intracranial metastases is well documented⁴⁻⁸ 47-80% of unselected patients with intracranial metastases may be expected to obtain symptomatic relief with cranial irradiation⁵⁻⁸ and about 12% are still alive and active one year later.³ These results are obtained without the stress to the patient of a major operation.

We hope these details will encourage the general physician to consider irradiation as a palliative measure for patients with cerebral metastases.

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¹ Paillas, J E, and Pellet, W, in *Handbook of Clinical Neurology*, ed P J Vinken and G W Bruyn, p 229. Amsterdam, North Holland, 1975.

² Harr, F, and Patterson, R, *Cancer*, 1972, **30**, 1241.

³ Montana, G, Mescham, W, and Caldwell, W, *Cancer*, 1972, **29**, 1477.

⁴ Hinds, W A, et al, *Cancer*, 1970, **26**, 138.

⁵ Chu, F C H, and Hilaris, B B, *Cancer*, 1961, **14**, 577.

⁶ Chao, J, Phillips, H R, and Nickson, J J, *Cancer*, 1954, **7**, 682.

⁷ Valk, J, in *Handbook of Clinical Neurology* ed P J Vinken and G W Bruyn, p 512. Amsterdam, North Holland, 1975.

⁸ Deeley, T J, and Edwards, J M, *Lancet*, 1968, **1**, 1209.

Anticonvulsants and thyroid function

SIR,—Dr P P B Yeo and his colleagues (17 June, p 1581) do not refer to an earlier study in which the effects of phenytoin on circulating thyroid hormones were reported.¹ Although agreeing that serum concentrations of thyroxine are significantly reduced in patients taking phenytoin for prolonged periods, our data suggested that this phenomenon could be adequately explained in terms of hormone displacement from serum-binding proteins with consequent increased turnover. Thus we found a small increase in free thyroxine concentration, which was the resultant of a higher free fraction and reduced total serum hormone concentration. This was reflected in an increase in the urinary excretion of unconjugated thyroxine.

Measurement of free thyroid hormone concentration in serum is difficult. The free fraction of thyroxine (0.009%) calculated from the data on control patients presented by Dr Yeo and his colleagues seems rather lower than most other workers have reported.

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¹ Finucane, J F, and Griffiths, R S, *British Journal of Clinical Pharmacology*, 1976, **3**, 1041.

Relative activity of atenolol and metoprolol

SIR—I read with interest the letter from Dr J D Harry and Anne G Shields of ICI (8 July, p 128) on the relative efficacy of atenolol and metoprolol in reducing heart rate in which they confidently claim that, although these two drugs are equipotent 3 h after single dose ingestion, atenolol is significantly more effective 24 h after ingestion.

I have recently completed a double-blind comparison of atenolol and metoprolol in the treatment of hypertensive patients in general practice, the results of which are to be published. From my data there is evidence

that refutes these claims. Three months after the start of the study 12 patients were randomly selected for standard exercise tests (75 W for 5 min) and pulse rate measurements. Six patients were later found to have been taken from the atenolol group and six from the metoprolol group. The single daily doses of the two drugs taken by these patients were comparable (200 mg). The mean pulse rate increases after exercise in the atenolol group were 21/min at 3 h after ingestion, and 26/min at 23 h after ingestion. The corresponding pulse rate increases in metoprolol patients were 19 and 21/min. There were no significant differences between the potency of atenolol and metoprolol at either 3 or 23 h after single-dose ingestion.

It seems to me to be unwise and even irresponsible to use evidence from short-term studies in healthy volunteers to deduce values for a drug which is, after all, more commonly used in the long term in unhealthy patients. Our evidence, after long-term single daily dose treatment of real patients in general practice, suggests that atenolol and metoprolol are equipotent 23 h after single-dose ingestion. This evidence, coming as it does from a well-designed general practice study is, I would suggest, of more and real practical value. One further point: since our data suggest that atenolol and metoprolol are equipotent at 3 h and at 23 h after ingestion the threefold price difference between the two drugs surely makes metoprolol preferable to atenolol in the long-term treatment of patients with chronic cardiovascular disease.

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Health care in developing countries

SIR,—Rational decisions on health care policies, both in developed and in underdeveloped countries, depend on reliable figures of cost and of outcome. For this reason, the study by Dr P H Rees and others (8 July, p 102) performs a most useful function. The conclusions, however, suggest that the application of cost-benefit methods is limited to the work of a hospital.

Most underdeveloped countries have inherited a health care system from the colonial era which was based on the model found in the industrialised countries. Hospitals in towns and cities cater mainly for the urban population, who are often relatively well provided for in terms of food, a clean water supply, and sewerage. In most underdeveloped countries, however, 80-90% of the population lives in rural areas. Allocation of resources to hospital care will inevitably deprive rural populations of cheap primary care, and urban teaching hospitals cannot logically be justified as a substitute for improving care in rural dispensaries. The annual cost of the intensive care unit at Kenyatta Hospital could provide prophylactic antimalarials for about one-million under-5s.

The authors justify the expense of reference hospitals in terms of their teaching function. Yet these hospitals will produce health workers who have become accustomed to using expensive investigative and therapeutic methods available only in the large hospitals and will be reluctant to work outside these "centres of excellence." The exodus of health care workers from underdeveloped countries

to Britain and other industrialised countries is in part the consequence of training these health workers in the skills of Western-type medicine in Western-style hospitals.

The authors point out that available and economic methods of prevention will have little impact on most medical admissions. Yet many of the diseases they treat are diseases of poverty, the results of poor nutrition and sanitation. Certainly these are not easily preventable, but equally the incidence of these diseases will not be reduced by any amount of curative health care. One major effect of the emphasis on curative medicine is to create the illusion that health is synonymous with health care. In reality improvement in health can come only from improvements in the conditions which produce ill health, and this is as true in Britain as it is in Africa.

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Axillary hyperhidrosis

SIR,—The results of the trial reported by Dr K T Scholes and others (8 July, p 84) confirm the good results reported by Hurley and Shelley.¹ In Exeter we have used their original regimen for five patients referred for surgery and in each case excellent control has been obtained, so much so that the patients, previously desperate for surgical treatment, have not required it.

Dr Scholes and his colleagues state in their summary that "no troublesome side effects were reported," although one patient had to stop treatment because of "unbearable irritation" and 29 (45%) had irritation severe enough to require topical steroids. We have also found that irritation may be troublesome, although it is certainly greatly reduced if the occlusive film is omitted, without affecting the efficacy of the treatment. Irritation may prevent sleep, and in this case daytime treatment is possible; one of our patients treats herself successfully for four hours each Sunday morning. It is most important to advise the patients not to shave the axillary skin immediately before treatment, since this leads to severe irritation.

Although the treatment is slightly irksome, our patients have accepted it gladly. It is too soon to abandon surgery completely, since the long-term results of this topical treatment are not known. However, this method provides control of socially debilitating symptoms and should be offered to all sufferers before surgery is considered.

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¹ Hurley, H J, and Shelley, W B, *Journal of the American Medical Association*, 1963, **186**, 109.

Abuse of pentazocine

SIR,—The recent report by Drs Alan King and T A Betts (1 July, p 21) suggests that their pentazocine experience is uncharacteristic and their evidence may be incomplete.

The possibility that pentazocine abuse can occur has long been recognised, but experience confirms that the risk of dependence is low. Only 555 reports of alleged dependence are available worldwide up to the end of 1977,