none) or who have been so subsidised by the manufacturers. What would happen if every university hospital applied the same restrictions?

More worrying to me is the fact that where local National Health Service management labours under the delusion that drugs account for a considerable proportion of the overall costs of anaesthesia and intensive care a new breed of second class university department is being created. In these days of dwindling independent sources of funds such departments can hope to keep in the forefront only by doing investigative work that the manufacturers want to support: exeunt academic and clinical freedom, arm in arm.

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SIR,—In the search for improved prescribing and for containment of costs of medicines hospital formularies have had their vogue, but they may be creatures of the past despite the approval of Professor James C Petrie and Dr Andrew C Scott (11 April, p 919). The designers of these documents have striven to reduce expenditure, but their success is not established. Add to this the need to devote paid medical and pharmacist time to auditing the results, and the benefits on the grounds of cost tend to disappear. There is a honeymoon period when hospital formularies have novelty value, but it is difficult to sustain induced changes in prescribing practice. For instance, the Dundee formulary (cited with approval) did indeed reduce index linked costs in the first two years, but a large increase in costs occurred in the third year and probably thereafter.¹

Bishop Auckland has had an annually reviewed district antibiotic policy for five years, which is considered to be clinically and bacteriologically modern and effective. Last year there was an increase of £17 700 spent on antimicrobial agents. Local factors are crucial in determining the result of hospital formularies. The St George's Hospital pharmacopoeia was estimated to have cut £500 000 from the predicted expenditure on drugs in 1984-5.² This amount is very much more than my own hospital spent on drugs altogether in the last financial year. In addition, the 1985 edition of the St George's formulary contains many more drugs than we use locally, and adoption of its policies might well cause an adverse change in prescribing patterns and cost.

Another factor to be taken into consideration is that pharmacology departments in well motivated teaching hospitals with liberal pharmacy support will obviously have more success in implementing their views than service staff in district general hospitals. Even then, friction may be expected between the doctor who wants to prescribe and the pharmacist who declines to dispense the medicine.

Though some people believe that local formularies are a good thing because they show that someone cares, facts are indeed elusive. There are, however, many recommendations about hospital prescribing that can generally be applied: (a) use of drugs in the major lists of the *British National Formulary*, with attention to costing bands; (b) adherence to the Department of Health and Social Security's limited lists for certain categories of drugs; (c) generic prescribing wherever possible; (d) generic dispensing; (e) close consultant supervision of prescribing, with the drug sheet always available on the ward round; and (f) regular ward pharmacy services.

Although I accept the need for flexibility in adopting new drugs in accordance with developments in treatment and discarding old ones because of less efficacy or greater toxicity, it is hard

to see how conscientious clinicians in district general hospitals, who do most of the work of the National Health Service, could save money with the adoption of comprehensive local formulary documents. I challenge anyone to prove otherwise.

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- 1 Bateson MC, Crooks J, Hamley JG, *et al.* Experience with a hospital formulary. *Health Bull (Edinb)* 1981;13:45-50.
- 2 Collier J, Foster J. Management of a restricted drugs policy in hospital: the first five years' experience. *Lancet* 1985;i:331-3.

Original pack dispensing

SIR,—Dr John P Griffin and Mr John R Sharp (21 March, p 724) point out several advantages of original pack dispensing for the prescriber, the pharmacist, and the patient. They do not, however, mention that original pack dispensing has developed in a haphazard and irregular way and that this has had many serious disadvantages.

Firstly, most of these packs consist of blister packed drugs in cardboard boxes. Patients tend to remove the blister pack from its box for convenience, and thus much of the batch numbering and expiry date information is lost as not all blister packs have this printed on the blisters. Several products packed in this way do not even have the product name printed on the pack so that it is legible when the pack is cut or when most of its contents have been expressed. If the aim of original pack dispensing was to improve standardisation why has no standard overprinting format been adopted?

Secondly, we are told that pharmacists support the packing of drugs in one month supplies. Would the authors care to define one month? Some companies take it to mean 28 days, others 30 days. In Ireland, when General Medical Services prescriptions are dispensed (equivalent to the British FP10), the reimbursing authority defines the prescriber's "month." Thus community pharmacists may have to open so called original pack dispensing packs and excise an extra two days' supply of drugs simply because the manufacturer has not bothered to adhere to local definitions.

Thirdly, and most irritatingly, several manufacturers overprint the blisters with dosage instructions. This may be acceptable for oral contraceptives, when the dosage regimen never varies, but the manufacturer cannot decide that everyone prescribed fenbufen capsules should take one in the morning and two at night. Many elderly patients need a smaller dose, and these instructions cause anxiety and confusion. Indeed, the usefulness of having drugs for patients with arthritis in blister packs at all could be questioned. Another example is the blister pack of captopril 25 mg labelled with instructions to take one tablet twice daily. In my experience the dosage prescribed varies greatly and is rarely as much as one tablet twice daily, often being half of a tablet. Is the patient to be expected not only to be unconcerned by the fact that the manufacturer's printed instructions differ from those of the prescriber but also to discard half of each tablet for want of a place to store it? This is an expensive drug, which the patient may be paying for.

Fourthly, original pack dispensing has created problems of storage and wastage on hospital wards as many products are now available only in blister packs, which require more storage space.

Computerisation of pharmacies has produced the capability for clear, detailed drug labelling with batch and expiry date control automatically included. Full original pack dispensing can never happen because patients and their drug needs

simply are not as uniform as the drug companies would like us to think. Original pack dispensing fails to take account of the individual patient's needs and worries and serves the pharmaceutical industry far better than the patient, the doctor, or the pharmacist. Limited original pack dispensing may be valuable, but many improvements on the present system are needed.

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Childhood leukaemia and nuclear establishments

SIR,—Dr Eve Roman and colleagues (7 March, p 597) seem to be under the impression that cancer registries, certainly in so far as childhood leukaemia is concerned, achieve around 95% efficiency. Reports of recent studies of the completeness of leukaemia registration show that this is not always the case and that childhood leukaemia may be underrecorded by as much as 30%.^{1,2}

The two health districts included in the study by Dr Roman and coworkers seem to be particularly conscientious about registering cases; part of the excess that they report may well be due to improved registration efficiency in the areas under investigation.

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- 1 Barclay R. Childhood leukaemia in west Berkshire. *Lancet* 1986;ii:212.
- 2 Bowie C, Ewings P. *Leukaemia in the west of Somerset, a second report*. Somerset: Somerset Health Authority, 1987.

SIR,—We would like to comment on two points arising from the thorough statistical analysis of childhood leukaemia by Dr Eve Roman and colleagues.

Firstly, the discussion of the results centred on Aldermaston, Burghfield, and Harwell, taken together, is used to imply that there is a significant excess incidence closer to these establishments. This generalisation is not supported by the statistical evidence. The only significant correlation with distance relates to Burghfield; there is no significant effect with distance from Aldermaston or Harwell. The data relating to Harwell are too sparse to be useful, but when those for Aldermaston are combined with those for Burghfield the significance of the correlation with distance from these two establishments taken together is reduced compared with Burghfield alone. Thus there are no grounds for concluding that there is a general effect on the incidence of childhood leukaemia for the three establishments covered by the paper; there is a significant effect only for Burghfield.

The cause of this effect remains to be identified. Radiation exposures are too low by a large factor to account for the result, but it could be due to some other environmental pollutant, a natural phenomenon, or a statistical fluctuation that happens to be centred in the vicinity of Burghfield. The figure shows the areas of significant excess incidence for the 0-14 age group in relation to the urban areas of Basingstoke, Henley, Newbury, Reading, and Wokingham, which suggests that an urban/rural effect may be at work.

Secondly, the final table in the paper, comparing childhood leukaemia incidence around these establishments with that around six other nuclear sites, is misleading in that it includes only sites where the incidence exceeds expectation (though in only one case is the excess significant) and