was this by suppository) a significant difference was found (χ^2 (with Yates's correction)=37.2, df=1, $p<0.001$).

Mr Keenan and his colleagues concluded that indomethacin suppositories were "safe" because of the "absence of noted side effects." These conclusions, however, were based on the results of their use in only 30 patients. A recent study reported that three of 44 patients given indomethacin suppositories after surgery developed dyspepsia in the postoperative period, and another patient had a haematemesis.³ Recently, a patient in this hospital started treatment with phenylbutazone for a painful bone metastasis seven days before a transurethral prostatic resection. He had no history of dyspepsia, but four days after the operation an acute duodenal ulcer perforated. The administration of non-steroidal anti-inflammatory agents at a time when stress ulceration can occur may be hazardous. This is further supported by the fact that stress ulcers in animals can be prevented by the administration of prostaglandins.⁴

Reasbeck *et al* found a significant increase in postoperative haemorrhage in patients receiving indomethacin suppositories.³ In the study of Mr Keenan and others persistent postoperative bleeding occurred when subcutaneous heparin was administered concurrently, therefore heparin was not used routinely in their trial. If they assume that subcutaneous heparin can be replaced by indomethacin as prophylaxis against pulmonary embolus they provide no evidence to support this assumption.

We believe that postoperative indomethacin suppositories may have serious side effects and its widespread use cannot be recommended.

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¹ Goodman AA, Frey CF. Massive upper gastrointestinal haemorrhage following surgical operations. *Ann Surg* 1968;167:181-4.

² Thompson MR. Indomethacin and perforated duodenal ulcer. *Br Med J* 1980;280:448.

³ Reasbeck PG, Rice ML, Reasbeck JC. Double-blind controlled trial of indomethacin as an adjunct to narcotic analgesia after major abdominal surgery. *Lancet* 1982;ii:115-8.

⁴ Lippman W, Seethaler K. Oral antiulcer activity of a synthetic prostaglandin analog (9-oxoprostanoic acid: AY-22, 469). *Experientia* 1973;29:993-5.

Control and prevention of tuberculosis

SIR,—The report by the Joint Tuberculosis Committee gives much needed guidance. Although I accept that fomites and the environment play a minimal part in the spread of tuberculosis, I wonder if we can ignore them altogether.

Some patients in general hospitals are particularly susceptible to infection, and, unless we have good evidence to the contrary, we should take reasonable measures to prevent the spread of a communicable disease. It seems rational to disinfect crockery and cutlery from untreated tuberculous patients or those receiving early treatment—for example, the first two or three weeks. Heat disinfection in a washing up machine is the preferred method, but, alternatively, disposables may be used at minimal cost. It is also rational that linen should be treated as potentially infectious and sealed in a hot water soluble or alginate stitched plastic bag for transport and should not be handled in the laundry before disinfection.¹ Waste from secretions should similarly be contained in a plastic bag and incinerated. Isolation of the patient in a single room is important, but to state that barrier nursing is unnecessary could be misleading as washing hands after handling a patient is the most

important component of the barrier nursing technique.

Unfortunately, it is difficult to obtain good evidence on the necessity of some of these procedures, and the distinction between ritual and rational methods is not always clear. I suggest that with tuberculosis we should err on the side of safety. Advice on management of patient contacts would also be useful to staff controlling infection.

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New drugs: antithrombotic treatment

SIR,—We wish to draw attention to a misleading statement in the article on antithrombotic treatment by Dr P Buckler and Professor A S Douglas (16 July, p 196). They state that calcium heparin consists of a "mixture" of sodium and calcium salts of heparin and give Minihep Calcium as an example. As the pharmacopoeial standards for the manufacture of calcium heparin allow not more than 0.1% sodium in the drug substance calcium heparin can hardly be said to be a mixture.

Furthermore, subcutaneous calcium heparin is said to give lower plasma concentrations than sodium heparin and thus a reduced risk of haemorrhagic complications, a point of view also advocated by other authors.¹⁻³ Comparative studies, however, have failed to find any differences between the two salts with regard to serum heparin concentrations (figure), haematoma formation, or clinical efficacy.⁴⁻⁷ This is in accordance with a review made by Segesser and Gruber⁸ that covered 20 studies with sodium heparin and 14 studies with calcium heparin totalling just under 7000

patients. The authors concluded that there was no difference between the two salts with regard to side effects and that one form of heparin had no clinically relevant advantages over the other (table).

These conclusions were confirmed by Kakkar, who, in an extensive double blind multicentre trial of postoperative low dose heparin prophylaxis, found wound hematoma in 3.6% of the group treated with sodium heparin and 4.5% of the group treated with calcium heparin.⁹ It was concluded that doses of 5000 IU of sodium or calcium heparin given every 12 hours seem to be equally safe and effective in preventing postoperative venous thromboembolism.

It seems reasonable, therefore, to say that it makes no difference whether calcium or sodium salts of heparin are used.

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¹ Thomas DP, Sagar S, Stamatakis JD, Maffei FHA, Erdi A, Kakkar VV. Plasma heparin levels after administration of calcium and sodium salts of heparin. *Thromb Res* 1976;9:241-8.

² Kakkar VV. Low dose heparin present status and future trends. *Scand J Haematol* 1980;25, suppl 26: 167.

³ Kakkar VV. Prevention of venous thromboembolism, haemostasis, and thrombosis. In: Bloom AL, Thomas DP, eds. *Haemostasis and thrombosis*. Edinburgh and London: Churchill Livingstone, 1981:678-9.

⁴ Lahnborg G, Bergström K. Clinical and haemostatic parameters related to thromboembolism and low-dose heparin prophylaxis in major surgery. *Acta Chir Scand* 1975;141:590-5.

⁵ Bergqvist D, Hallböök T. A comparison between subcutaneous low-dose sodium and calcium heparin. *Acta Chir Scand* 1978;144:339-42.

⁶ Allen JG, Arendrup H, Toftgaard C, Lindegaard P, Madsen EM, and Stampe Sørensen S. Calcium heparin or sodium heparin in low dose heparin prophylaxis? *Thromb Haemost* 1979;42:1064-5.

⁷ Bender F, Aronson L, Hougie C, Moser K. Bioequivalence of subcutaneous calcium and sodium heparins. *Clin Pharmacol Ther* 1980;27:224-9.

⁸ Segesser von D, Gruber UF. Vergleich der Wirksamkeit von Natriumheparin und Calciumheparin zur Verhütung thromboembolischer Komplikationen. *Arzneimittelforsch* 1977;27:2157-63.

⁹ Kakkar VV. Prevention of fatal postoperative pulmonary embolism by low doses of subcutaneous sodium or calcium heparin—a double blind randomized multicentre trial. *Thromb Haemost* 1983;50:10.

Determination of heparin concentrations in blood after administration of 5000 U sodium (○—○) and calcium (●—●) heparin. (Fig 4 from Lahnborg and Bergström.⁴)

A simple system for references and reprints

SIR,—It is with some sympathy for Dr A S Henderson and Mr R Bosly-Craft (12 November, p 1448) that I write to bring to their attention, and to that of your readers, a more advanced system for references and reprints that has been in existence for many years. The Famulus system, based on a Fortran program originally designed by T B Yerke in 1967, is implemented on the ICL 2980 at Queen Mary College, London, on the Euclid system at University College, London, and also at the University of London Computer Centre.

Famulus allows each reference to be

Prevalence of deep vein thrombosis and pulmonary embolism in patients treated with sodium or calcium compared with untreated controls from several studies. Data obtained from tables 3 and 6 of review by Segesser and Gruber⁸

	Deep vein thrombosis			Pulmonary embolism		
	Total No studied	% Controls	% Treated patients	Total No studied	% Controls	% Treated patients
Sodium	1740	27.6	9.3	1681	1.6	0.2
Calcium	2429	32.7	12.8	4568	0.9	0.3