A comparison of the combination of antacids and cimetidine with antacids alone (suggested by your leading article) has already been reported in the treatment of patients with established acute mucosal bleeding.⁸ Haemostasis was achieved earlier with cimetidine but it is noteworthy that bleeding stopped within 48 hours in only 33% of either treatment group. This fact—that established acute gastrointestinal haemorrhage may be difficult to control—and the disastrous results of surgical intervention in the few patients in whom medical treatment is unsuccessful contradict your final sanguine conclusion that “treatment may reasonably be reserved for those in whom bleeding occurs.”

It is true that prophylaxis should be reserved for high-risk patients—those with severe burns, head injuries or multiple injuries, and major operations, especially when these conditions are complicated by hypotension, jaundice, sepsis, renal failure, or severe respiratory insufficiency. Cimetidine infused slowly intravenously has fewer side effects than antacids, may be used even when the gut is not functioning, and is more convenient. For the most effective prophylaxis intragastric pH should be maintained above 4 and antacids may occasionally need to be added to cimetidine to achieve this.

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¹ Safaie Shirazi S, Foster LD, Hardy BM. *Gastroenterology* 1976;**71**:421-5.

² Strauss RJ, Stein TA, Wise L. *Am J Surg* 1978;**135**:120.

³ Levine BA, Sirinek KR, McLeod CG, Teegarden DK, Pruitt BA. *Surg Gynecol Obstet* 1979;**148**:399-402.

⁴ Owen DAA, Parsons ME, Farrington HE, Blakemore R. *Gastroenterology* 1979;**77**:979-85.

⁵ Halloran LG, Zfass AM, Gayle WE, Wheeler CB, Miller JD. *Am J Surg* 1980;**139**:44-8.

⁶ Spenney JG, Hirschowitz BI. *N Engl J Med* 1980;**303**:108.

⁷ McElwee HP, Sirinek KR, Levine BA. *Surgery* 1979;**86**:620-4.

⁸ Teres J, Bordas JM, Rimola A, Bru C, Rodes J. *Dig Dis Sci* 1980;**25**:92-6.

* *We are aware of the experimental evidence in animals suggesting that H₂-receptor antagonists will prevent gastric mucosal injury in certain circumstances, but other studies quoted in our leading article indicate that adequate antacid titration is likely to be more effective. In any case, as Dr Hetzel would agree, experimental work is of doubtful relevance to human stress-induced gastrointestinal bleeding.

The study of Halloran *et al* that he quotes does show convincing evidence that stress-induced gastrointestinal bleeding is reduced by cimetidine. Whether this is relevant to other patients at risk of stress-induced bleeding is uncertain; for particular mechanisms, notably gastric acid hypersecretion, are probably important in patients with severe head injury. Furthermore, bleeding was not prevented in a fifth of those patients with head injury treated with cimetidine, and vigorous antacid therapy might well be more effective. We did not cite the other two controlled studies mentioned by Dr Hetzel because they were inconclusive. The first (by McElwee *et al*) was conducted by the United States Army Institute of Surgical Research, a group that had used antacid prophylaxis routinely in over 750 patients with burns, of whom only one had had major gastrointestinal bleeding. Their controlled trial contained just 27 patients, only 13 of whom received cimetidine—hardly sufficient for a confident conclusion. In the second study (by Teres *et*

al) only 15 ml of antacid was given two hourly—a quarter or less of the dose used by Priebe *et al*—and intragastric pH levels were not reported. This low dose of antacid will not maintain a gastric pH above 4 and would not be expected to influence acute mucosal lesions. The study of Priebe *et al* has indeed been criticised but the criticisms have been answered by the authors.¹ The fact that they have found the problem of stress-induced gastrointestinal bleeding to be small, even in previous studies when some patients received no prophylaxis, supports our view that routine prophylactic treatment is unnecessary.

Possibly, then, cimetidine will reduce the incidence of stress-induced gastrointestinal bleeding in certain specific circumstances, notably in acute hepatic failure and severe head injury; but vigorous antacid therapy may well be more effective. We have no evidence that the eventual outcome will be influenced by either form of treatment. In other conditions in which stress-induced gastrointestinal bleeding occurs the mechanisms may differ, and current evidence indicates that vigorous antacid treatment prevents bleeding whereas the efficacy of cimetidine is uncertain. Cimetidine may be convenient to administer, but its intravenous use may be hazardous, particularly in patients with hepatic and renal failure,² and we need larger studies to establish its safety in such patients. As we said in our leading article, present evidence is not sufficient to justify the widespread use of prophylactic cimetidine in intensive care units, though clearly further trials are needed.—Ed, *BMJ*.

¹ Priebe HJ, Skillman JJ, Bushnell LS, Silen W. *N Engl J Med* 1980;**303**:109.

² Blain PG. *Adverse Drug Reaction Bulletin* 1980; No 83:300-4.

Passing a nasogastric tube

SIR,—I have read your valuable article on passing a nasogastric tube (25 October, p 1128) and should like to make two suggestions.

It is certainly helpful and permissible in most circumstances for the patient to drink while the tube is being passed—any fluid so taken can be aspirated once the tube enters the stomach. It is not possible, however, for a patient to drink continually from a glass and for the tube to be passed at the same time. The two processes get in the way of each other. The problem, however, is solved if a feeder with a spout is used.

There is no doubt also that securing the tube to the nose is more comfortable for the patient than sticking it to the cheek; but, alas, many patients have greasy noses and some of the newer adhesive plasters (Micropore, Dermicel) float off during the night. Old-fashioned zinc oxide strapping is much safer and stays put much longer with the greasiest of noses.

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SIR,—We were pleased to see the article by Mr A Tucker and Mrs Jennifer Lewis on passing a nasogastric tube (25 October, p 1128). Many doctors have little practice, as often the intubation is done by the nursing staff. However, we disagree with the general use of large-bore nasogastric tubes for feeding. There are situations where a large nasogastric tube is necessary—for example, to establish that the

stomach is emptying properly in acutely ill patients—but under normal circumstances it is preferable to pass a fine tube for the comfort of the patient.

Some of the fine-bore tubes can remain in situ for a number of weeks without deterioration, whereas the Ryle's tubes should be changed after four to five days as there is a greater risk of nasopharyngeal ulceration and gastric erosions. Many fine-bore tubes come with an introducing wire or a mercury bolus for ease in passing; they are also radio-opaque, unlike Ryle's tubes, so the position can be checked by x-ray examination.

The majority of modern tube feeds, whether prepared or made up in a diet kitchen, will go down the finest tube (1 mm) without any risk of blockage. It is not always necessary to use sterile water as the first feed. A patient is also able to begin to eat or drink with a fine tube in place without any undue discomfort.

Nasogastric feeding is a traumatic experience for the patient. Care and consideration should be given in selecting and introducing any tube.

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Parity and breast cancer

SIR,—Following our report (9 August, p 419) of an association between parity and age at presentation of breast cancer, Dr Edward Trapido has described an analysis of 611 breast cancer patients (18 October, p 1072) in whom mean age at presentation of parous women (57.26 years) was not significantly less than that of nulliparous women (58.86 years; $p=0.15$). He also noted that among parous women mean age at presentation did not decrease with increasing parity, and concluded that his data did not support our study. In contrast, our attention has been drawn by Dr P Juret to his study¹ of 790 patients, in which it was found that parous women did present at significantly younger ages than nulliparous women, as in our sample. We believe that these seemingly conflicting results can be reconciled on the basis of our proposal that (a) breast cancer is usually initiated in early adult life, and (b) in a proportion of parous women tumour growth is accelerated by pregnancy.

Dr Trapido infers from our hypothesis that there should be a linear inverse relationship between parity and age at presentation. This is not the case, nor was it found in our study. Consider a large random sample of women with breast carcinomas. By our hypothesis they can be divided into nulliparous women (group A), parous women whose tumours are accelerated by pregnancy (group B), and parous women whose tumours are not influenced by pregnancy (group C). We would predict that group C would present at the same mean age as group A. Group B would present at a younger mean age; they would also be less likely to attain high parity before manifesting the disease. Among women of high parity, therefore, group C would be overrepresented and group B underrepresented. Mean age at presentation would thus be lowest in women of intermediate parity; in higher-parity groups the mean age would rise towards that for nulliparous women but should not exceed it. These trends are

discernible in Dr Trapido's data and we estimate that his para 1 and para 2 groups are significantly younger (55.7 and 55.5 years) than the nulliparous (58.9 years). To test these predictions we have pooled the 1742 patients described by Dr Trapido, by Dr Juret and his colleagues,¹ and by us. As the table shows, the results conform very closely to those expected.

Age and parity in patients with breast cancer—pooled data

Parity	0	1	2	3	4	≥5
Mean age at presentation	59.1	58.1	55.2	55.8	57.0	59.0
No	464	336	381	268	139	154

Mean age at presentation is only an indirect index of latency and large numbers are needed to minimise other factors such as differing ages at initiation and inherent tumour growth rates. We suggest that this accounts for the differences between the three studies.

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¹ Juret P, Couette JE, Brune D, Vernhes JC. *Europ J Cancer* 1974;10:591-4.

Collecting and banking human milk

SIR,—I was concerned by the publication of the Swedish paper "Collecting and banking human milk: to heat or not to heat" (20 September, p 765) and was, therefore, pleased to read Dr J D Baum's criticism (18 October, p 1066). His summary of the essential points is exact, and I hope you will allow me to add to the—in my view—quite serious criticism he introduces.

The Swedish authors are not alone in stating that because they have identified no ill effects from the giving of raw breast milk then the procedure must be safe. This is scarcely a scientific attitude. Their belief in the extreme value of non-heat-treated breast milk might be attributed to faith rather than science, and their conclusions to a failure to understand the difference between "wet nursing" and the collection of breast milk used at a later time—wet nursing, if the donors are screened, being clearly acceptable and desirable. The condition of raw breast milk is, however, affected by the time at which the major contamination occurs—that is, at collection. This problem is well understood in the dairy industry.

The Swedish paper contains a useful review of the peculiar properties of human breast milk. It makes, however, unjustifiable assumptions which are not supported by the arguments which precede them. The final sentence, "Our own experience of giving raw milk to newborn infants confirms that pasteurisation is unnecessary," is meaningless. The paper makes no distinction between the population and social class structures and the differing morbidity patterns in Scandinavia and this country. It suggests that what might only be applicable to Sweden, and a particular part of Sweden, can be applied equally to other countries and areas: an objectionable epidemiological principle.

The paper does admit the risk of the transmission of tuberculosis, and dismisses this risk with facility. The authors do not think it

necessary to screen for HBsAg carriers, because hepatitis B "... is uncommon in our region." The authors state that they are not aware "... of any hazards caused by administering milk naturally contaminated with potential pathogens. ..." A state of unawareness cannot be considered to be reassuring.

The paper is speculative in regard to the effect of heat treatment on the nutritional properties of human breast milk, and is in direct contradiction to the studies carried out by the Oxford University department of paediatrics and others. They produce no evidence that the low temperature and long time methods of pasteurisation produce the effects that they claim.

The Swedish paper should be read with care, and its conclusions accepted with scepticism. It is to be hoped that paediatricians will not accept it as authoritative.

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SIR,—In the complex debates recently reopened in your columns by Dr Bengt Björkstén and colleagues on whether or not bank human breast milk should be pasteurised before being fed to newborn babies (20 September, p 765) it is important not to lose sight of the fact that the prime reason for giving milk to babies is to provide them with an adequate source of nutrients for optimum growth and health.

Bank breast milk is not homogeneous in its composition, especially in regard to its fat content, varying with the method of collection ("drip" or "expression")¹ and the stage of lactation.² We have shown,³ using the creamatocrit method,⁴ a remarkable range of fat concentration (and therefore energy content) in breast milk arriving at our milk bank. Thirty-four of 140 samples contained under 10 g/l fat, 62 10-19 g/l, 28 20-29 g/l, 13 30-40 g/l, and 3 over 40 g/l. The mean fat content of the milk was only 17 g/l, the standard reference value for mature breast milk being 42 g/l.⁵ We suggested that the very low overall fat content most likely reflected the type of milk on which our milk bank largely depends—namely, "drip" milk collected by mothers in established lactation.

Human milk banks have developed because of the widely held belief that breast milk is the best food for small babies cared for in neonatal units. However, several studies have drawn attention to slow weight gain in preterm babies fed bank breast milk,^{6,7} possible explanations previously having focused mainly on the low protein content of human milk. The importance of considering the energy content of bank breast milk in evaluating neonatal growth is evident. Furthermore, the heterogeneity of its fat concentration means that reference values for the energy content of human milk, in contrast with proprietary formulas, cannot be reliably used in estimating energy intake. With improvements in the composition of the milk formulas which have now become available as alternative foods, paediatricians might find it increasingly difficult to feed a milk of such variable fat content to babies in neonatal units. For those of us who continue to hold the view that human milk, with all its possible nutritional imperfections, is still the best milk for small babies, there is as urgent a need to research into methods of improving the quality of bank breast milk,

especially in regard to its fat content, as to investigate methods of preserving to a maximum its antimicrobial properties.

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¹ Gibbs JH, Fisher C, Bhattacharya S, Goddard P, Baum JD. *Early Hum Dev* 1977;1/3:227-45.

² Lucas A, Gibbs S, Baum JD. *Early Hum Dev* 1978;2/4:351-61.

³ Carroll L, Conlan D, Davies DP. *Abstracts of Proceedings of the Neonatal Society* (in press).

⁴ Lucas A, Gibbs JAH, Lyster RLJ, Baum JD. *Br Med J* 1978;i:1018-20.

⁵ Department of Health and Social Security. *The composition of mature human milk*. Reports on Health and Social Subjects 12. London: HMSO, 1977.

⁶ Gordon HH, Levine SZ, McNamara H. *Am J Dis Child* 1947;54:1030-47.

⁷ Davies DP, Evans TJ. *Early Hum Dev* 1978;2/4:383-92.

SIR,—We support the recommendation of Dr Bengt Björkstén and others (20 September, p 765) that the pasteurisation of breast milk is unnecessary. Our evidence is derived from four years' experience at this hospital.

Expressed breast milk is collected either from mothers on the wards or from mothers who have been discharged. The mothers are carefully instructed about personal hygiene, milk collection, and storage technique. The milk is expressed either by an electric breast pump or by hand. Gamma-sterilised collection vessels and accessories are supplied by the milk bank. The milk collected from mothers at home is refrigerated at 4°C and collected twice a week by the Hackney branch of the National Childbirth Trust. Any mother with overt infection is not accepted as a donor. All samples are cultured. Only those yielding *Pseudomonas aeruginosa* are pasteurised and the rest are pooled and deep frozen. This frozen milk is thawed at room temperature and given to low-birthweight babies whose mothers have an insufficient supply. The milk may be kept frozen for up to two months but usually the demand is so great that this does not occur.

Over the past four years approximately 2500 low-birthweight babies have received frozen unpasteurised breast milk that has been thawed. No ill effects have been noted.

Organisms probably derived from the skin and microflora of the nipple were present in the milk of 37% of mothers. Although these organisms are potential pathogens we agree that they appear to be harmless even to sick low-birthweight babies of other mothers.

We agree with Dr David Baum (18 October, p 1066) that great caution must be exercised in the administration of a breast milk bank. However, he states that pasteurisation "can preserve the majority of the antimicrobial factors" (our italics). Dr Björkstén and his colleagues suggest that all the factors are preserved by freezing. Our experience suggests that pasteurisation is unnecessary, time-consuming, and expensive.

We are most grateful to Sister P B Anderson for her invaluable help in managing the milk bank, the National Childbirth Trust for collecting and delivering the milk, and the City and Hackney District Management Committee for defraying the costs of the latter.

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