drawing on the guidance and training that can be given by departments of nutrition and dietetics.

MARTIN LOCK
Senior registrar
VIVIENNE VALD
Senior dietitian

Napsbury Hospital,
London Colney,
St Albans AL2 1AA

- 1 Garrow J. Starvation in hospital. *BMJ* 1994;308:934. (9 April.)
- 2 McWhirter JP, Pennington CR. Incidence and recognition of malnutrition in hospital. *BMJ* 1994;308:945-8. (9 April.)
- 3 Thomas BJ, ed. *Manual of dietetic practice*. Oxford: Blackwell Scientific, 1988.
- 4 Lennard-Jones JE. *A positive approach to nutrition treatment*. London: King's Fund, 1992.

Identifying malnutrition benefits everybody

EDITOR,—We were depressed to read the paper by Janet P McWhirter and Christopher R Pennington on malnutrition in hospital.¹ We undertook a similar survey in 1984, one year after setting up a clinical nutrition team, in a similar large teaching hospital, Southampton General Hospital. We studied 206 general surgical patients, in four wards, on three occasions at fortnightly intervals. Using simple bedside anthropometric measurements and a simple dietary questionnaire, we obtained similar results to those of McWhirter and Pennington.

Eighty four patients in our study population were malnourished, 37 seriously so. Sixteen patients had been in hospital for more than three weeks when assessed, of whom 12 were severely malnourished. One third of the group had proved malignancy and were undergoing major surgical procedures. There were 13 day cases. Mortality in hospital was 5% (nine cases) and the complication rate 36% (73 cases). Nutritional status deteriorated during the patients' stay in hospital, and this was associated with increased complication rates. Twelve of the 15 patients in whom we obtained serial measurements had complications; all had sepsis, and five had enterocutaneous fistulas. Only 11 of the 206 patients received nutritional support, although 32 had not eaten a normal meal for more than seven days (five of these 32 were receiving nutritional support). Of the 32 "starving" patients, 17 were malnourished, 12 severely so. Sixteen had had major surgery (laparotomy plus resection), all of whom had developed complications. Twelve had moderate surgery, and the complication rate was 57% (seven cases). Mortality in hospital was 13% (four cases).

It is not difficult to identify malnourished patients, and it costs nothing. The combination of pre-existing malnutrition, surgery for cancer, and a period of acute starvation indicates the subgroup that needs to be targeted for early nutritional intervention. Gains accrue to patients, surgeons, and managers—namely, lower postoperative morbidity and mortality, better surgical results, and a reduction in hospital costs. So why isn't anything being done?

CATHERINE ROYCE
MARY TAYLOR

Drahtzugstrasse 51,
CH 4057 Basle,
Switzerland

- 1 McWhirter JP, Pennington CR. Incidence and recognition of malnutrition in hospital. *BMJ* 1994;308:945-8. (9 April.)

Junior doctors are starving too

EDITOR,—Nutrition is indeed given too little attention in hospitals.¹ This attitude results not only in undernourished patients but in undernourished doctors. As active resident medical staff, junior doctors out of hours have to visit vending machines in search of nutrition. The appetising choice is usually limited to reheating fatty sausage left from

breakfast or watery scrambled egg. Fortunately, chocolate and carbonated sugar are always available, but can these be regarded as adequate nutrition?

G MACKEY
Senior house officer 3 in orthopaedics
Inverclyde Royal NHS Trust,
Greenock PA16 0BX

- 1 Garrow J. Starvation in hospital. *BMJ* 1994;308:934-5. (9 April.)

Studying ancient DNA

EDITOR,—Fred B Charatan reports that research on a Peruvian mummy shows that tuberculosis was present centuries before Columbus discovered the New World.¹ This confirms the research that I and Lemma did in a joint study between University College London's Institute of Archaeology and the medical schools' department of medical microbiology; this work has been published² and was mentioned at the second international congress on ancient DNA in Washington last October. We have extracted and amplified by the polymerase chain reaction, using the insertion sequence primers specific for tuberculosis, ancient DNA from bones with morphological evidence of tuberculosis. The bones come from Europe, Turkey, and Borneo; some are over 1500 years old.

The statement that the experiments at the University of Minnesota represent the "first successful attempt" is thus surprising and wrong. Scientists from the University of Bradford have confirmed our experiments and techniques (meeting of the Ancient Biomolecule Initiative, Cambridge, 6 January 1994).

In the year since our initial paper was submitted our research has progressed. We have isolated *Mycobacterium leprae* DNA from a bone from AD 600 (A Masri *et al*, submitted for publication). In addition we are developing new primers to see how many different chains of bacterial DNA can be "fished out" of any specimen and we are sequencing segments to provide information on rates of mutation. This will give us insight into issues such as changes of virulence with time, longstanding antibiotic resistance, for how long the tubercle bacillus has differed genetically in Europe and the United States, and the history and origin of the major epidemics and pandemics of ancient man.

In conjunction with Drs C and L Fricker from Thames Water, who are using the technology developed in our previous experiments to try to improve the speed and sensitivity of current techniques to detect water contamination, we recently isolated ancient *Escherichia coli* DNA from the gut contents of Lindow Man, a body found in an iron age bog dated to 500 BC. The techniques that we developed open up ancient cesspits for DNA extraction, giving information on public health and the history of disease in whole communities rather than in individual people. We are currently working on faeces from Viking York in Britain and from Haines Cave in the United States—a combination of academia and business pursuing a common goal even if for different reasons. Professor Raul Cano of the Californian Polytechnic State University and I are conducting a joint project on the origins of syphilis, hoping finally to clear Columbus's name. Sample collection is currently complete, and the study is well advanced.

I trust that the above corrects any misconceptions that Charatan's article may have created.

M SPIGELMAN
Research fellow
Institute of Archaeology,
University College London,
London WC1E 6BT

- 1 Charatan FB. Peruvian mummy shows that TB preceded Columbus. *BMJ* 1994;308:808. (26 March.)

- 2 Spigelman M, Lemma E. The use of the polymerase chain reaction (PCR) to detect *Mycobacterium tuberculosis* in ancient skeletons. *International Journal of Osteoarchaeology* 1993;3: 137-43.

Caring for patients with asthma

Teaching self management takes time

EDITOR,—The Grampian asthma study concluded that peak flow meters and self management plans offered "little clinical benefit."¹ Closer examination of the methods shows that the self management plans used by Beasley *et al*² and by us³ were not used and that the crucial ingredient of doubling the dose of inhaled steroid as the peak flow falls was not adhered to. Our recently published work confirms the importance of this step. If patients manage themselves by increasing bronchodilators only, as occurred in one arm of our study, the outcome is not as impressive.⁴

The self management plans of the Grampian asthma study focused on when to start oral steroids and when to seek immediate medical help. Such a plan is more suited to preventing admission and increasing doctor contact rather than reducing morbidity. It is therefore no surprise that the number of consultations with general practitioners rose in the intervention group.

In our experience, consultants who tailor treatment to individual patients produce less effective self management plans than asthma nurses who follow the protocol and implement tested self management plans.

Teaching patients self management skills requires an initial consultation of 45 minutes and a follow up examination one week later. Specifically designed diary cards can enhance this process.⁴ It usually takes patients three months before they are familiar with such plans. Patients often need to be guided through their first attack. Once the concepts have been grasped then patients require little input and quite often use their peak flow meters only during an asthma attack. Although initially time consuming, such an approach reduces morbidity and is cost effective for both patient and doctor.⁵ The Grampian asthma study made no mention of what efforts were made by the physicians to teach their patients how to use self management plans. We found that 78% (33/42) of patients who attended a nurse clinic and used specifically designed diary cards executed their self management plans appropriately compared with 46% (17/37) who were under a physician's care. It seems unfair to discard these useful tools because the consultants may have failed to successfully teach patients how to use them. An analysis of the patients who correctly followed their self management plans would be interesting before judgment is passed.

Finally, we would caution the authors against generalising their findings to all patients with asthma. As highlighted in the paper, outpatient departments may deal with only 10% of those with asthma.⁵ General practitioners working with trained asthma nurses who implement appropriately constructed self management plans may succeed where hospital outpatient departments do not. We believe that this is particularly relevant when dealing with children and parents, a group that was not covered in the Grampian studies.

IAN CHARLTON
General practitioner
GILLIAN F A CHARLTON
General practice asthma nurse

7 Tilba Street,
Kincumber,
2251 New South Wales,
Australia

- 1 Grampian Asthma Study of Integrated Care (GRASSIC). Effectiveness of routine self monitoring of peak flow in patients with asthma. *BMJ* 1994;308:564-7. (26 February.)

- 2 Beasley R, Cusley M, Holgate ST. A self management plan in the treatment of adult asthma. *Thorax* 1989;44:200-4.
- 3 Charlton I, Charlton C, Broomfield J, Mullee MA. Audit of the effect of a nurse run asthma clinic on workload and patient morbidity in a general practice. *Br J Gen Pract* 1991;41: 227-31.
- 4 Charlton I, Antoniou AG, Atkinson J, Campbell MJ, Chapman E, Machintosh T, et al. Asthma at the interface: bridging the gap between general practice and a district general hospital. *Arch Dis Child* 1994;70:313-8.
- 5 Charlton I, Bain J. The care of children with asthma in general practice: signs of progress? *Br J Gen Pract* 1991;41:356-9.

Integrated care may benefit all asthmatic patients

EDITOR,—The concept of integrated care in asthma management could be beneficial for all concerned. The laudable Grampian asthma study is particularly encouraging as it is applied to a population that are not necessarily those that would benefit most—that is, patients currently on a hospital waiting list.¹

The general practitioners in this study (330) referred about 4% of their adult patients with asthma (based on the assumptions that of the 500 000 population of Grampian, 80% are over 16 years of age and that the current prevalence of asthma in adults is 5%).² Therefore like so many general practitioners they provide care for 96% of their patients with asthma. There are few data available on the balance of care between the general practitioner, the outpatient clinic, and hospital admissions for asthma, but unpublished data from our study in Swansea have shown that in children this balance of care is out of step with that in the management of other chronic diseases. When a research nurse gathered data (rather than using hospital activity analysis) there were five times as many admissions for asthma to a district general hospital than referrals to outpatient departments (502 compared with 908 in 1992) over a period of 12 months. The reason for referral was assessed by the paediatricians using both the referral letter and the interview with parent(s). This is different from what happens in other chronic diseases—for example, diabetes, which relies on regular outpatient surveillance with far fewer admissions for a crisis. Whereas diabetes and asthma may be clinically inherently different, it is unlikely that such differences in the balance of care can be explained on clinical grounds.

Measuring the appropriateness of hospital referral has important health care implications and has little to do with the severity of the condition. In one study East Anglian general practitioners identified four important factors that affected their referral behaviour: ease of access, interest and skills of the doctors, patient pressure or demand, and fear of litigation.³ Other studies have identified the relative inability to tolerate uncertainty.⁴ None of these factors has anything to do directly with the severity of the condition. The authors of the Grampian asthma study conclude that the integrated care programme was for patients with "moderately severe asthma" and that this severity of asthma may have been an important factor in the referral behaviour of the Grampian general practitioners who had referred patients "to hospital for help in the diagnosis of management of their asthma and therefore they may be considered as having more troublesome symptoms than those who were not referred." We are not given any evidence in this paper or in other published studies that general practitioners refer patients because of disease severity.

Indeed, in the Grampian asthma study only 11% (89 of 801) were considered to have been ineligible for entry into the integrated care randomisation schedule because of the "severity of asthma." Taking patients on the current outpatient waiting list is therefore not the most appropriate area to evaluate the effectiveness of an integrated care programme. Hutchinson believes that the

behaviour of individual doctors and the factors underlying it are the key elements of the referral conundrum. Studies on integrated care should therefore involve general practitioners more actively in the patient selection process rather than look at the minority who are on hospitals' outpatient waiting lists.

ALAN JONES
Senior lecturer

Department of General Practice,
University of Wales College of Medicine,
Cardiff CF4 4XN

- 1 Grampian Asthma Study of Integrated Care (GRASSIC). Integrated care for asthma: a clinical, social, and economic evaluation. *BMJ* 1994;308:559-64. (26 February.)
- 2 Peckham C, Butler N. A national study of asthma in childhood. *J Epidemiol Community Health* 1978;32:79-95.
- 3 De Marco P, Cain C, Lockwood T, Roland M. How valuable is feedback of information on hospital referral patterns? *BMJ* 1993;307:1465-6.
- 4 Newton J, Hayes V, Hutchinson A. Factors influencing general practitioner referral decisions. *Family Practitioner* 1991;8: 308-13.
- 5 Hutchinson A. Explaining referral variation. *BMJ* 1993;307: 1439.

Authors' reply

EDITOR,—In response to Mark Levy, although 569 patients were randomised, not all patients or their general practitioners answered all the questions; we presented minimum numbers for each denominator. These figures provide 80% power of detecting at the 5% significance level a difference between self monitoring of peak flow and conventional monitoring ranging from 23% to 26% of the standard deviation of the variable in question; to describe this as weak, as Levy does, is to clutch at statistical straws. All patients in the study had been referred to a hospital outpatient department; to describe them as having mild asthma is to understate the seriousness of their condition and the difficulty of managing it in general practice without referral. Levy is correct to indicate the pragmatic nature of this study: we evaluated self monitoring of peak flow under "real life conditions."

More intensive education of patients in self monitoring and more rigorous standardisation of self management guidelines may improve the effectiveness of self monitoring of peak flow, but the problem remains that you can give patients peak flow meters and guidelines but you can't make patients use them.

If the emphasis is shifted to providing training for patients in self management (as distinct from educating them) and to devoting more resources to this task, as Ian Charlton and Gillian Charlton recommend, improvements in morbidity may result. The Charltons have themselves reported no benefit in outcome through issuing peak flow meters to a sample of patients in general practice.² Our study found no benefit for patients referred to an outpatient clinic. Seemingly it is the quality of training for patients and the nature of their self management guidelines that hold the key to improved morbidity; the additional provision of a peak flow meter may be superfluous. We would like to see training in self management for patients. We would also like to see details of the British Thoracic Society's management guidelines (including doubling dose of inhaled steroid, which is now a feature of our advice on self management but was not widely accepted when our study was implemented) evaluated in controlled trial whenever feasible and rigorously audited when it is not.

In response to J Marsh,³ although patients given integrated care experienced no identifiable change in health status when compared with patients given conventional care, they preferred integrated care and benefited financially from the system. From a related study we have evidence that general practitioners support integrated care.⁴ In short, integrated care generated a range of advantages but

no disadvantages. That is why we described it as "an alternative management option."

NEIL DRUMMOND
Research fellow
MONA ABDALLA
Research fellow
JAMES BEATTIE
Research fellow

Health Services Research Unit,
University of Aberdeen,
Aberdeen AB9 2ZD

IAN RUSSELL

Office of Research and Development,
NHS Wales,
Cardiff CF1 5XT

JAMES FRIEND
Consultant physician
JOSEPH LEGGE
Consultant physician
GRAHAM DOUGLAS
Consultant physician

Thoracic Medicine Unit,
Aberdeen Royal Hospitals Trust,
Aberdeen AB9 8AU

- 1 Levy M. Caring for patients with asthma. *BMJ* 1994;308:1099. (23 April.)
- 2 Charlton I, Charlton G, Broomfield J, Mullee MA. Evaluation of peak flow and symptoms only self management plans for control of asthma in general practice. *BMJ* 1990;301:1355-9.
- 3 Marsh J. Caring for patients with asthma. *BMJ* 1994;308:1100. (23 April.)
- 4 van Damme R, Drummond N, Beattie J, Douglas G. Integrated care for patients with asthma: views of general practitioners. *Br J Gen Pract* 1994;44:9-13.

Trials of antiplatelet therapy

EDITOR,—The impressive collaborative overview of antiplatelet therapy for prevention of venous thromboembolism¹ raises several questions which are of great practical relevance in daily practice.

Firstly, this meta-analysis contradicts the recommendations given by consensus panels² and also the general opinion of experts that aspirin has little or no effect on venous thrombosis or pulmonary embolism. Secondly, the authors studied 9000 randomised patients from 62 trials (only two published later than 1985); another systematic overview published five years ago found only five trials and 762 randomised patients and concluded that aspirin induces only a non-significant reduction in postoperative venous thrombosis.³

Thirdly, the goal of the Antiplatelet Trialists' Collaboration was to identify all randomised trials on the topic, rather than using predefined quality criteria to detect trials that have been planned, conducted, and analysed appropriately.

Fourthly, the introduction of the paper says that subcutaneous heparin is associated with a 40% reduction in the occurrence of deep venous thrombosis, but the paper referenced—by the same group—reported a 68% reduction.

Lastly, the conclusion of this huge work may possibly be that antiplatelet therapy may induce a reduction in venous thrombosis of 26% (from an incidence of 34% in controls to 25% in patients under treatment) while the corresponding reduction for subcutaneous low dose heparin is 65%³ or 68%⁴ the use of low molecular weight heparins being associated with an additional 15% reduction. Such a conclusion would have been by far more informative than that given as a "clinical implication"—that "antiplatelet therapy should be considered for patients at high risk of thromboembolism," a misleading and potentially dangerous recommendation if followed by clinicians.

HENRI BOUNAMEAUX

Division of Angiology and Haemostasis,
University Hospital,
Geneva,
Switzerland

1 Antiplatelet Trialists' Collaboration. Collaborative overview of randomised trials of antiplatelet therapy. III. Reduction in venous thrombosis and pulmonary embolism by antiplatelet