely be deferred to the following day but will also benefit from overnight rehydration, correction of electrolyte imbalance, and nasogastric decompression of the gut. These measures inevitably tend to be curtailed at night when everyone wants to operate and get to bed. I consider therefore that probably only 70 (and possibly fewer) of the cases reported by Mr Sherlock and others required night time operation, which has important implications.

The reason for operating at night is the lack of money available to pay staff in busy district general hospitals to cover additional operating sessions on a regular basis for deferred emergencies. Those hospitals which run three or four "trauma lists" a week for fractured hips and deferred internal fixation of other fractures testify to the success of such a policy in freeing operating theatres at night for general surgical emergencies. With the present staffing structure of NHS hospitals, however, day time operating for all is a luxury which the NHS cannot afford; indeed, a shift system for deliberate night time emergency surgery by training surgeons desperate for experience might provide the most efficient use of operating theatres.

If, however, the proposals of the Short report are implemented, there will be no junior surgeons to operate through the night. Are consultants justified in their fears that they will end up supporting an underpriced NHS by working day and night until their retirement to keep pace with demand? I am sure that the "powers that be" would like to think they would, but I am equally certain that what would happen is that each night covered by a consultant would be followed by a vacant operating session to deal with the night's harvest of deferred emergencies. Most of the time, as my modified conclusions from the findings of Mr Sherlock and others suggest, the consultant will get a decent night's sleep and the house surgeon will get a far better grounding in the assessment of surgical emergencies than she does now, which should result in better surgically trained general practitioners. The loss of one elective operating session for each night on take would, of course, result in lengthened waiting lists, quite properly reflecting the government's reluctance to provide enough money for the NHS to function as its subscribers wish.

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SIR,—The paper on nocturnal emergency surgery has touched on all relevant factors

except one. I suspect this factor has not been mentioned as accurate statistics cannot be produced without an enormous amount of heart searching on the part of the trainee and some embarrassment on the part of the consultant. The factor is that a few surgeons in training do emergency operations which could easily wait simply because they know that if they leave these patients to be operated on next morning they will find themselves at the end of a retractor while the consultant does the operation.

The remedy is for consultants to make sure that their trainees get enough elective operating to do. They should also be prepared to come in for an emergency and take their registrar through the operation instead of "taking over" the operation themselves. Furthermore, if the registrar knows that he will be taken through a major emergency operation by a senior colleague next morning he will certainly leave patients who can wait—with benefit to the patient. Only with such a practice will the patient get the best deal and nocturnal emergency surgery be reduced.

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Treatment of oesophageal cancer: proposal for a national society

SIR,—Mr Richard Earlam's account of the management of oesophageal cancer in the North East Thames region (23 June, p 1892), though no doubt reflecting current practice, makes depressing reading from which three important conclusions are apparent. Firstly, when a major specialised operation is undertaken on an occasional basis in centres without the coordinated multidisciplinary approach of specialised units the outcome is abysmal. Secondly, the results are so different from those obtained in these units that it is clear there exist fundamental differences in philosophy, selection, and practical management of a disorder that is uncommon. Finally, data obtained either from many outdated series or even from pooled hospital activity analyses are less valid in assessing our current achievement than prospective analysis of data from specialist units.

The first objective with oesophageal cancer must be to render the patient euphagic and obviate an unpleasant death from starvation. The second is to offer a cure in selected patients. The third objective is to accomplish the above in a humane manner and with morbidity and mortality which is both clinically and ethically acceptable. The attainment of these objectives requires careful selection by a few doctors choosing the treatment without bias and after objective assessment of spread and operability. It demands a multidisciplinary approach with physicians, surgeons, radiologists, anaesthetists, radiotherapists, and oncologists employing proved advances in assessment, preoperative preparation, operative techniques, and postoperative care, together with careful documentation, follow up of patients, and continuing review of results.

The documentation and analysis of results become more meaningful if these are from a well defined catchment population as has been the experience in Lancaster. It has one of the highest incidences in the United Kingdom, and 186 patients with oesophageal carcinoma have been treated over the past 10 years. Resection has been deemed appropriate in about 40%, with a resectability rate of 95% of those operated on.¹ The procedure related mortality (hospital and 30 day

mortality) has been 10% overall, falling to 5.5% in the last two years. The mean time to death in those not surviving resection was 11.5 days; no procedure related deaths occurred after 30 days, and very few patients stayed in hospital for this length of time. Survival at one year was 5% and at five years 10%, although this latter figure is conservative as some patients remain alive two to four years after the resection. Every patient referred had fiberoptic endoscopy with a biopsy and brush cytology as an outpatient, and no one was denied a therapeutic procedure. Over 90% of those discharged from hospital who have since died have done so outside the acute hospital. Most were with their families, who were supported by general practitioners, a 24 hour district nursing service, and an oncology health visiting service.

All of these figures are very different from those of Mr Earlam's review, but are by no means confined to our own units. Very similar figures for operative mortality and survival have been published recently by Dark *et al*² and McKeown.³ We maintain that a nihilistic approach should not be adopted merely because the potential for therapeutic disaster appears to be so great. We believe that no patient should be denied the chance of a cure. Equally he should not be made to incur an unacceptable risk by being subjected to inappropriate surgical intervention; neither should a lesser procedure such as intubation be a substitute for well performed surgery on the grounds that the former carries a lesser mortality. Our experience has shown this is not the case, and resection in appropriate cases is the only treatment to achieve euphagia in over 90% of cases.⁴

What is now required is the centralisation of treatment of these patients in specialist units where a multidisciplinary approach and the concentration of numbers will allow controlled trials of the various therapeutic modalities. Furthermore, such units could through a national society for all doctors working with patients with cancer and other disorders of the oesophagus compare their results, coordinate clinical trials, and promote healthy discussion—to the ultimate benefit of the sufferers.

At the first British based international conference on disorders of the oesophagus recently held in Lancaster many specialists from various parts of the world submitted views similar to those expressed in this letter. Since then there has been a feeling among British doctors that the time has come to form such a national body. The publication of Mr Earlam's review is a timely reminder of our obligations to our patients and colleagues and we invite those interested in the concept of such a society to write to us.

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¹ Watson A. Therapeutic options and patient selection in the management of oesophageal carcinoma. In: Watson A, Celestin LR, eds. *Disorders of the oesophagus*. London: Pitman, 1984.

² Dark JS, Mousalli H, Vaughan R. Surgical treatment of carcinoma of the oesophagus. *Thorax* 1981;36: 891-5.

³ McKeown KC. Carcinoma of the oesophagus. *J R Coll Surg Edinb* 1979;24:253-74.

⁴ Watson A. A study of the quality and duration of survival following resection, endoscopic intubation and surgical intubation in oesophageal carcinoma. *Br J Surg* 1982;69:585-8.

Low osmolar contrast media

SIR,—The implication of Professor Ronald G Grainger's leading article (21 July, p 144) and letter in *Clinical Radiology*¹ is that non-ionic media should be used for all intravascular

examinations, and some radiologists would say for all examinations. I do not think that this is reasonable or necessary. The ionic agents that have been in use for the past 20 years are reasonably safe with a death rate similar to that of penicillin.²

The death rate from intravenous urography is not known with any accuracy as it is derived from national surveys all of which are subject to statistical faults. While it is generally accepted that the death rate is about one in 40 000, some surveys have given much lower rates³: one department in observations on 300 000 patients has found a death rate of one in 75 000 for ionic media.² We cannot know the death rate from non-ionic media as insufficient experience has accumulated, but Professor Grainger supposes it will be from one in 40 000 to one in 80 000 or possibly one in 100 000.¹ This is then much the same as for ionic media.

The casual reader might suppose that much is known about deaths occurring after contrast media injections, but this is not so. It is not known, for example, how many of the deaths are due to idiosyncratic reactions, direct toxicity, or natural causes. The number of examinations carried out each year is estimated by Professor Grainger at between a half and one million, but the true figure is not known.

Ansell pointed out in 1970 that the death rate had not been reduced compared with previous trials despite the reduction in systemic toxicity.³ This implies that once unduly toxic media such as acetrizate are eliminated there is a constant risk, and one is not entitled to infer that the risk of death is lower because the median lethal dose is raised. This hypothesis gains support from Professor Grainger's suggestion that the maximum safe dose at one examination should remain at 200 ml for non-ionic media as well as ionic media.

The hypothesis that the low osmolality of the medium is the cause of most severe adverse reactions is widely accepted because it was the hypothesis that guided the production of the non-ionic media. The observations of Märe refute the osmolality hypothesis: he found that pulmonary oedema was not induced by injections of mannitol urea or saline at the same osmolality as diatrizoate.⁴ Furthermore, ioxaglate produced more pulmonary oedema and iopamidol as much as diatrizoate. I do not see why Professor Grainger states that nausea and vomiting are due to hyperosmolality¹ as ioxaglate is notorious for causing this problem. I think that the different sensations and adverse reactions are mediated by different mechanisms and so cannot be related to one characteristic of a contrast medium.

The sensations experienced by patients undergoing angiography or urography are certainly reduced in intensity and incidence when non-ionic media are used but are not abolished, and some patients still spontaneously complain of the side effects. There is no doubt that non-ionic media produce better angiograms, but this is not true for urograms.

Work in my department on some 1300 patients has shown that the incidence of spontaneous complaints was the same for ionic and non-ionic media, and only specific questioning showed a difference. The only important difference was in the sensation of nausea or incidence of vomiting, but particular patients experienced these even when non-ionic media were used.

When working in Bristol on the problem of contrast media reactions I made the observation that some patients had rashes which appeared 12 to 24 hours after the examination and lasted for some days and some patients had a flu like illness in the days following urography.⁵ These reactions have been investigated by Dr Philip Panto and myself using a questionnaire, and we have found the incidence to be the same for ionic and non-ionic agents. The incidence of idiosyncratic reactions and iodism is the same for both groups of agents.

In our trials the urograms produced by non-ionic agents were appreciably worse than those produced by sodium containing ionic agents. The pelvic-renal system was opacified later and was less distended so there were more undiagnostic

examinations and many more second injections were required.

Like Dalla Palma *et al*⁶ I can see no reason for changing to non-ionic media for routine urography or computed tomography. Only a small percentage of special cases require non-ionic media. Less than 5% of patients at increased risk of an idiosyncratic reaction actually suffer from one,⁵ and I have already indicated that this risk may not be reduced by using non-ionic agents. I do not think it wise to perform urography in any patient with overt cardiac failure using any medium, and if possible urography should be deferred in any extremely ill patient—except perhaps in patients with acute renal failure, when the urographic findings may be of the highest importance.⁷ Some workers prefer to use ultrasound for diagnosis in renal failure and so eliminate the dangers of urography.

There is no indication at present for using non-ionic media for urethrography, cystography, sinography, peroperative cholecystography, percutaneous biliary drainage, or nephrostomies.

The problem is considerably more complex than Professor Grainger suggests. For his argument to be valid we need to know much more precisely how many and what type of procedures were performed, how many deaths occurred, and what was the aetiology. Numerators and denominators which may vary by a factor of two render arithmetical arguments nugatory.

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- ¹ Grainger R. The clinical and financial implications of the low osmolar radiological contrast media. *Clin Radiol* 1984;35:251-2.
- ² Hartman GW, Hattery RR, Witten DM, Williamson B. Mortality during excretory urography: Mayo Clinic experience. *American Journal of Roentgenography* 1982;139:919-22.
- ³ Ansell G. Adverse reactions to contrast agents. *Invest Radiol* 1970;5:374-84.
- ⁴ Märe K. *Contrast media induced pulmonary oedema*. 2nd ed. Göteborg: Barbro och Staffen Cederblom, 1983.
- ⁵ Davies P, Roberts MB, Roylance J. Acute reactions to urographic contrast media. *Br Med J* 1975;iii:434-7.
- ⁶ Dalla Palma L, Rossi M, Stacul F, Agostini R. Iopamidol in Urography. A comparison between ionic and non-ionic contrast media in patients with normal and impaired renal function. *Urol Radiol* 1981;4:1-3.
- ⁷ Davies P. Urographic appearances in renal failure due to intraluminal ureteric obstruction. *J R Soc Med* 1982;75:768-71.

SIR,—Professor Ronald G Grainger ably summarises the potential role of low osmolar radiological contrast media in reducing the incidence of adverse reactions (21 July, p 188). The reduced cardiotoxic activity of these media is probably the main factor leading to a reduction in severe and fatal reactions.

While there is some evidence to suggest that these media are also likely to lead to a lower incidence of "allergic like" phenomena they are not entirely devoid of this activity. Indeed, I have heard of several such reactions, including delayed ones, after low osmolar media.

Professor Grainger mentions steroid prophylaxis and suggests that it could be used in patients at high risk receiving conventional ionic contrast media. I believe that even with the new low osmolar media there is still a case for considering steroid prophylaxis in certain patients at higher risk—for example, asthmatic patients and those who have had a previous serious reaction. Sodium cromoglycate may also have a place in prophylaxis.

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Leptospirosis in cattle and man

SIR,—We have recently reported two cases of human infection with *Leptospirosis interrogans* serovar *hardjo*¹ which were remarkably similar to those described by Dr R J C Hart and others (30 June, p 1983). Two male dairy cattle workers presented with a flu like illness associated with severe frontal headache and meningism. Although they both milked the same herd, their infections occurred five years apart. A serological survey of the herd performed after the second case showed that one third of the animals had evidence of *L hardjo* infection. Both patients recovered, although only one received antibiotics.

A review of published accounts produced only two other cases of *L hardjo* meningitis in which cerebrospinal fluid cell counts were reported.² Dr Hart and others' second patient did not have meningism, and the findings in the cerebrospinal fluid would be in keeping with a traumatic lumbar puncture rather than meningitis. The reported findings in the cerebrospinal fluid in *L hardjo* meningitis (table) are likely to be similar to those in other forms of leptospiral meningitis. Despite

Findings in the cerebrospinal fluid of patients infected with *Leptospirosis interrogans* serovar *hardjo*

Day of illness	Protein (g/l)	Cell count/ μ l (polymorphonuclear leucocytes, lymphocytes)	Reference
5	400	213 (32/68)	2
7	300	230 (50/50)	2
7	750	523 (pnn + lym)	1
8	803	244 (75/25)	1
8	not given	330 (9/91)	BMJ (30 June, p 1983)
6	not given	6 (3/3) + 240 red blood cells	BMJ (30 June, p 1983)

meningism the cell count may not rise until the fifth day of the illness after which a rapid polymorphonuclear response is seen.³ Over the next week the cell count becomes predominantly lymphocytic. Cerebrospinal fluid cell counts must therefore be interpreted in relation to the duration of the illness. Since *L hardjo* infection in cattle seems to peak at the same time (autumn) as enteroviral meningitis in man misdiagnosis may be common in this occupational group.

Although antibiotic treatment of leptospirosis is controversial, Mackay-Dick's extensive but uncontrolled studies in Malaysia showed that early and high dose intravenous benzylpenicillin dramatically reduced morbidity.⁴ While reports on the use of amoxycillin are only anecdotal, doxycycline has been shown to be effective in both the prophylaxis and treatment of leptospirosis.^{5,6} *L hardjo* was not one of the serotypes causing infection, but doxycycline did reduce the duration of illness, severity of symptoms, and occurrence of leptospiuria. Furthermore, as some patients may unpredictably go on to develop jaundice and renal failure and then die⁷ we suggest that doxycycline treatment be considered in those at occupational risk with appropriate symptoms.

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¹ Shaunak S, Brettle RP, Inglis JH, Holmes L. Leptospirosis. *Communicable Diseases Report (Scotland)* 1984;18 No 16:7-9.

² Sakula A, Moore W. Benign leptospirosis: First