

exaggerate the strike-capability in vivo of those pathetically harmless HL-A antibodies. Fibrin deposition in glomeruli and afferent arterioles, as in the Shwarzman reaction, follows the vasomotor disturbance but is only occasionally detected by ordinary histological means. Since rejection could not be prevented or diminished in intensity by effecting hypofibrinogenemia or increased by blocking the fibrinolytic system,⁷ fibrin deposition is of secondary significance. Some confusion about fibrin deposition and glomerular microthrombi arises, because kidneys are removed under experimental conditions after 6-24 hours whereas clinically, unfortunately, they may be removed up to 14 days later.⁸

Though I have always stressed that the glomerular basement membrane bears the brunt of the reaction this tissue is not specifically involved, since second set (and first set) heart allotransplants succumb to intense coronary vascular spasm.⁹ This observation would appear to be now confirmed, though the authors^{10 11} seem unaware of the original observations. The factor common to the rejection of second set heart and kidney allotransplants is intense, irreversible vascular spasm. The glomerular changes, on the other hand, vary—with or without apparent fibrin deposition, with or without polymorphonuclears, with or without red blood cell and platelet aggregation—and the glomerular capillaries are either violently contracted or paralytically dilated. No plasma or lymphocyte cells are observed infiltrating second set kidneys unless the rejection has been slow—that is, 30 hours—and this I made clear from the beginning.¹²

Since full doses of Arvin⁷ did not affect the second set reaction it was suspected that complement was not involved. If anything, the reaction is even more intense in the fully decomplemented animal.¹³ It is therefore tedious to read the hypothesis of Mr. Amery and his colleagues that the second set reaction involves binding of complement with an antigen-antibody complex. This was a theory I postulated, on general principles, several years ago.¹⁴ It was up to Mr. Amery and his colleagues to confirm or refute the experiments on decomplemented animals, which, I may say, are very costly. Since a sensitized and decomplemented animal can mount a reaction as severe as the second set reaction, and there are none more severe, it could mean that complement is of trivial biological significance, and it seems to me that Müller-Eberhard¹⁵ gets near to drawing this conclusion.—I am, etc.,

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Recruitment to Medical Microbiology

SIR,—Although we are relative newcomers to medical microbiology, we share the anxiety expressed by others^{1 2} that the number of junior doctors entering the specialty is low.³ Demand arises from two main sources: retirement and new appointments. Projected figures show that this situation will remain for several years to come and this in itself should encourage recruitment in a rapidly expanding specialty.

We are obviously biased, but we feel that a subject which offers tremendous involvement in patient care on a personal consultation basis combined with the possibilities of considerable scope for clinical research should attract a greater influx of enthusiastic trainees. The current trend is to change the image of the laboratory-tied specialist, and this should be encouraged.

There is a pressing need for trained medical microbiologists and admirable ways of attracting medical students towards this career have been suggested¹ and should be pursued. We feel that all medical microbiologists should emphasize to their junior staff (in particular, the uncommitted senior house officers) the special advantages of this versatile and satisfying specialty and the relatively short period between medical registration and consultant appointment.—We are, etc.,

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Advice on Heart Transplants

SIR,—The Chief Medical Officer at the Department of Health, following discussions with a group of experts, has advised hospital boards that special facilities or extra resources should at present not be made available for cardiac transplantation. The statement made it plain that clinical decisions for the care of patients are the responsibility of the consultants concerned.

It would not be right, nor should it be argued, as in your leading article (17 February, p. 374), that it is appropriate, for the C.M.O. to recommend that cardiac transplants should not be performed in this country at present. The decision as to how to treat a patient, whether by established or by new methods, is governed by the clinical judgement and the medical ethical considerations

of the physician or surgeon in charge. Should a small group of consultants, however expert, with the C.M.O., be in a position to make recommendations as to how others are to treat their cases? Decisions regarding financial support of one project as against another have to be made centrally and will by necessity determine largely the approach to that particular research and therapy, but the principle of recommendation is quite another matter.

Clinical transplantation of the kidney and of other tissues and organs was performed in this country on the initiative of individual groups of clinicians long before any Ministry backing took place. It would be a sad day for British medical practice and clinical research if it allowed its activities to be directed by ministerial recommendations, however well intentioned.—I am, etc.,

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Teachers and Patients

SIR,—I have been comparing your recent leading article "Teachers and Patients" (3 March, p. 503) with a previous leading article "Teaching and Patients" (31 December 1966, p. 1605).

I am amused to note the importance still attached to attractive Turkish towelling as an antidote to embarrassment, and pleased to see that it is no longer claimed that patients who object to teaching are "seemingly always women" and mostly middle-aged. In fact, of course, many are men and young. Patients who decline to be used for teaching are not necessarily full of fears, particularly modest, or psychologically disturbed. Many, while probably very willing to co-operate in teaching within reason, object to unnecessary affronts to privacy and human dignity. The characteristic which distinguishes them is courage, and doubtless many of the submissive patients who are assumed to be willing participants object just as strongly.

I am sorry to see that you do not repeat the view expressed in the earlier article that "rectal and vaginal examinations are so personal a matter that they should be conducted in privacy with only the consultant, the attending nurse, and the one student who is the patient's appointed friend and confidant in attendance." The Patients Association goes further, maintaining that all aspects of a patient's health are a personal matter and that if students can be taught on the basis of one student only in some circumstances, they could be taught on that basis in general.

I think the Health Department was right in its circular of guidance not to suggest that texts (to be sent to patients) should mention "benefits that may accrue to the patients by attending a teaching hospital." It would hardly be wise or tactful to suggest that medical care is less good in non-teaching hospitals, that consultants are less careful when not watched by students, or that patients who are not taught on cannot get any information. Surely it is better to ask for patients' co-operation as a gift rather than as a price to be paid for doubtful benefits. I agree that G.P.s should not be brought into the picture in connexion with hospitals teaching on patients. If patients have to tell their G.P. if they object to teach-

ing they may fear, rightly or wrongly, that he will be unsympathetic, and even remove them from his list.

However, whatever reservations one may have about the Department's circular—and we have many—the mere fact that guidance has been issued represents a victory for the Patients Association.—I am, etc.,

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Classification of Protein-calorie Malnutrition

SIR,—With reference to the article by Professor J. C. Waterlow (2 September, p. 566), I would like to raise the following points from four years' experience in Rwanda, where childhood malnutrition has lately assumed almost epidemic proportions.

That we are unable to classify malnutrition as accurately as we desire surely witnesses to our lack of skill as a profession in describing and analysing what we are seeing. This is not to underrate the value of weighing and measuring the height of such children but to give these figures a rightful place in the total clinical picture. In Rwanda we are beginning to classify our cases of malnutrition in the following way, based upon an attempted understanding of what is happening to the child. We find that most children fall readily into one of three groups.

Group 1.—"Marasmic" children of women who are not producing enough breast milk. They are almost always under 1 year of age, have no or few teeth, and their mothers have futilely attempted to feed them with beer, sweet potatoes, and as much cow's milk as they can beg from wealthier neighbours. They hang on to their mother's breast, are thin and wizened, and in advanced cases may become light skinned and oedematous. They are often very active—always wriggling—are rarely miserable, and are surprisingly difficult to treat.

Group 2.—Children aged usually between 1 and 2½ who have to be pulled off their mother's breast to be examined, and their miserable looking faces appear to be full of teeth and eyes. They are the weaning children who have never taken to food and whose only reliable source of nourishment is a normal but inadequate supply of breast milk. Skin changes are slow to appear, and oedema of the feet appears only in the more advanced cases. Somewhat contrary to the teaching of others, we have found that the only way to deal with most of these cases is to recommend the mother to deny the child her breast in an attempt to promote the child's appetite for appropriate food. This, indeed, can prove remarkably successful.

Group 3.—Children who have been successfully weaned but faultily fed, both with the wrong types of food and too infrequently. In our experience they are older than 2 years, and mostly between 2½ and 4. However, as the table, based on 295 patients hospitalized in 1972 shows, often much older children and adults are affected. We have found two common types of presentation, easily distinguishable and with intermediate forms. Firstly, underweight and oedematous children who show little if any skin lightening or hair changes. Secondly, many, often older, children with very light skin, very light and thin hair, but with no oedema—or, at most, a mere trace. Those in the second subgroup are often much more difficult to treat than those in the first with normal skin and hair. Significantly, the more seriously affected in the second subgroup become oedematous after a few days in hospital on unrestricted

fluids, at a time when the children in the first subgroup on a similar regimen may already be losing their oedema. Seriously ill children in the third group tend to become hypothermic terminally. This can be recognized at a glance. The child is an inert bundle, resents any interference, has stunted, discoloured hair, a shiny, pale skin, and is blown up in the dependent parts with oedema fluid. Very few of these children survive.

Age of Patients on Admission to Hospital with Clinical Malnutrition in 1972

Age	No. of Patients
0-11 months	21
12-23 months	51
2-4 years	138
5-9 years	59
10-20 years	13
over 20 years	13

* All but one were females.

Whether there is any difference in aetiology between our two subgroups remains to be seen. Up till now we have unfortunately not routinely measured the height of children. It is extremely difficult to do because it requires the full co-operation of the child—something an undernourished child is rarely able to give. On the other hand, we find age in years and months relatively easy to determine. Every adult male has an income tax book in which at least the year of birth of his children is written. Most mothers, by reference to the "agricultural calendar," can recall the month of the year in which a child was born. By using these two figures in addition to counting the child's teeth the age of a child can be accurately assessed.—I am, etc.,

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Cost of Drugs

SIR,—While discussing the cost of drugs for urinary tract infection Professor J. D. P. Graham (3 March, p. 546) wrongly ascribes to me and my colleagues¹ the statement that "ampicillin should be omitted on account of frequency of rashes." With a prevalence of 7.3% for this phenomenon² there is something to be said for his point of view but we did not discuss the matter. I would accept credit, however, for the remainder of the sentence—namely, "Choice . . . is influenced above all by the sensitivity of the pathogen to the drug"—and the first part of the following sentence—"Little bacterial resistance to the last three drugs [nalidixic acid, co-trimoxazole, and nitrofurantoin] has been encountered." I am also pleased to note the quasi-biblical status of our paper—often quoted but seldom read.

It is a pleasure to be misquoted and mis-spelt in a good cause, as I fully agree with Professor Graham's tenet that cost-effectiveness is a more important consideration than cost alone. A rational choice of antibiotics should be based on the following factors³: (1) causal organisms and sensitivity based on either a "best guess" or a laboratory report; (2) pharmacology; (3) toxicity; (4) cost; (5) availability; (6) special effects; and (7) emotion. Our paper presented "league tables" of antibiotic sensitivity against causal bacteria. These are of value for making a "best guess" choice and also for monitoring the changing ecology of the bacterial population. We now provide a

routine monthly computer print-out of our data to assist the clinicians in this group in their choice.

The cost of antibiotics is a favourite whipping-boy but the only truly expensive drugs are those that fail. The basic cost of treating a child in this hospital is appreciably more than £100 per week, yet a child with a respiratory tract infection can be given six days' therapy with erythromycin stearate at home for less than £1. In hospital terms the cost of such a tablet is on the same scale as that of dropping a chip on the dining-room floor or sewing on a fresh button in the hospital laundry.—I am, etc.,

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Prolonged Action of Pindolol

SIR,—In a recent comparative study of propranolol and pindolol we found that though the antianginal effect of the two drugs was similar the action of pindolol was more prolonged. This difference may be of clinical value, and we therefore report briefly our findings.

In a double-blind cross-over study one group of patients was treated in the sequence propranolol-placebo-pindolol and another group in the sequence pindolol-placebo-propranolol. The periods of treatment with pindolol and propranolol were four weeks, in a dosage of 5 mg and 40 mg four times daily respectively, and the intervening period on placebo lasted two weeks. Of the 30 patients included in the study three defaulted, two were withdrawn because of side effects, and one was dropped for unreliability in reporting. The patients' progress during the trial was measured by the number of nitroglycerine tablets required each week and by the "angina index" (number of severe attacks \times 3 + number of moderate attacks \times 2 + number of mild attacks \times 1). Both drugs produced a decrease in the angina index and in the number of nitroglycerine tablets needed, and seemed equally effective in these respects. However, the patients who started on propranolol deteriorated rapidly when propranolol was replaced by placebo, whereas patients who started on pindolol did not begin to deteriorate until they had been on placebo for about a week. At first it was thought that this finding might be an artefact owing to the wide variations in the severity of angina among the patients. The results were therefore re-evaluated after excluding all patients with an angina index of more than 25 at the end of the first week's treatment, but the same pattern of response was found.

Since all the beta-adrenergic blocking agents seem equally effective in the treatment of angina pectoris, interest in them has tended to centre on the finer points of distinction such as duration of action, patient acceptability, and side effects. Our results suggest that a further point of distinction worthy of consideration is the patient response in the event of sudden, though temporary, interruption in therapy. Olsson and Varnauskas¹ showed that complete beta-blockade persisted for 24 hours after a single 10-mg dose of pindolol, whereas six hours