the range of heights within which 95% of the parents' sons or daughters will fall and explain to the parents that if their child has a height status or prediction within this range (which stretches 8.5 cm either side of the most likely height) then they are within normal limits for their family. This "parental target," as it is called, should be plotted on the height charts, and makes explanation to the parents very easy in the clinic (see *Fetus into Man*).¹

J M TANNER

Institute of Child Health,
London WC1N 1EH

¹ Tanner JM. *Fetus into man*. London: Open Books; and Cambridge, Mass: Harvard University Press, 1978:168.

Seasonal fluctuations in serum concentrations of vitamin D metabolites in normal subjects

SIR,—Dr J R Juttmann and others state in their paper (25 April, p 1349) that there is a seasonal variation in the serum value for 1,25-dihydroxyvitamin D, commonly dependent on exposure to ultraviolet light. Obviously, it would be of great interest were the levels of 1,25(OH)₂D₃, the most active metabolite of vitamin D, to rise following sunlight exposure, as it might help to explain the hypercalcaemia found in the summer in some individuals and the increased incidence of stone formation reported by Robertson *et al*¹ found in summer. It is puzzling, however, that the circulating values of this hormonal form of vitamin D should rise following increased exposure to sunlight, since the conversion of 25-hydroxy-D to 1,25(OH)₂D₃ is tightly controlled by plasma concentrations of calcium, phosphate, and parathyroid hormone.² It is well known that the 25-hydroxylation step is only partially feedback regulated and that the plasma concentrations of 25(OH)D show considerable seasonal variability, as shown by Juttmann and his colleagues.³⁻⁵ We wish to report that we find no evidence of seasonal variability in the circulating values for 1,25(OH)₂D₃ in 231 healthy children and young adults. A full account of our findings will soon be published in the *Journal of Clinical Endocrinology and Metabolism*.

The values of 1,25(OH)₂D₃ obtained in subjects during each month of the year are shown in the figure. The mean values range from a high level of 49 ± 19 pg/ml (SD) in April and August to a low level of 29 ± 16 pg/ml in October. One difference between our method of obtaining samples and that of Dr Juttmann and his colleagues is that we examined 231 individuals throughout the year, whereas they examined seven individuals over several periods of time serially. None the less,

Seasonal variation in serum 1,25(OH)₂ vitamin D concentrations.

there are serial data to support the contention that there is no seasonal fluctuation in the serum concentrations of 1,25(OH)₂D.⁶ Gray *et al* and we are using the competitive binding assay, with diluted cytosol, from vitamin-D-deficient chick intestine. Dr Juttmann and his colleagues are using a radioimmunoassay following separation by high-pressure liquid chromatography. Perhaps the differences in the methods account for the discrepancy between our results and theirs. It is always possible that their radioimmunoassay is measuring D metabolites other than 1,25(OH)₂D.

Thus, some metabolite that rises following sun exposure may be measured. Our own data would suggest that the concentrations of this most active metabolite of vitamin D have no change related to sunshine exposure, and that this lack of seasonal variation is further evidence of the tight feedback regulation of 1,25(OH)₂D₃ synthesis.

RUSSELL W CHESNEY

University Hospital and Clinics,
Madison, Wisconsin 53792

JOHN F ROSEN

Montefiore Hospital and Medical Center,
Bronx, NY 10467

¹ Robertson WG, Peacock M, Marshall RW. *Clin Sci Mol Med* 1975;**49**:597-602.

² DeLuca HF, Schnoes HK. *Ann Rev Biochem* 1976;**45**:631-66.

³ Stamp TC, Round JM. *Nature* 1974;**247**:563-4.

⁴ Haddad JG, Stamp TC. *Am J Med* 1974;**57**:57-62.

⁵ Lund B, Sorensen OH, Hilden M. *Acta Med Scand* 1977;**202**:223.

⁶ Gray RW, Lemann J Jr, Adams ND. In: Norman AW, ed. *Vitamin D: basic research and its clinical application*. Berlin: Walter de Gruyter, 1979: 545-51.

Evaluation of laboratory tests

SIR,—There is concern in your leading article (20 June, p 1994) about the number of investigations performed on patients. Some investigations are expensive and might be unnecessary. The rationale for additional investigations when the diagnosis is already established is questioned.¹ These investigations are requested on the premise that some measurements will be abnormal in certain diseases. Some doctors regard this as a help to diagnosis.

An example of this is the measurement of serum immunoglobulins in respiratory disorders. Abnormality in immunoglobulins may be useful in diagnosis. To evaluate this hypothesis, a retrospective analysis was made studying the case records of patients in a chest hospital. Patients were identified where a measurement of serum immunoglobulins was done during the preceding 12 months and then analysed to assess the contribution of the test towards the management of the patient.

Sixty-three patients were studied (31 men and 32 women). Immunoglobulin measurement was requested after a period of inpatient care, a provisional diagnosis having already been made. Therefore, the main reason for requesting the test was to seek confirmatory evidence, negative and positive, for the diagnosis.

Twenty-four patients (12 men and 12 women) had normal amounts of immunoglobulins. The remaining patients had increased amounts of one or more immunoglobulin. The test was considered to be helpful in those patients where the immunoglobulin pattern was similar to that expected in the provisional diagnosis. If the pattern was abnormal but non-specific, the test was considered to be of doubtful importance. Analysis of immunoglobulins in this study showed that they were helpful in 33 (52%) patients; unhelpful in 13 (20%); and of doubtful use in 17 (28%).

Any firm conclusion based on this study is difficult. Although the investigation was helpful in half the patients, it was not diagnostic. It confirmed the expected pattern of immunoglobulins for the diseases already diagnosed. Nevertheless, in some cases the diagnosis was of sufficient uncertainty to make confirmation helpful. Although no change from original diagnosis was made by the test, confirmation of the diagnosis was reassuring in management of the patient.

It is argued that such investigations are expensive and seldom necessary. Before accepting this argument the expense of the investigation should be considered in relation to the expense and unpleasantness of treatment and stay in the hospital for the patient. The study shows that in the majority the immunoglobulin assessment may help by confirmation of a diagnosis already made.

R S RAMAIAH

Clwyd Health Authority,
Mold, Clwyd

R W BIAGI

Llandyrnog, Clwyd

¹ Anonymous. *Lancet* 1981;i:539-40.

Tonsillitis and otitis media

SIR,—I wish to comment on the views presented by Dr H B Valman on otitis media (11 July, p 119). Dr Valman states that over one-half of the cases of acute otitis media are viral in origin. Even if a viral infection often precedes acute otitis media, however, the microbiology of the middle-ear fluid in acute otitis media suggests the clinical disease itself to be almost always bacterial.¹ By far the most common bacterium in acute middle-ear fluid cultures has quite uniformly been shown to be *Streptococcus pneumoniae*.¹ We cultured it in the middle-ear fluid in 39% of 519 children with acute otitis media²; if antigen-detection methods were included in the analyses, pneumococcal aetiology was implicated in about 60% of the cases.² *Haemophilus influenzae* is remarkably less frequent, causing only about 10-20% of the cases,^{1,2} and the role of *Streptococcus pyogenes* has fallen to almost nothing during the past decades.³ On the other hand, *Branhamella* (formerly *Neisseria*) *catarrhalis* is today in some cases (3-6%) of acute otitis media suggested to be the pathogen.^{1,2}

Besides amoxycillin, penicillin V in big doses (25 mg/kg body weight) is also effective in eradicating the pneumococci and most strains of *H influenzae* from the middle-ear fluid⁴; the two drugs may be regarded as primary choices for antimicrobial treatment in acute otitis media. Erythromycin does not reach sufficient concentrations in the middle-ear fluid to inhibit *H influenzae* and cannot be recommended for acute otitis media unless combined with a sulphonamide.⁵ Cephalixin is not effective against *H influenzae*, but a new cephalosporin, cefaclor, is active against it even in the middle-ear fluid.⁵ Effective also against the ampicillin-resistant strains of *H influenzae*, both co-trimoxazole and cefaclor can be recommended for treatment failures, even if they are caused by β -lactamase-producing middle-ear pathogens.

Dr Valman does not mention myringotomy in the treatment of acute otitis media. Myringotomy and aspiration of the middle-ear fluid is, however, a most effective way to initiate the rapid resolution of infection of the middle ear and thus to prevent the prolongation of the disease and the development of secretory otitis media.⁶ The procedure also provides

reliable information on the nature of the middle-ear process. As a simple and immediately pain-relieving measure it is therefore highly recommended and should always be performed when treating a child with acute symptoms and fluid in the middle ear.

Finally, nasal or oral decongestants of any type have not been established to have any beneficial effect in the prevention or treatment of either acute or secretory otitis media.⁷ Since, besides their well-known side effects, oral decongestants may even be harmful to the middle ear,⁷ they should not be routinely used for otitis media.

PEKKA KARMA

Department of Clinical Sciences,
University of Tampere,
SF-33520 Tampere 52, Finland

¹ Klein JO. *Ann Otol Rhinol Laryngol* 1981;**90** suppl 84: 30-36.

² Luotonen J, Herva E, Karma P, Timonen M, Leinonen M, Mäkelä PH. *Scand J Infect Dis* (in press).

³ Herberts G, Jeppsson P-H, Nylén O, Branefors-Helander P. *Pract Otorhinolaryngol* 1971;**33**:191-202.

⁴ Kamme C, Lundgren K, Runderantz H. *Scand J Infect Dis* 1969;**1**:77-83.

⁵ Ginsburg CM, McCracken GH, Jr, Nelson JD. *Ann Otol Rhinol Laryngol* 1981;**90** suppl 84: 37-43.

⁶ Karma P. *Br Med J* 1976;**3**:1018.

⁷ Sorri M, Sipilä P, Palva A, Karma P. *Acta Otolaryngol*, in press.

Management of patients with bilateral amputations

SIR,—I refer to your leading article (12 September, p 684) regarding the management of double amputees. This contains several very valid points, in particular that the home environment is often woefully unsuitable for the returning double amputee—regardless of how well he may have performed on his new prostheses in the walking-training school. The level of communication between all those concerned in amputee rehabilitation could certainly be improved with advantage. I also agree that the greater use of purely cosmetic limbs for double amputees permanently confined to wheelchairs should be encouraged. There are, however, several misconceptions which need to be corrected.

Reference is made to "halting the automatic prescription of a sequence of prostheses." In fact, the need or otherwise for an artificial limb would have been considered much earlier by the multidisciplinary care team. It is implied that the artificial limb and appliance centres issue, almost inexorably, a series of limbs to every amputee. This is not the case. All patients referred to our service are first medically assessed. Not infrequently it is decided, after consideration of all relevant factors, that a wheelchair existence would be in the patient's own best interest. In marginal cases a trial of pylons may be undertaken, while in more straightforward cases the amputee will advance—subject to satisfactory progress at every stage—from short- to long-rocker pylons and finally to a pair of definitive limbs. There is no automatic prescription.

You demonstrate a rather negative approach to what may have to be done as a lifesaving measure. The more positive attitude might have been to stress the advantages of the below-knee procedure over any higher level operation, where this is clinically possible. In this way the speed and end-result of rehabilitation would be greatly improved. It is particularly important to remember that where amputation has been performed in a single amputee for arteriosclerosis, approximately 30% will be

double amputees within three years. Even the retention of one knee joint can strikingly enhance future mobility.

The third paragraph states that those with double amputations above the knee are expected to walk and are given artificial limbs irrespective of their physical and mental ability to cope with them. As pointed out this is not the case. Each amputee receives a complete assessment from the artificial limb and appliance centre medical officer, and the patient's mental approach is taken into account in any decision to proceed.

You state correctly that the initial assessment is made by the hospital team but this should occur before operation and not "as soon as postoperative recovery permits." The artificial limb and appliance centre medical officer and the prosthetist (limb fitter) should be part of the multidisciplinary team, as they are at Roehampton.

A double amputee cannot be tested, as you suggest, to see whether he is suited to walking with prostheses before being referred to the artificial limb and appliance centre. Pneumatic pylons are not suitable for double-above-knee amputees since they rub together and are unstable, nor is it recommended that a pneumatic pylon should be paired with the patient's original prosthesis supplied when a single amputee. The latter requires shortening, and this must be done at the artificial limb and appliance centre.

Learning to walk again as a double amputee is an entirely new experience, which is why the majority are started on a very short (24 in, 61 cm) pair of rocker pylons; for reasons of stability such a patient is seldom restored to his original height. The result of any assessment of a recent double amputee using his original and unaltered prosthesis would be quite false and in fact could lead to unfair rejection.

Also the apparent cost of two pairs of artificial limbs is quoted. This does not represent the cost of hardware alone but includes a significant element covering the bespoke fitting service provided throughout the country.

Finally, in the last paragraph it seems a little rash to assume that administrative procedures in the NHS are necessarily more efficient than in the DHSS or that postal delays would be any less following transfer.

A W G ENGLISH

Limb Fitting Centre,
London SW15 5PR

Gamma-aminobutyric acid and weight control

SIR,—Two papers in two recent editions may be brought together. Drs J Egger and E M Brett (29 August, p 577) report that weight gain is found with the antiepileptic drug sodium valproate and that weight loss was also seen on withdrawal. Dr H Petursson and Professor M H Lader (5 September, p 643) describe noticeable weight loss on withdrawal of benzodiazepine treatment. Both drugs are thought to increase brain γ -aminobutyric acid.¹⁻³ The formation enzyme of γ -aminobutyric acid, glutamic acid decarboxylase, is decreased by approximately half in the brains of patients dying of protracted illnesses in contrast to those who die suddenly,⁴ and in contrast to choline acetyl transferase and catecholamines.⁵⁻⁶

These separate experimental findings suggest that γ -aminobutyric acid has some influence

on weight control, and an application would be a trial of benzodiazepines in cachectic conditions and during the almost inevitable nitrogen loss postoperatively. The conventional treatment of anorexia nervosa with chlorpromazine could also be reviewed.⁷

M WELLER

Royal Free Hospital,
London NW3 2QG

¹ Imler S, Ciesielski L, Maitre M, Randrianarisoa H, Mandel P. *Biochem Pharmacol* 1973;**22**:1701-8.

² Haefely WE. *Brit J Psychiat* 1978;**133**:231-8.

³ Costa E, Guidotti A, Toffano G. *Brit J Psychiat* 1978;**133**:239-48.

⁴ Spokes EG. *Brain* 1979;**102**:333-46.

⁵ Bowen DM, Smith CB, White P, Davison AN. *Brain* 1966;**89**:459-96.

⁶ Perry EK, Gibson PH, Blessed G, Perry RH, Tomlinson BE. *J Neurol Sci* 1977;**34**:247-65.

⁷ Slater E, Roth M. *Clinical Psychiatry*. London: Baillière, Tindall, and Cassell, 1970:125.

Stridor

SIR,—I read Dr H B Valman's article on stridor (25 July, p 294) and the letters it provoked from Drs M G Addy and N R Bennett (12 September, p 729) with interest.

A review of 36 patients with stridor admitted to hospitals in Oxford in 1979 showed that most (26) were due to laryngotracheobronchitis and required no active management. Of the five children who required an artificial airway (nasotracheal intubation), however, three had laryngotracheobronchitis and two had epiglottitis. The clinical picture in these five cases was the same.

These figures suggest to me that the two types of croup are not all that different. Stridor thought to be due to a viral infection (laryngotracheobronchitis) should be taken every bit as seriously as that thought to be due to a bacterial infection (epiglottitis). Clinically the two conditions are often indistinguishable. Possibly one child in ten admitted to hospital with laryngotracheobronchitis will require an artificial airway.

It is wrong to say that nasotracheal intubation guarantees safety. Twice I have seen nasotracheal tubes block with disastrous or near disastrous consequences. Nursing a child with a nasotracheal tube in place requires the highest standards and individual attention. I would suggest these children should not be nursed on a busy ward but in the intensive care unit. In Oxford a clear protocol has been laid down for dealing with a child with stridor. It involves the senior registrars in anaesthetics and ENT as well as the paediatricians on call. A picture of a child with epiglottitis is being prepared which will be displayed on the walls of the casualty department and in the wards to remind new staff of the clinical picture of a child with acute epiglottitis or croup.

PIERS ROWLANDSON

John Radcliffe Hospital,
Oxford OX3 9DU

Points

Management of asthma in the child aged under 6 years

Dr JANNA FREARS (Children's Asthma Clinic, Beaumont House Chest Clinic, Plymouth PL4 9BQ) and Mr A G BUTLER (Glaxo Group Research Ltd, Herts SG12 0DJ) write: Dr C J Bacon (11 July, p 141) has pointed out the possible benefits of nebulised corticosteroid treatment in the severely affected young child