should not deter other groups who want to see such a team established in their own area. It does make the point, however, that support teams need to be set up with great care, with adequate funding and proper commitment, if they are to be successful. There needs to be a single consultant in charge, with at least one other doctor and, wherever possible, a full time social worker plus at least two nursing sisters. We believe that the appointment of a single unsupported nurse, instead of a properly funded team, will inevitably prove a recipe for disaster.

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SIR,—In reply to the questions and comments on our paper from Dr Andrew Hoy and others (13 July, p 142) it is true that none of the consultants in our team had worked in a hospice, but all had visited hospices as much more than casual sight-seers. We do not accept their implication that no terminal care support team should be started without a consultant who has worked in a hospice. We recognised the need for mutual support; that was a major reason why we arranged our regular sessions at the Cassel Hospital.

We should perhaps have explained the 24 hour on call advice service that was available for patients who were already known to the team, but not for new referrals. The sister provided this service from 9 am to 5 pm Mondays to Fridays; at other times she and other members of the team took it in turns. During the sister's absence the social worker took her place as far as she could.

Lastly, we must point out that clinicians with special responsibility for patients with cancer are also responsible for looking after them when they are dying. Those in the departments of medical oncology and radiotherapy wish to develop the service they offer using all means, including Macmillan nurses. Together they can offer strong leadership and, equally important, education of staff and students.

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Comparison of barium swallow and ultrasound in diagnosis of gastro-oesophageal reflux

SIR,—Dr D R Naik and colleagues can detect gastro-oesophageal reflux in children by ultrasound (29 June, p 1943), but they ignore a crucial point about the nature of reflux. Gastro-oesophageal reflux occurs often in infants and children as a normal physiological event.¹ Static studies, such as the barium swallow or ultrasound, may well detect reflux if it happens to occur during the period of the test, but these tests cannot distinguish pathological reflux from that which is merely physiological. We use 24 hour lower oesophageal pH probe monitoring as a dynamic test that is capable of quantifying reflux in various ways and hence of distinguishing physiological from pathological reflux under near normal conditions. The barium swallow and meal may have a place in detecting oesophagitis or hiatus hernia during the management of reflux, but we believe it is a misleading test for diagnosing reflux in children. By its very nature it will have a high false

positive yield (detecting physiological reflux) and a high false negative yield (pathological reflux not occurring at the time of the examination).

For most infants the history is sufficiently clear to diagnose reflux. Only if there is doubt, or if the problem appears severe or resistant to treatment, is further investigation warranted. In this instance 24 hour oesophageal pH monitoring establishes the diagnosis, quantifies the problem, and provides an objective means of testing the effect of posture and drugs.²

Detection of reflux by ultrasound as described by Dr Naik and colleagues is certainly the least invasive of investigations, but it does not give any information that is helpful in making decisions about treatment for the child.

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- 1 Koch A, Gass R. Continuous 20-24 hr esophageal pH-monitoring in infancy. *J Pediatr Surg* 1981;16:109-13.
- 2 Meyers WF, Herbst JJ. Effectiveness of positioning therapy for gastroesophageal reflux. *Pediatrics* 1982;69:768-72.

** The authors reply below.—ED, *BMJ*.

SIR,—We agree that gastro-oesophageal reflux is common and may be either physiological or pathological. Differentiating these two groups is difficult by all methods, and there are no universally agreed criteria. We chose our initial criteria such that those cases with a "flash" of reflux would be regarded as negative.¹

The history is not always as clear as Drs MacFarlane and Miller suggest and we receive requests to determine whether or not gastro-oesophageal reflux is occurring. Formerly this would have meant a barium swallow. We have shown that this can be achieved reliably by ultrasound, and barium should not be necessary. While 24 hour lower oesophageal pH monitoring is an elegant investigation, it would not be appropriate to perform this on every child with suspected reflux; it seems reasonable to reserve this test for those cases (a small number) which fail to respond to simple conservative measures.

We find that the results based on our criteria are useful to our clinical colleagues; our method is simple, safe, and readily available in any department with a real time sector scanner.

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- 1 Naik DR, Moore DJ. Ultrasound diagnosis of gastro-oesophageal reflux. *Arch Dis Child* 1984;59:366-9.

SIR,—Having found that gastro-oesophageal reflux in children may be shown by ultrasound examination (29 June, p 1943), Dr D R Naik and his colleagues recommend that "all patients under the age of 5 years should undergo ultrasound examination as the initial investigation." May I disagree?

Reflux in childhood is commonest in infancy, when it may well be considered to be physiological.¹ When the parents present the child for further clarification the diagnosis is readily made by the characteristic history and physical findings of a well, thriving infant. Indeed, Dr Naik states that they often see the reflux by naked eye as a "show" at the mouth.

After this diagnosis has been made clinically why proceed any further? Surely the argument that a doctor somehow feels better having shown the

reflux on investigation is totally fallacious; such a finding is so common that it may well be incidental, and it certainly does not preclude other pathology.

Concern may arise, however, in those babies in whom reflux is complicated by haematemesis or failure to thrive. Here a true hiatus hernia or "partial thoracic stomach" should be excluded.¹ (Unfortunately Carre does not state his personal indications for investigation.) It is precisely here that we are told that ultrasound examination is insufficient and barium studies are required.

It must therefore be asked whether ultrasound has any truly useful place in the investigation of gastro-oesophageal reflux outside that of research into its incidence and age variability in "normal" babies.

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- 1 Carre JJ. Clinical significance of gastroesophageal reflux. *Arch Dis Child* 1984;59:911-2.

Turbulence in the lungs

SIR,—While the physics quoted by Dr John M Lamberty in his comments (15 June, p 1829) on our article on tracheal carcinoma and previous tracheostomy (1 June, p 1628) are, of course, correct, we feel that our suggested mechanism remains a likely explanation of why malignancy should arise in the trachea at the site of an old tracheostomy. Our point is that air flow in the normal trachea is relatively more laminar than in the bulk of the respiratory tract (although not, of course, in the distal regions). An irregularity in the wall of the trachea such as an old scar would alter the quality of air flow in that region in such a way as to encourage local deposition; there are two possible mechanisms. Firstly, rotational turbulence might be generated, leading to centrifugal "embedding" of particles into the tracheal wall. Secondly, air velocity on the leeward side of any such obstacle would be reduced, and thus deposition increased.

We have now seen two more cases of tracheal carcinoma in aged smokers. One had had a childhood tracheostomy and the other a benign pedunculated lesion projecting into the lumen just below the tumour but quite separate from it. We would be interested to hear of alternative theories to account for our observations.

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Glue ear: the new dyslexia?

SIR,—Your correspondence (20 July, p 211) on the subject of Dr N Black's thoughtful and provocative article (29 June, p 1963) appears to suggest that there is unanimity in the ear, nose, and throat world regarding the benefits of tympanostomy tubes (grommets). Not so; any operation should have to prove its value. In this case it has been estimated that at least one million children undergo this procedure annually,¹ but the evidence is strangely lacking. Controlled trials have shown that myringotomy and adenoidectomy together are effective in producing hearing improvement in most children.^{2,4} Only the small proportion of refractory cases would then require grommets with their attendant and well documented long term consequences.⁵

In addition, some of your correspondents draw a "red herring" across the trail by implying that grommets are responsible for preventing chronic suppurative otitis media in later life. This is a