by advancing the needle into the liver parenchyma by only 1 cm instead of the usual 2 cm.

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SI units and acidity

SIR,—Dr P J Tomlin's letter (24 September, p 833) illustrates very well the difficulties which arise when doctors are unaware of the real nature of the data they use and apply inappropriate arithmetical procedures to them. He correctly points out the difficulty in using means and standard deviations to indicate the normal range when the true mean is unknown and the frequency distribution is not Gaussian. But in such circumstances it is surely impossible to make any rational decision on the basis of such data. To put it bluntly, how can one decide what is abnormal when one does not know what is normal?

To ask clinicians to remember all the details of every test they use is to impose an absurd and unnecessary burden on them. For them to use constantly a book of tables is little better. The same information is available perfectly simply by establishing the means and the nature of the frequency distribution, changing the latter to Gaussian form so that the standard deviation now has some real meaning, and then giving the results in standard units of T-score form. This would be additional to the actual values of the measurements. I have advocated this procedure for many years on the grounds that such a single unit, which would apply to all tests, present and future, would make for a tremendous simplification of the clinician's task.

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Modified jejunioileal bypass for obesity

SIR,—We agree with the findings of the report by Dr J D Maxwell and others (17 September, p 726) on the modified jejunioileal bypass for morbid obesity and would like to make the following comments.

There is still considerable confusion regarding the extent of small-bowel resection or bypass which will result in serious intestinal decompensation. Estimates of the mean length of small intestine removed from its mesentery at necropsy have varied from 300 to 990 cm and have often been used in formulating statements on the effects of small-bowel excision in the human. These post-mortem estimates do not reflect the length of the small intestine in vivo, and as most clinical observations should relate to the length of the small intestine measured at operation it is surprising that this information is so scanty and confused. Indeed, accurate measurements of small-intestine length at operation are difficult to obtain because of the changing state of the coils of small bowel consequent on peristaltic activity, handling, and exposure. In 30 adult patients requiring elective abdominal surgery we have measured the small-bowel length from the duodenojejunal flexure to the ileocaecal valve after a preliminary exploratory laparotomy and

obtained a mean length of 298 cm with a standard deviation of 30 cm. If this is a reliable estimate of small-bowel length, then the average length of jejunum and ileum in the adult human should average 120 cm and 180 cm respectively as measured at the time of surgery.

These observations stress the real need to avoid, whenever possible, ileal excisions or bypass in excess of 150-160 cm. There must indeed be a critical length of residual ileum below which gross decompensation occurs, and a review of the literature clearly shows that the majority of patients who have died after intestinal bypass for morbid obesity have been those patients in whom less than 20 cm of terminal ileum was retained for absorptive purposes.

The procedure recommended by Dr Maxwell and his colleagues of increasing the amount of residual ileum at the expense of the jejunum in bypass procedures for morbid obesity has also been advocated by Scott¹ and is the most sensible contribution that has been made on the subject. It is certainly corroborated by our own experience.

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¹ Scott, H W. *Journal of the Royal College of Surgeons of Edinburgh*, 1977, 22, 241.

Oxytocin induction and neonatal hyperbilirubinaemia

SIR,—The report by Mr W C Chew (10 September, p 679) has prompted us to communicate our preliminary observations regarding the pathogenetic role of oxytocin infusion, given for induction or augmentation of labour, in neonatal hyperbilirubinaemia.

The association between maternal infusion of oxytocin during labour and neonatal hyperbilirubinaemia is generally accepted.¹⁻³ However, the exact mechanism of production of hyperbilirubinaemia by oxytocin is still a matter of speculation. It is conceivable that the oxytocin may cause water retention owing to its antidiuretic-hormone-like effect, resulting in hyponatremia and hyposmolality in the maternal blood. These alterations would be reflected in the fetal blood.⁴ The hyposmolality in the newborn would result in swelling of the red blood cells, thus making them more fragile and vulnerable to haemolysis. The jaundice may therefore appear earlier and serum bilirubin levels are likely to exceed physiological limits in these neonates.

We have attempted to test the above hypothesis by undertaking a prospective evaluation of 49 full-term, vertex-presenting, vaginally delivered newborn babies with feto-maternal blood group compatibility. Seventeen infants were delivered after oxytocin infusion and 32 were born spontaneously. Cord blood was collected for estimation of serum osmolality (by Fiske osmometer) and sodium concentration. The age at onset of jaundice and serum bilirubin at the age of 4 days $\pm$ 12 h was assessed. Serum osmolality and sodium concentration were significantly lower in the babies delivered after oxytocin infusion than in the control group (see table). Jaundice appeared within 24 h of birth in four neonates belonging to the oxytocin group, the serum bilirubin concentration exceeding 170 μ mol/l (10 mg/100 ml) in two of these. None of the

Serum osmolality and sodium concentration in infants born spontaneously and after oxytocin infusion

	Serum osmolality (mmol/l)	Sodium (mmol/l)
Control group (32)	306.14 $\pm$ 5.16	136.46 $\pm$ 5.08
Oxytocin group (17)	290.10 $\pm$ 3.60	127.95 $\pm$ 5.98

* $t = 12.70$, $P < 0.001$.

$\dagger t = 5.00$, $P < 0.001$.

babies in the control group manifested early jaundice or hyperbilirubinaemia.

These initial observations suggest that the proposed hypothesis is tenable, though it is desirable to enlarge the series and include evaluation of the osmotic fragility of the red blood cells to lend additional support.

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¹ Chalmers, I, Campbell, H, and Turnbull, A L. *British Medical Journal*, 1975, 2, 116.

² Chew, W C, and Swann, L L. *British Medical Journal*, 1977, 1, 72.

³ Oski, F A. *American Journal of Diseases of Children*, 1975, 129, 130.

⁴ Oh, W. *Pediatric Clinics of North America*, 1976, 23, 601.

Acceptable and unacceptable risks

SIR,—Drs J M Evans and J A M Keogh (17 September, p 735) rightly conclude that an intravenous anaesthetic induction agent which had some advantages over others was nevertheless unacceptable because the incidence of adverse reactions was 1 in 1000.

In the same issue (p 738) Dr Barbara Bannister and others report a case of severe hypokalaemia and cardiac arrest after the consumption of about 1.8 kg of liquorice sweets per week, corresponding to a daily intake of about 250 g. Most people who appreciate sweets of all sorts would agree that 60-120 g (about 2-4 ounces) is a reasonable and not too greedy feast. Thus about twice the higher normal dose had caused very severe ill effects after an unspecified time. This was predictable. Life-threatening toxicity has been reported before¹ and there has been a warning about serious adverse reactions after eating modest amounts for only one week.² Liquorice is no longer recommended in pharmaceutical preparations.¹ It is doubtful whether in Britain any pharmacist would sell or any pharmaceutical manufacturer would make anything so toxic as liquorice sweets that is so good to eat.

The same issue also contains a report (p 726) by Dr J D Maxwell and others on the results of 120 jejunioileal bypass operations for obesity which caused substantial weight loss but were followed by five deaths as well as clinically and statistically significant liver damage lasting 6-12 months in all the 35 patients whose liver function was studied. The authors state that "most patients . . . were satisfied with the outcome," though "at the expense of a certain morbidity and mortality." One is not told how satisfaction was assessed, how many is "most," or what were the views of the three patients who died slowly of liver failure.

It seems probable that any trial of a new drug in a chronic and not too severe condition such as obesity would include control data from comparable untreated or differently treated patients and that liver damage over

several months in a sample of 35 would be reason to stop further trials. A single directly attributable death among 120 patients would presumably lead to instant withdrawal of the new medicine.

It is not suggested that the strict controls applied to clinical pharmacologists by themselves, by governments, and by research committees should or could be imposed on surgeons and confectioners. Everybody cannot be protected from everything. But it is interesting to note a wide divergence of attitudes when in the same issue a case of near-death from sweets is reported without any comment about future safety, 100% iatrogenic morbidity and 4% mortality allows the conclusion that "further careful evaluation of the effects of intestinal bypass operations is required," and 1 in 1000 morbidity makes an intravenous injection "unacceptable."

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¹ Martindale: *The Extra Pharmacopoeia*, ed A Wade, 27th edn, p 603. London, Pharmaceutical Press, 1977.

² Epstein, M T, et al, *British Medical Journal*, 1977, 1, 488.

Prevention of retained throat pack

SIR,—The recent death of a child from a retained throat pack prompts me to suggest that all who apply this useful but dangerous technique must establish a foolproof system in order to avoid a repetition of this tragedy. For example, it is usually possible to leave a length of pack hanging externally or fastened to the tube. In all cases a label should be stuck on the forehead or other prominent site to act as a reminder. The use of a second pack or loose swabs inside the mouth or pharynx must be forbidden. Responsibility for the removal of the pack devolves on the person who inserted it, but all who are present must see it removed at the appropriate time. This is particularly important on occasions when there is a change of anaesthetist.

Only by treating the problem with the same care that is exercised in a laparotomy will tragedies be avoided.

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Ulceration of face associated with trigeminal neuropathy

SIR,—In your leading article on the surgical treatment of trigeminal neuralgia (17 September, p 718) you state that one of the complications of injection of alcohol into the trigeminal ganglion or root and fractional rhizotomy is facial dysaesthesia and you quote its incidence as 10-20%. However, you make no mention of the fact that ulceration of the skin of the face with erosion of the ala nasi is also a well-recognised complication of interruption of the peripheral sensory fibres of trigeminal nerve.

Ulcération en arc of the face and nose was first described in 1933 by McKenzie in Canada and by Loveman in the United States.^{1 2} It may follow the injection of alcohol into the Gasserian ganglion³ or sensory root section of the nerve. In 1959 Spillane and Wells⁴ presented a comprehensive review of the literature and reported this finding in 25 patients, including one of their own. In 1967 Henderson⁵ noted that ulceration of the face

and nostril occurred in 12 (18%) of 66 patients who developed permanent anaesthesia of the cheek and nostril following surgery.⁵ Although he stated that the precise cause was uncertain, he supported my earlier contention⁶ that self-inflicted trauma in response to persistent paraesthesiae may be of importance.

Ulcerative lesions of the face and nostril have also been reported in patients with isolated trigeminal neuropathy.^{1 7} I have also seen quite a number of patients who have developed ulceration of the skin of the forehead and scalp after herpes zoster, and in a previous letter³ I suggested that these lesions involving the analgesic skin may be more often seen by dermatologists than by neurologists and neurosurgeons and that their true incidence is far greater than the paucity of reports in the neurological literature would suggest.

Ulcération en arc may also develop as a complication of involvement of the central sensory pathways of the trigeminal nerve, and I have previously presented clinical details of two such patients with acute vascular disorders of the brainstem.^{5 8} In each patient the neurological findings indicated that the central sensory connections of the trigeminal in the spinal tract and nucleus would have been involved in the neuropathological process. There was dissociated anaesthesia, with loss of pain and temperature sensation but preservation of light touch, over the ipsilateral cheek and nostril and, in one patient, the skin above the eyebrow was also ulcerated (see figure).

Ulceration of skin of face with cartilaginous destruction of nostril in patient with vascular lesion of brainstem.

All these patients with involvement of the peripheral or central sensory pathways of the trigeminal nerve who later developed progressive ulceration of the skin of the face and, in some instances, cartilaginous destruction of the nostril had complained of persistent pain and intense and unpleasant irritation on the affected side of the face where this dissociated anaesthesia was found. The pain was described in such terms as a "deep, gnawing, burning pain" and "as if the whole side of the face was on fire," and the intense irritation was likened to "something crawling under the skin and inside the face" or "being invaded by ants." The patients found themselves picking at this analgesic area of the face and nostril with their finger-nails and often woke up during the night

to find themselves scratching off pieces of skin and tissue involuntarily.

Critical appraisal of these cases led me to the belief that the development and later progression of ulcerative lesions of the face and nostril were not, as hitherto presumed, trophic in origin (by definition, pertaining to nutrition) but were self-inflicted and could thus be preventable. These destructive lesions are the direct result of repeated trauma by the finger-nails to those parts of the face, scalp, and nostril which have been rendered analgesic through involvement of the peripheral or central sensory pathways of the trigeminal nerve, being provoked by persistent and painful paraesthesia.

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¹ McKenzie, K G, *Canadian Medical Association Journal*, 1933, 29, 492.

² Loveman, A B, *Archives of Dermatology and Syphilology*, 1933, 28, 369.

³ Freeman, A G, *British Medical Journal*, 1967, 1, 631.

⁴ Spillane, J D, and Wells, C E C, *Brain*, 1959, 82, 391.

⁵ Henderson, W R, *British Medical Journal*, 1967, 1, 7.

⁶ Freeman, A G, *British Journal of Dermatology*, 1966, 78, 322.

⁷ Spillane, J D, and Urich, H, *Journal of Neurology, Neurosurgery, and Psychiatry*, 1976, 39, 105.

⁸ Freeman, A G, *Journal of Neurology, Neurosurgery, and Psychiatry*, 1976, 39, 821.

Study of doctors' career decisions

SIR,—The imbalance between the posts available in certain specialties and the numbers of doctors wishing to fill them has shown itself as a surplus of applicants for general medicine, nephrology, cardiology, and many surgical specialties while vacancies remain unfilled in community medicine, geriatrics, venereology, anaesthetics, radiology, and some of the psychiatry and pathology groups.

The Institute of Manpower Studies is engaged in a study of qualified doctors' career decisions. These take place over a period of several years and a complex group of factors, including personality, education and experience, career prospects, and working conditions all play a part. Sheer chance is also a factor. We need to know how interest in, or distaste for, a particular specialty arises, what are the critical stages in the decision-making process, and how flexible the process is. The institute's task is to investigate the relative importance of the various factors which determine qualified doctors' specialty decisions and to study the causes of the imbalances between applicants and posts, bearing in mind that these may differ for different specialties.

The research began in October 1976 and the first stage consisted of interviews with 200 doctors all over Great Britain. They included not only doctors inside the NHS but also those in industry, research, the armed Forces, and administration. The interviews helped us to design a questionnaire for the second part of the study—a survey of 7000 doctors.

The doctors we are most interested in are those who have already made their specialty decision and who have done so not too long ago. The sample will concentrate, therefore, on doctors who have qualified between two and 20 years ago; and some older doctors will be included for purposes of comparison. The pilot survey took place in July and the main one is now being sent out.

The questionnaire contains a brief section on personal background and career history and then moves on to the main business of the inquiry—the decision to specialise. It asks