through a conventional mask is recommended. However, exceptionally asthma is diagnosed in patients with a long history of chronic bronchitis and probable respiratory failure. In these a lower concentration (24%-28%) may be needed to limit oxygen induced reduction of respiratory drive.

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Fibrinogen: a possible link between social class and coronary heart disease

SIR,—Dr H L J Markowe and colleagues show high fibrinogen values, a possible cardiovascular factor, in lower grade employees compared with higher grade employees (9 November, p 1313). This finding fits well with the raised cardiovascular mortality in lower classes.¹ The authors consider that "job stress" might be the basis for their results.

Our group has carried out a longitudinal study trying to determine the effects of "examination stress" on blood viscosity and plasma viscosity, which are highly dependent on fibrinogen. In volunteers who had prepared themselves for final exams for an average of four months we found that blood viscosity at low shear and constant packed cell volume was 20.1% and plasma viscosity 3.3% higher (both significant at the 1% level) when stress was present. Measurements were taken on the day of the examination and three weeks after the candidates successfully passed it.

These results seem to confirm that stress is the reason for the fibrinogen differences in the study of Dr Markowe and colleagues. It is interesting to note that all cardiovascular risk factors are associated with haemorrhheological abnormalities much like the ones described above.² On the basis of such observations we have formulated a working hypothesis,³ which suggests that both atherogenesis and haemorrhheological variables are influenced by partly similar phenomena—namely, the adsorption of plasmatic macroproteins to surfaces in contact with plasma. Haemorrhheological measurements may therefore have valuable diagnostic potential.

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Antisecretory drugs and gastric cancer

SIR,—What is a simple clinical gastroenterologist—like myself—to think? Dr K G Wormsley (23 November, p 1054) in "getting to the point" has not helped much. There is a regulatory body, the Committee on Safety of Medicines, which has statutory responsibility and authority in matters of drug testing and prescribing. Physicians must also make their own decisions in given situations when testing new drugs as in everyday practice. Dr Wormsley has declared his position.

Loxidine was withdrawn from testing after the finding of "diffuse carcinoma of the fundus in rats." These tumours were not dose related.¹

Presumably an as yet unpublished report details these findings,² variously entitled "diffuse gastric carcinoma in the rat produced by loxidine" or "association of long lasting unsurmountable histamine H₂ blockade and gastric carcinoid tumours in the rat" (7 September, p 675) by those who have had the opportunity to study the work in detail. Fundic carcinoma in mice was also reported in the same abstract.¹ Reports on omeprazole describe "carcinoid tumours" in the rat³ but not in the mouse. Are the findings in animals receiving these two agents similar? If not, are differences those of degree or more fundamental? Disinterested observers need to address and answer these questions. A number of investigators have started retesting omeprazole in short term healing studies in duodenal ulceration on the grounds that a significant benefit in healing at two weeks would be a genuine advance.

Drug prescribing in the United Kingdom and elsewhere is such that once a drug is approved for general use the only sanctions remaining are those of prudent prescribing habits—not always enough—so a reasonable safety margin has to be provided. Regulations cannot protect against all aspects of bad prescribing. Should we, therefore, be testing in the short term drugs which if prescribed long term have profound acid lowering effects?

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Patients with suspected Lassa fever in London during 1984

SIR,—After a long period of neglect it is encouraging to see a revival of interest in the management of infection in hospital and an appreciation of the need to train nurses and doctors in infectious diseases and their control. With infection rife in many hospitals and a high proportion of very susceptible immune deficient patients being cared for in hospital, it is no longer acceptable to nurse infectious patients in side rooms with inadequately trained staff. This, of course, has been appreciated for many decades by the DHSS, but plans for the provision of purpose built units in general hospitals have mostly never been implemented, while regional infectious diseases units have been allowed to decline with loss of trained and experienced staff.

A purpose built infectious diseases unit by itself is inadequate because staff must be properly trained, not only in the control of infection but also in the clinical assessment and management of patients. This need has been fully appreciated by the Royal College of Physicians, which has recommended the appointment to such units of physicians specially trained in infection to ensure expert management.

The paper by Dr Anthea Tilzey and others (30 November, p 1554), emphasising the difficulties they experienced at St Thomas's Hospital with suspected Lassa fever, reflects light from one facet, albeit an important one in London. In doing so they have created the impression that Lassa fever is of little consequence and can be readily contained. Unfortunately their conclusions are based on a

very small number of cases outside Africa, and it is always unwise to extrapolate from such limited experience. Within west Africa there is ample evidence that Lassa fever is a major hazard for hospital staff, and great care must be taken to prevent nosocomial spread. For example, in Sierra Leone Keane and Gilles reported that over three years 15 out of 75 hospital staff were infected with Lassa virus and two died¹; in Nigeria 14 out of 73 patients diagnosed as having Lassa fever in two hospitals were hospital staff.² Moreover, there is evidence of case to case spread from patients without pulmonary disease. In one Liberian hospital 9% of patients confirmed to have Lassa fever were contacts with no history of parenteral exposure.³

In the UK it is very unlikely that Lassa fever or any of the other viral haemorrhagic fevers will pose a threat to the general community, but they present a hazard to clinical and laboratory staff so due care should be taken to reduce risks to the minimum by careful clinical and epidemiological assessment of febrile patients from endemic areas and skilled management of suspected or confirmed cases.

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Parenteral nutrition

SIR,—Professor Miles Irving recommends "the normal daily requirement of electrolytes, trace elements, and vitamins in parenteral feeding" (16 November, p 1404). We recently described a case where fulminant cardiovascular beri-beri developed after only two weeks' balanced high energy parenteral feeding incorporating daily multivitamin supplements (Solivito) with 1.24 mg of thiamine.¹ After partial recovery from post-traumatic sepsis the patient underwent an apparent secondary haemodynamic deterioration with renal failure, initially attributed to septic shock. He was recognised near the point of death, biochemical testing was confirmatory, and on recovery after high dose thiamine replacement he had defective short term memory.

Such cases are probably not rare. Macroscopic or microscopic changes of Wernicke's encephalopathy are seen in 2% of necropsies.² Our case closely matches a description of Wernicke's encephalopathy in three surgical patients on parenteral feeding for burns, wasting disease, or sepsis in whom a period of secondary cardiovascular decompensation and metabolic acidosis (in other words, fulminant beri-beri) preceded death.³ Clinically, septic shock is difficult to distinguish from fulminant cardiovascular beri-beri.¹ Most patients with the hyperdynamic changes of septic shock have pre-existing malnourishment from wasting disease or alcoholism, often with liver disease.⁴ A common metabolic defect has even been postulated to explain the close similarities and "pathological synergy" between septic shock and cirrhosis.⁵ Thiamine deficiency—especially if plausibly but inadequately treated—remains the likeliest candidate for such a defect. We therefore propose four precautions in the parenteral feeding of such patients.

(1) Slow intravenous replacement doses of thiamine (100 mg) and other water soluble vitamins should always be given at the start of parenteral feeding.

(2) Daily maintenance dosages should err generously on the side of safety. For thiamine we suggest at least 2.5 mg/1000 kcal (4.2 MJ) balanced intake since this is the minimum regimen that has been tested

and found safe biochemically.⁶ Other investigators, concerned about the instability of thiamine in intravenous solutions containing preservatives such as 0.1% sulphite, have not tested doses of thiamine lower than 50 mg daily.⁷

(3) Twice daily parenteral water soluble vitamin regimens seem safer and more physiological, particularly in liver disease, high energy parenteral feeding (>2400 kcal (10.0 MJ)/day), and when diuretics are given concurrently.⁸

(4) The common practice of unbalanced administration of dextrose solution is dangerous and unjustified: at necropsy Wernicke's encephalopathy has been documented in such cases even without liver disease and when supraphysiological doses of thiamine were used (24 mg/daily) and daily energy loading was moderate (1000 kcal (4.2 MJ)).⁹

Wasting disease, major surgery, burns, alcoholism, septic shock: patients with any combination of these must represent most of those given parenteral feeding. Doctors and manufacturers of preparations for parenteral feeding surely have a responsibility to "get it right first time" for such patients. Others agree about the inadequacy of present regimens of water soluble vitamins, particularly thiamine, in parenteral feeding.¹⁰ We challenge manufacturers to bring recommended dosages of thiamine into line with those that have been tested and found safe.

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Use of electronic mail for patient record transmission

SIR,—I was interested to read Mr John F Cowie's report of the use of the Telecom Gold electronic mail service to transmit laboratory reports between two hospitals (16 November, p 1439).

At Northwick Park Hospital we are nearing completion of a six month pilot study to evaluate the use of electronic mail for sending laboratory results to local general practices, a full report of which is in preparation.

The Prestel Mailbox service, rather than Telecom Gold, was chosen for our project to relay results from the microbiology laboratory at the hospital to seven group practices in the district. The two messaging services are very similar, all subscribers having their own "mailbox" from which only they can take messages; other subscribers' mailboxes cannot be opened.

Each practice has been provided with a low cost viewdata terminal (Tandata TD1616F), colour television, and thermal printer, and similar equipment is installed in the laboratory. Results are entered each afternoon in the laboratory and

transmitted as mailbox messages to the local Prestel computer at the same time as the duplicate conventional report leaves in the internal post. The result is available in the practice's own "mailbox" when the doctors next call the Prestel computer—usually during evening surgery on the same day. At that time the results are taken from the Prestel mailbox, saved in the terminal, and printed after disconnection from the computer (to reduce telephone and computer charges). The paper report is carried to the practices by a hospital van.

Using the date and time of sending the Prestel report, the date and time received by the practice (written on the printed copy), and the date of receipt of the paper report, we can compare the times taken for conventional and electronic mail results to reach the practices. Preliminary analysis shows that electronic mail reduces the delay incurred during distribution by one to four days.

The service has been found to be a reliable method for sending reports, in respect of both the integrity of messages and the reliability of the equipment. No specific data encryption techniques were applied to this pilot study, the inbuilt security features of customer identity number and password being relied on for protection from unauthorised access. On line inquiry of the laboratory data, while the ultimate goal, was not provided in this pilot study. Subsequent development of the system using a laboratory viewdata host computer would permit such on line access to past results and would enable us to incorporate further security measures, including data encryption.

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Staphylococcus saprophyticus as a urinary pathogen

SIR,—The article by Ms Linda Pead and others (26 October, p 1157) stimulated us to review our own findings in relation to urinary tract infections caused by *Staphylococcus saprophyticus*. Our findings are largely similar to but differ in some respects from theirs.

In our laboratory urine specimens are cultured on blood and MacConkey agars and significant counts taken to be greater than 10⁶ colony forming units per litre.

From April 1977 to March 1982 we reported 5862 urinary isolates to general practitioners in the Cardiff area. Coagulase negative staphylococci sensitive to novobiocin were accepted as *S saprophyticus*.¹ There were 267 of these, 4.6% of all presumptive pathogens, and 81% of the patients had accompanying pyuria. Nine hundred and fifty nine (16%) of all our significant cultures were from women aged 15 to 25, and in this group 147 (15%) were *S saprophyticus*. Accompanying pyuria was present in 90% of these. The proportion of such infections seemed to have increased over the years, from 9% in 1978 to 21% in 1981, in line with the Portsmouth findings. The age distribution of all *S saprophyticus* infections is shown in the table. As in

Isolates of *S saprophyticus* from women not in hospital by age (percentages are given in parentheses)

Age (years):	<15	15-25	26-50	>50	Total
Cardiff	10 (4)	147 (59)	68 (27)	24 (10)	249
Portsmouth	36 (2)	1237 (66)	552 (30)	55 (3)	1880

the Portsmouth study, we noticed an increased relative frequency of *S saprophyticus* infections in the 15-25 age group in the second half of the year, although the figures fluctuated.

Ms Pead and her colleagues reported only four of

their strains resistant to normally used antibiotics. However, we deemed 43% to be resistant to ampicillin/amoxycillin.

The Cardiff findings match those from Portsmouth in respect of the proportion of all urinary infections in the 15-25 year age group caused by *S saprophyticus*, the incidence of pyuria accompanying *S saprophyticus* infections, the increasing proportion of such infections over several years, and the relative increase in the second half of the year. Three fifths of all *S saprophyticus* infections in women in Cardiff occurred in the 15-25 year age group compared with two thirds in Portsmouth. This would support the contention that these infections are associated with initial sexual activity, and Cardiff is a university city although not a holiday resort. We have no explanation for the significantly increased number of infections ($\chi^2=26.7$; 1 df; $p<0.001$) in the over 50s in Cardiff. It is of interest that only 75% of this group had accompanying pyuria.

Our high incidence of ampicillin/amoxycillin resistance is probably because we do not rely on ampicillin/amoxycillin disc sensitivity alone but report on the basis of sensitivity to penicillin discs.²

There are still many unknowns about *S saprophyticus* urinary tract infections. Perhaps in the season when a young man's fancy turns to thoughts of love a young maiden's should turn to thoughts of (trimethoprim) prophylaxis.

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Phaeochromocytoma presenting as an acute abdomen

SIR,—I was interested to read the Lesson of the Week presented by Dr David J Jones and Ms Patricia Durning (2 November, p 1267). I was unfortunate to be concerned with a similar case.

A 48 year old woman was admitted after a road traffic accident during which she dislocated her hip. Preoperative investigations were unremarkable apart from an initial blood pressure of 170/130 mm Hg and pulse of 100 beats/min. Subsequently the blood pressure ranged from 160/120 mm Hg to 150/100 mm Hg with a pulse of 76 to 92 beats/min.

After premedication with pethidine 50 mg the patient was transferred to theatre. Preoxygenation was followed by intravenous thiopentone 250 mg. Anaesthesia was maintained with nitrous oxide and halothane in oxygen. Closed reduction of the hip was rapidly achieved. While hip traction was being applied the patient's respiration became irregular and the pulse impalpable. Ventilation with 100% oxygen and external cardiac massage were started. An electrocardiographic monitor showed ventricular fibrillation so a direct current shock was administered. Forty five minutes of resuscitation ensued during which repeated doses of resuscitative drugs and DC shocks were given. The rhythm alternated between sinus bradycardia, supraventricular tachycardia, ventricular tachycardia, and ventricular fibrillation.

A stable rhythm was eventually achieved with a heart rate of 120 to 150 beats/min and a blood pressure of 250/120 mm Hg. The patient was transferred to the intensive care unit for ventilation. She continued to have episodes of ventricular tachycardia despite a lignocaine infusion. After several hours she became hypotensive and despite further resuscitative measures she died. Postmortem examination showed bilateral phaeochromocytomas.

These case reports support the contention of Apgar and Papper that undiagnosed phaeochromocytoma is associated with a high mortality.¹