histolytica.³ We feel it is important that there should be an awareness of the possibility that amoebiasis may exist in homosexual patients presenting with diarrhoea, since this may be misdiagnosed as inflammatory bowel disease and corticosteroids would be inappropriate in such cases and might result in fulminant amoebic infection.⁷

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Hepatitis in pregnancy

SIR,—I was interested to read the editorial on hepatitis in pregnancy by Drs Roger Williams and R J Ede (24 October, p 1074). Our experience with hepatitis¹ has been rather similar in Tabouk, a town in the north of Saudi Arabia.

From November 1977 to May 1978 we admitted 48 patients with acute hepatitis. Fifteen of these were pregnant (24 weeks or more), and nine developed fulminant hepatitis with grade 4 coma.² The other six had normal pregnancies, delivery occurred at term, and the babies were all born live. None of the non-pregnant patients developed fulminant hepatitis, and there were no deaths in patients who did not develop this complication. Of the nine pregnant patients with fulminant hepatitis (four of whom were Australia-antigen positive), seven survived. All survivors showed an early and rapid improvement after delivery. Induction of labour was not practised, and all deliveries were spontaneous and premature. Three babies were stillborn and another died a few hours after birth. One baby, whose mother was in coma for 16 days, survived for six weeks, when it died following a series of apnoeic attacks. The other four babies survived.

The very high incidence of fulminant hepatitis in pregnancy in places like the Middle East is probably a reflection of periodic epidemics in hyperendemic areas where the birth rate is unusually high. Malnutrition may also be a factor.³

The survival rate in our small series of patients with fulminant hepatitis with grade 4 coma (77%) is much higher than the generally quoted figures (10-30%).⁴ We treated our patients along conventional lines; we also gave them liberal amounts of fresh frozen plasma at an early stage. We feel that this may have helped to prevent the haemorrhagic complications which are so frequently the cause of death in fulminant hepatitis.

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Dental health in patients susceptible to infective endocarditis

SIR,—We agree with both Dr W P Holbrook and others (1 August, p 371) and Dr H Pogrel (5 September, p 673) that dental care for those at risk for endocarditis is most important and we too have recommended a simple oral regimen for prophylaxis.¹ While we agree that amoxycillin, with its prolonged blood levels, may answer the problem, we are concerned about the current pressures arising from the recommendation that a 3 g dose be given to all patients (whether "at risk" or not) undergoing dental extraction.² Never before, to our knowledge, has such a drug been advised to cover a very common procedure, predominantly carried out in normal people, whose use would be of possible benefit to a tiny minority. While the single sachet is convenient it is, in our hospital at least, equivalent to 40 g of phenoxymethyl penicillin in cost.

Currently available studies on prevention of bacteraemia in humans^{2,3} with amoxycillin have shown promise, but not complete prophylaxis. Tests on the rabbit model which has been used for other regimens⁴ have not yet been completed, although we are aware that Professor McGowan and others in Glasgow have set up a study, the results of which we await with interest. Until then we would advise caution, and certainly not as yet recommend this regimen to those most at risk—that is, patients with prosthetic heart valves in situ, in whom a parenteral regimen is preferable.

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Gonorrhoea presenting as "sterile" pyuria

SIR,—The report by Drs B Chattopadhyay and I Hall (27 September, p 841) of the detection of *Neisseria gonorrhoeae* in urine specimens examined by Gram-staining of the centrifuged deposit one day after receipt of the specimen (when the urine contained pus and overnight culture had yielded no growth) was interesting. It prompted us to investigate how often the use of this technique might provide an explanation of apparently sterile pyuria in male patients, and whether it should be incorporated into our laboratory protocol.

During the period from October 1980 to July 1981 we applied their technique to urine specimens from 50 men aged 17-75 years. All were sent at the request of the general practitioners to whom the patient had presented with symptoms related to micturition, and all showed pyuria of a concentration greater than 100×10^6 pus cells/l. All were cultured on CLED (cysteine-lactose-electrolyte-

deficient) agar, and none yielded any growth after overnight incubation in an atmosphere containing 7% carbon dioxide. The urine was then centrifuged and a Gram-stained smear of the deposit was made. Gram-negative intracellular diplococci were not detected in any of the specimens.

It may be concluded that the procedure described by Drs Chattopadhyay and Hall will seldom provide an explanation for apparently sterile pyuria in men with urinary symptoms, and there seems to be no indication to incorporate it into a protocol for the examination of urine specimens. This, of course, does not rule out the possibility that the pyuria in some of these patients may have been due to gonococcal urethritis—*N gonorrhoeae* was, in fact, isolated from a urethral swab from one of the patients—it is simply that the organism is not often detected by examination of the urine sediment one day after receipt in the laboratory.

Possible causes of apparently sterile pyuria in male patients with symptoms remain a matter for conjecture. Urine specimens may be contaminated with pus cells from urethritis due to chlamydiae or to *N gonorrhoeae*. Genitourinary tuberculosis is a rare cause; early morning urine specimens from 14 of the men reported here were examined for *Mycobacterium tuberculosis*, and all proved negative. Our present protocol for investigation of these patients is to request a further fresh specimen, which is cultured on CLED agar and chocolate agar for incubation in 7% carbon dioxide and on blood agar for anaerobic incubation. This procedure was undertaken for 12 patients in this study, and the pyuria was still present in five. Culture yielded growths of *Corynebacterium* spp in three, and also in one patient in whom the pyuria had disappeared.

Evidence is accumulating¹⁻³ that "fastidious" organisms may be associated with prostatic and urinary tract infection in men, and a search for them would seem to be justified in patients with persistent pyuria.

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Aspiration around high-volume, low-pressure endotracheal cuff

SIR,—Drs William McCrae and Peter Wallace (7 November, p 1220) clearly demonstrate leakage of oropharyngeal secretions into the trachea and bronchi around the cuff of a low-pressure, high-volume endotracheal tube. The oropharynx of patients nursed in an intensive therapy unit frequently and rapidly becomes colonised with a wide variety of exogenous organisms, including coliforms and *Pseudomonas* spp.¹ These organisms originate from the hands² and possibly clothing of staff and from feeds given to the patient.³ The bacteria isolated from tracheal aspirate are often the same as those found in the oropharynx of the patient.^{1,4}

The penetration of oropharyngeal secretions around an endotracheal tube cuff could therefore represent an important route by which bacteria reach the lower respiratory passages in ventilated patients. This suggestion is supported by personal experience in an intensive therapy unit. Patients were protected from potential bacterial contamination of ventilators and air by bacterial filters (Williams Anaesthetic Filters, Formaflow Ltd, Frimley, Surrey) placed in the expiratory and inspiratory lines on the patient's side of the

ventilator. Humidifiers were filled with 0.02% chlorhexidine and the respiratory tubes autoclaved every 24 hours. However, the rate of colonisation of the trachea in these patients was similar to that previously found in patients in whom these measures were not undertaken. The lack of a protective effect could be accounted for by contamination of the trachea by secretions of the oropharynx. Atherton and White³ found similar organisms in the gastric contents and trachea of a series of patients who had intermittent positive-pressure ventilation and they proposed the stomach as a source of bacteria colonising the respiratory tract. It seems anatomically more likely that secretions of the mouth and pharynx are the source of bacteria for both trachea and gastric contents.

The hazard of bacterial spread from the oropharynx to the trachea in ventilated patients emphasises the importance of oral hygiene, oropharyngeal suction, and the difficult problem of avoiding contamination of feeds and fluids. If leakage occurs frequently around the cuffs of endotracheal tubes, much more attention will have to be paid to these aspects of patient care in intensive therapy units.

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A further hazard of ventilation

SIR,—We were interested to read the short report of aspiration around a high-volume, low-pressure endotracheal cuff (7 November, p 1220). We would like to report a further hazard we have encountered with two patients in this unit.

Both patients were ventilated via an 8-mm Shiley tracheostomy tube with a Cape ventilator. The cuffs of both tubes were inflated correctly and there were no audible leaks. The peak inspiratory pressures were 38 cm H₂O in the first case and 40 cm H₂O in the second. End-expiratory pressures were atmospheric. In each case an oesophageal temperature probe (Light Laboratories, Type 10ES) was inserted via the nasopharynx. The

Chest radiograph showing oesophageal temperature probe in right main bronchus of patient with tracheostomy tube.

probes have a diameter of 3 mm. It was noted on chest radiographs done soon after insertion that the probes were in the right main bronchus of each patient (figure).

The hazards of this complication are pulmonary infection and false temperature readings. With the introduction of fine-bore nasogastric feeding tubes, which could also conceivably pass around the low-pressure cuff, a further and more serious complication can be envisaged. We feel that a chest radiograph or direct laryngoscopy should be performed in all patients who have oesophageal tubes passed while they are being ventilated.

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Megadose vitamin C and metabolic effects of the pill

SIR,—Some years ago we reported¹ that women taking oral contraceptive pills containing oestrogen plus progestogen had lower than expected levels of ascorbic acid in their leucocytes and platelets. This finding was confirmed by several other studies.²⁻⁵ More recently, Dr D J Back and colleagues (9 May, p 1516) have shown that the plasma concentration of ethinyloestradiol is significantly higher in oral contraceptive users receiving 1000 mg ascorbic acid daily than in the same women not receiving a vitamin C supplement. The bioavailability of ethinyloestradiol is only about 40%,⁶ owing to extensive formation of sulphates during absorption and first pass through the liver. The interaction with ascorbic acid may be due to competitive inhibition of this sulphation, for ascorbic acid is also sulphated in the gut wall during absorption. The net effect of megadose vitamin C is therefore to increase the bioavailability of ethinyloestradiol. We have conducted a small study to determine whether this interaction has biological consequences.

Twelve healthy young women (18-23 years), non-smokers, who had used low-dose oral contraceptives (Triquilar, Schering; Triphasil, Wyeth; Nordette, Wyeth) for at least six cycles, were randomised between two vitamin C supplements in a double-blind manner. One supplement contained 50 mg and the other 1000 mg ascorbic acid. The women were instructed to take the vitamin capsule at the same time as their oral contraceptive pill. During the second cycle the women were switched to the alternative vitamin supplement. Blood was collected from fasting subjects on the last day of oral contraceptive taking in each cycle. Plasma was separated and analysed for high-density lipoprotein cholesterol, fibrinogen, coagulation factors VII and VIII, sex-hormone-binding globulin, and caeruloplasmin. Analytical methods are described elsewhere.⁷ A comparison of mean values for each

Biochemical findings in oral contraceptive users receiving vitamin C supplements

Test	Units	Mean $\pm$ SD	
		50 mg vitamin C	1000 mg vitamin C
HDL-cholesterol	nmol/l	1.30 $\pm$ 0.10	1.41 $\pm$ 0.09
Fibrinogen	mg/l	3.7 $\pm$ 0.8	4.6 $\pm$ 0.7
Factor VII	% control	101 $\pm$ 8	119 $\pm$ 9
Factor VIII	% control	109 $\pm$ 21	151 $\pm$ 23
Sex-hormone-binding globulin	nmol/l	68 $\pm$ 12	95 $\pm$ 14
Caeruloplasmin	g/l	0.51 $\pm$ 0.11	0.79 $\pm$ 0.13

Conversion: SI to traditional units—High-density lipoprotein cholesterol: 1 nmol/l $\approx$ 38.6 mg/100 ml.

of these measurements with the two levels of vitamin C supplementation are shown in the table. Results obtained during the high-dose vitamin C supplementation are significantly different from results during the low-dose supplement.

We conclude that the use of megadose vitamin C by oral contraceptive users enhances the effect of contraceptive steroids on important plasma proteins, and may increase the risk of cardiovascular disease. The overall effect of the large vitamin C supplement is to convert a low-oestrogen pill into a high-dose pill.

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Effect of supplementary food on suckling patterns and ovarian activity during lactation

SIR,—The paper by Professor P W Howie and others (19 September, p 757) showed that in Scottish women the introduction of supplementary feeding was associated with a reduction of nursing and the resumption of ovarian activity. These women were essentially substituting artificial feeding for breast feeding, whereas in many developing countries women introduce supplementary foods while still maintaining intense lactation and prolonged amenorrhoea.¹ Clearly, under the latter circumstances supplementation per se does not automatically lead to the resumption of ovarian activity.

The distinction between the substitution of artificial foods for breast milk and the mere supplementation of additional foods while intensive breast-feeding is maintained is important, since it would be unfortunate if the findings of this excellent Scottish study were to be incorrectly generalised to a Third World setting, and policy makers assumed that lactating women were at risk of conception as soon as they introduced supplements.

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Therapeutic embolisation

SIR,—In his leading article "Therapeutic embolisation" Mr A E Young mentions the burgeoning specialty of interventional radiology" (31 October, p 1144). An increasing part of this is percutaneous angioplasty, in which arterial stenoses and, in some cases, occlusions can be treated by catheterisation. I should like to draw attention to another technique which radiologists can offer in arterial disease. In conjunction with Dr Kjeld Nielsen of Copenhagen, I am assessing the value of intra-arterial carbon dioxide in-