

Medical Audit

SIR,—The concept of medical audit has been put forward as a means whereby the public may be reassured that there is some monitoring of clinical standards. In your leading article (16 February, p. 255) you mention that the pressure for medical audit will undoubtedly grow, and you go on to state that doctors in this country must take care to retain their clinical freedom. To this end medical audit, particularly self-audit, can be an ally rather than an enemy.

There is no doubt that a medical audit is one means by which standards may be investigated, but there is considerable doubt at present regarding the criteria by which standards may be measured, especially in general practice. Criteria can be stated in general terms, such as the need to consider the physical, psychological, and social components of any diagnosis,¹ but to devise criteria related to each of the whole range of patients' problems is much more difficult. In general practice the physical component of a patient's problem may be only a part of his total problem, and the total problem may be highly individual and often complex.

At the present time the importance of medical audit in general practice lies in the orbit of education, particularly continuing education, to which the maintenance of good clinical standards is inseparably related. Though a general practitioner is as capable as anyone else of being blind to his own failings, this is less likely to occur when the scientific habit of self-criticism is maintained. Such self-criticism can be carried out by the general practitioner himself by assessment of process and outcome as revealed by his clinical records, provided he has kept his notes in a form that is capable of such assessment.² By this means he will be able to determine the areas to which remedial educational measures should be devoted.^{2,3}

In the future, medical audit by peer assessment will be practicable only when we know what we do⁴ and what we should be doing. When applied to the range of work of a general practitioner this is a complex exercise but one to which attention is now being given by various workers.—I am, etc.,

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¹ Royal College of General Practitioners, *The Future General Practitioner—Learning and Teaching*. London, British Medical Journal, 1972.

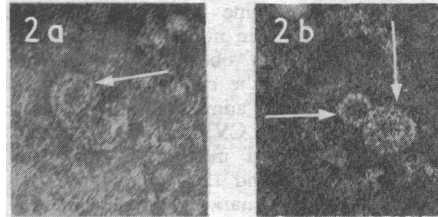
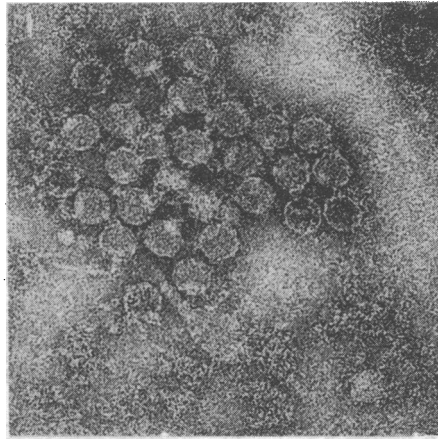
² Acheson, H. W. K., *British Journal of Medical Education*, 1972, 6, 26.

³ Acheson, H. W. K., *Continuing Education for General Practitioners: an Appraisal*. To be published.

⁴ Dudley, H., *British Medical Journal*, 1974, 1, 275.

Hepatitis A Virus-like Particles

SIR,—Feinstone *et al.*¹ described the finding by immune electron microscopy of spherical 27 nm virus-like particles, which appeared to be specific for hepatitis A, in extracts of faeces obtained from patients during the acute phase of infection. We now describe preliminary observations on the finding by a similar technique of virus-like structures in faecal extracts of patients during the icteric phase of hepatitis A. These particles had virus-like morphology (fig. 1) and measured 36–40 nm in diameter. Some of the particles



Virus-like particles in extracts of faeces obtained during the acute phase of hepatitis A $\times 126,000$

were "full" and others were "empty" and they were aggregated by pooled human immunoglobulin, which is known to attenuate or prevent hepatitis A illness. This pool of human immunoglobulin has been shown by radioimmunoassay to be free of hepatitis B antigen and hepatitis B antibody.

In faecal extracts prepared from two other patients with hepatitis A identical, discrete, virus-like structures were found undergoing spontaneous uncoating (figs. 2a and 2b) to reveal an inner core approximately 28–30 nm in diameter. These inner core particles may be similar, if not identical, to the particles described by Feinstone *et al.*¹ The double-shelled spherical structures closely resemble the large particles of the faecal antigen previously described by Cross *et al.*²

We would speculate, by analogy to the morphological and antigenic complexity of hepatitis B virus,^{3,4} that the structures we now describe may be related to the aetiological agent of human hepatitis A.—We are, etc.,

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¹ Feinstone, S. M., Kapikian, A. Z., and Purcell, R. H., *Science*, 1973, 182, 1026.

² Cross, G. F., Waugh, M., Ferris, A. A., Gust, I. D., and Kaldor, J., *Australian Journal of Experimental Biology and Medical Science*, 1971, 49, 1.

³ Zuckerman, A. J., *Hepatitis-associated Antigen and Viruses*, p. 77. Amsterdam, North-Holland Publishing Co., 1972.

⁴ Kaplan, P. M., Greenman, R. L., Gerin, J. L., Purcell, R. H., and Robinson, W. S., *Journal of Virology*, 1973, 12, 995.

Outbreak of Giardiasis

SIR,—I was interested to read the letter from the Brighton Public Health Department on

their outbreak of giardiasis (16 February, p. 288).

I have just been consulted by a young man who visited Leningrad at the end of January 1974 and returned with diarrhoea, abdominal pain, nausea, and general malaise. *Giardia lamblia* cysts have been found and he has just started his second course of metronidazole.

Perhaps the hazards of visiting Leningrad should be more widely known, as the symptoms of the infestation seem to be quite severe.—I am, etc.,

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Mass Screening for Cervical Cancer

SIR,—Your leading article on "Uncertainty of Cervical Cytology" (1 December, p. 501) is incomplete and misleading. The number of women screened in the United States was greatly underestimated.¹ Furthermore, data are available documenting a highly significant decrease in both morbidity and mortality in Louisville, Kentucky, following mass screening covering well over 90% of the population at risk and including more than 92% of low income/high risk women.² Because of limitations on space, further details cannot be given here, but are available.^{3,5}

Death rates in British Columbia have been slow to fall, but a decrease is now evident.⁵ The report by MacGregor from north-east Scotland, where 85% of married women have been screened, shows a significant decrease in new clinical cases.⁵

Cytological screening is relatively inexpensive in the United States⁶ and the cost: benefit ratio of 1:9 is very attractive to health authorities.⁷ This ratio will vary depending on the magnitude of the cancer problem, the efficiency and productivity of the cytology laboratories, and other cost factors. Economic feasibility and the scientific merit of mass screening should be considered separately. If there are to be further delays in the utilization of mass screening, they should be based on economic considerations and not on any questioning of the scientific merit. Controversy will continue only as long as all facts are not considered.—I am, etc.,

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¹ 1974 *Cancer Facts and Figures*. American Cancer Society, 1974.

² Christopherson, W. M., and Parker, J. E., *Cancer*, 1969, 24, 64.

³ Christopherson, W. M., Mendez, W. M., Ahuja, E. M., Lundin, F. E., jun., and Parker, J. E., *Cancer*, 1970, 26, 29.

⁴ Christopherson, W. M., Parker, J. E., Mendez, W. M., and Lundin, F. E., jun., *Cancer*, 1970, 26, 808.

⁵ Boyes, D. A., Knowelden, J., and Phillips, A. J., *Bulletin of Cancer*, 1973, 11 (July), 4.

⁶ Christopherson, W. M., and Parker, J. E., *Cancer Journal for Clinicians*, 1969, 19, 107.

⁷ *Program Analysis. Disease Control Programs—Cancer*, p. 14. Washington, U.S. Department of Health, Education and Welfare, October, 1966.

Other Systemic Effects of Eye Drops

SIR,—It was with interest that we read your leading article on the hypertensive effects of eye drops (5 January, p. 2) as its publication coincided with a related episode which one of our young patients experienced with mydriatic drops.

During the first week in January of this year a 6-year-old girl attended the ophthalmic outpatient department for assessment of a squint. During the course of the visit a drop of 1% cyclopentolate was instilled into each conjunctival sac in order to dilate the pupil and paralyse the ciliary body. Fifteen minutes later a drop of 0.25% hyoscine was instilled as the pupil was not dilating. This produced sufficient mydriasis to allow refraction to be performed and the appropriate spectacles were ordered. She was allowed home to be followed up in the orthoptic department.

On the way home the mother noticed that the child tripped twice. About half an hour later she continued to trip over but in addition became very aggressive, saying odd things. She also tried to pick up non-existent objects. She was brought to the accident department where she was found to be markedly ataxic, with hallucinations; she tried picking up non-existent mice and scratched herself because she said spiders were crawling over her body. Her pulse rate was 70 beats per minute and her blood pressure was 100/60 mm Hg. She was admitted to the paediatric ward and sedated with diazepam. The following morning she was much more rational and by lunch-time she was well oriented and coherent. She could not recall any of her past experience from leaving the outpatient department the previous morning.

In order for refraction to be carried out accurately in children it is usually essential to relax the tone of the ciliary muscle. The most effective drug to produce relaxation of accommodation is atropine instilled into the eye as drops or as ointment. Unfortunately, the cycloplegic effects of atropine can last for two weeks. Shorter-acting cycloplegic drugs are hyoscine and cyclopentolate. Hallucinations are a rare complication of atropine and perhaps it is the similar part of the hyoscine and cyclopentolate molecules which produced this effect in our patient. The remarkable feature, however, is that a sufficient amount of drugs could be absorbed from a few drops of dilute solution to produce such dramatic effects.—We are, etc.,

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Closing Volume and Pregnancy

SIR,—We have read with interest the paper by Dr. D. R. Bevan and others (5 January, p. 13). The authors conclude that "the apparent increase in closing volume (CV) merely represents a fall in functional residual capacity (FRC)—airway closure occurring at the same lung volume." We believe that this calls for some comment in the light of their results.

It is known that CV in normal subjects increases with age^{1,2} and it is also generally expressed as a percentage of vital capacity (VC) or total lung capacity (TLC) to make allowance for variation in body size. As the authors state that the reduction in VC in their pregnant subjects was small, we have converted the values obtained in the sitting posture to CV/VC% and compared them with the results of Buist and Ross² obtained by the same method in 152 seated female non-smokers. Six of the 20 pregnant subjects (nos. 1, 3, 6, 16, 18, and 19) have CV/VC% (sitting) more than 2 S.D. above the mean predicted value for their age (the value being exceptionally high in nos. 1 and 3), and five of these are among the 10 subjects in whom CV exceeded FRC in the sitting posture. This may be evidence of a

real increase in CV in these subjects; such an increase could possibly be related to smoking,¹ but this cannot be decided without knowledge the subjects' smoking habits.

The authors have related CV to absolute lung volume by assuming that residual volume (RV) forms 20% of TLC. This assumption may have been unnecessary and could be misleading, for Buist and Ross² have estimated RV from the dilution of the single breath of oxygen used to measure CV itself. It should therefore be possible to relate the lung volume at the onset of airway closure to estimates of TLC or FRC derived from VC, expiratory reserve volume (ERV), and the original records of the expired nitrogen concentration.

An unusual finding is that CV fell significantly when pregnant subjects moved from sitting to supine posture. This is in contrast to findings in normal subjects^{1,3} and to our findings in obesity.⁴ Though the authors claim that the conditions for which their patients were admitted were unlikely to have an effect on CV, we note that if the subjects are divided into groups of eight with hypertension and 12 without, the mean fall in CV is more marked in the hypertensive group (336±S.E.M. 112 ml) than in the others (116±S.E.M. 51 ml), though the difference between the groups just fails to reach statistical significance (0.1>P>0.05). Comparison of hypertensive and normal pregnant subjects with allowance for smoking habits might reveal a true difference in CV.

In obesity the hypoxaemia which occurs in some subjects sitting and becomes worse on lying down can be related quantitatively to the decline in ERV with increasing weight and to the amount by which CV exceeds FRC.⁴ Ang *et al.*⁵ found that arterial Po₂ fell on recumbency in late pregnancy, and this suggested that a similar mechanism might have been operating in these circumstances. The finding by Bevan *et al.* that CV exceeded FRC in only six subjects supine compared with nine sitting still leaves uncertain the cause of this increase in hypoxaemia. We believe the relationships between CV, ERV, posture, and arterial Po₂ in pregnancy may require further investigation, especially in normal pregnancy in smokers and non-smokers.—We are, etc.,

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- 1 McCarthy, D. S., Spencer, R., Greene, R., and Milic-Emili, J., *American Journal of Medicine*, 1972, 52, 747.
- 2 Buist, A. S., and Ross, B. B., *American Review of Respiratory Disease*, 1973, 107, 744.
- 3 Collins, J. V., Clark, T. J. H., McHardy-Young, S., Cochrane, G. M., and Crawley, J., *British Journal of Diseases of the Chest*, 1973, 63, 19.
- 4 Farebrother, M. J. B., McHardy, G. J. R., and Munro, J. F., *Bulletin de Pathophysiologie Respiratoire*, 1973, 9, 1264.
- 5 Ang, C. K., Tan, T. H., Walters, W. A. W., and Wood, C., *British Medical Journal*, 1969, 4, 201.

Levodopa and Chronic Bronchitis

SIR,—The following finding may be of interest. I cannot find a similar recorded case.

The patient, a man aged 56 years suffering from chronic bronchitis with severe bronchospasm for over 18 years, has tried many types of bronchodilator. He has taken Amesec capsules (containing amino-

phylline, ephedrine, and amylobarbitone) for the past eight years, along with courses of antibiotics, but had become so dyspnoeic that in 1970 a regional medical officer of the Department of Health and Social Security described him as a "respiratory cripple." In September 1973 he developed Parkinson's disease and I started treatment with levodopa. In February 1974 he told me that during the whole period since taking levodopa he had taken only two Amesec capsules, whereas previously he required up to three daily. He had no dyspnoea and his Parkinsonism had improved.

I discussed this patient with Professor C. D. Marsden of King's College Hospital, London, who suggested that this response might be explained by the conversion of dopa into a metabolite that dilates the bronchioles. I would be interested to know whether this beneficial effect of levodopa on chronic bronchitis with severe bronchospasm has been previously observed.—I am, etc.,

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General-practitioner Deputizing Services

SIR,—I read with interest the article on G.P. deputizing services (*Supplement*, 16 February, p. 9) and feel I must point out their shortcomings from the patients' view.

These services are largely staffed by junior hospital doctors working in a specialty, and they do not have the broad base of knowledge that the G.P. should have. The tendency is to send to hospital cases outside their experience which in many cases can be treated at home. The deputy is paid according to the number of calls, so that there is no encouragement to practice good medicine; the call often consists of a few quick questions, a prescription, and off to the next call. If the patient is not diagnosed at the first call there is no encouragement to observe the patient in his home for a few hours; he is often sent to hospital without need.

I have worked in a junior hospital grade for three years in a region where deputizing services are used and I am frankly appalled by the standard of care which the patient received from these services.—I am, etc.,

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SIR,—In reply to the article by Dr. B. T. Williams and Professor J. Knowelden (*Supplement*, 16 February, p. 9), I think it necessary to comment on some of the conclusions drawn in an otherwise excellent report.

In looking at the "popularity" of deputizing services among general practitioners the authors have measured the percentage of users against the total number of general practitioners in the appropriate executive council areas. It would have been much more appropriate to measure the percentage of users in the geographical areas actually covered by deputizing services. Most services overlap into the county areas to some extent and the county executive councils therefore technically have deputizing services in their areas. The majority of the county area, however, might well have no service offered at all. The number of general practitioners for whom a service is available is shown in the report as 14,561. The true figure is probably much nearer 10,000 and the percentage of users is therefore probably much higher than that shown.

The authors highlight the lack of con-