

illness, and their presentation and response to treatment are little different from those of any other form of depression. In the wider context of depressive illness in patients studied in acute medical admissions the cause of the depression was found to be the medical illness in 65%, while in the remainder it was related to other stresses and previous history.¹² The pattern of depression in patients with acute organic illness tended to show less suicidal tendency and greater anxiety, helplessness, and hopelessness than in patients in psychiatric wards. Investigations in patients who develop lethargy after an infection usually fail to explain their symptoms, and in the absence of depression the nature of their disease remains unexplained. The management of these patients is important though frustrating—there is often no effective treatment. The disorder is, however, usually self limiting, even though restoration of health may take several months. A single case report of a patient with prolonged postviral exhaustion who was studied with nuclear magnetic resonance showed abnormally early intracellular acidosis for the exercise performed, and the authors suggested that the cause was excessive formation of lactic acid resulting from a disorder of metabolic regulation.¹³

Physical examination of the patient is important not only to exclude a physical cause of the symptoms but to act as a reassurance. Laboratory investigation, though unlikely to establish a diagnosis, may provide further reassurance. A simple haematological and biochemical screen may occasionally show anaemia undetected by clinical examination; biochemical evidence of osteomalacia suggesting malnutrition; hypothyroidism—or even apathetic hyperthyroidism undetected by the clinical history and physical examination; uraemia; macrocytosis and raised liver enzyme activities unmasking alcoholism; hyperglycaemia indicating diabetes mellitus; or a high erythrocyte sedimentation rate suggestive of underlying organic disease.

When the history, physical examination, and laboratory investigation fail to establish a diagnosis the management of the patient is of the utmost importance. Mood disturbances hinder recovery from physical illness, so that both the mind and the body need care and attention.¹⁴ There are no more common circumstances where the physician's attitude and lack of understanding may perpetuate disease. Patients consider themselves and their illnesses to be important, and they need to know that their physician thinks so too. The patient has come to the doctor because he feels ill. The physician is, therefore, being insensitive to tell the patient in whom there is no evidence of serious organic disease that "there is nothing wrong." The patient knows that something is wrong and wants an explanation. Even if there is no specific treatment once he understands the problem the patient can usually come to terms with it and adjust his life accordingly. It is not knowing what is wrong that is injurious. He also needs to know that he is not unique, and that the physician has met the problem before. An optimistic approach is essential—and justified; but there is no clinical problem more demanding of the art of medicine than the management of lassitude.

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Practice nurses: an underused resource

In the mid-1960s near extinction of general practice in the United States left many rural areas without doctors. This manpower crisis, together with radical feminist ripples from the worldwide wave of student radicalism, overcame the resistance of the American Medical Association to nurse practitioners—for a time. By 1978 over 7000 of them were established in practice, mostly giving primary care for chronic illness and working in health maintenance or prevention in rural or poor communities.¹ In due course the performance of the nurse practitioner in primary care was subjected to randomised controlled trial at Burlington, Ontario, Canada. Within the limits of the trial they were found to diagnose, refer, and prescribe as well as the general practitioners with whom they worked—and perhaps a bit better than randomly selected general practitioners working alone.^{2,4} But then medical school output rose, radicalism moved from left to right, and little is now heard of the nurse practitioner in North America, though she still seems to be beaver away.⁵

In this issue (p 1181) Isaac Marks reports a randomised controlled trial of behavioural therapy by psychiatric nurses, showing that their patients did better at follow up one year later than did those given routine treatment by their general practitioners—and that when those unsuccessfully treated by general practitioners were crossed over to treatment by nurses, these patients also improved. All preferred primary care by nurse therapists or general practitioners to hospital outpatient care by psychiatrists. As in the Burlington trial, these nurses had been trained appropriately for their work and had been given enough time to perform it. Also as in the Burlington trial the doctors with whom their performance was compared had not been trained appropriately for their work and were generally operating under greater pressure from time. Probably anyone with intelligence, honesty, and a social conscience can do any specified medical task provided they are trained for it, given enough time, and can maintain their skills by continued experience.

Divisions of labour in hospitals permit generally safer and more effective follow up of many chronic conditions such as hypertension, diabetes,⁶ and childhood asthma⁷ than that provided by general practitioners working alone, their actions prompted by demand by patients rather than their own planning. When general practitioners have a similar nursing and clerical staff, however, the care they provide is at least as good as that in outpatient departments, more convenient for patients, and more economic for the health service. Above all their care is more feasible when hypertension, diabetes, and childhood asthma affect about 10%, 2%,

and 15% respectively of the populations at risk—far beyond the resources of any affordable hospital service.

The key both to effective anticipatory care and effective deployment of extended nurses is a more structured contact with patients so that responsibilities can be more clearly anticipated, defined, and audited. At present only about one practice in four (usually large groups) employs a practice nurse, and attached community nurses employed by district health authorities are tending to be withdrawn from clinical work with general practitioners to maintain care of the housebound and sick in conditions of financial drought. Though the contract for NHS general practitioners introduced in 1966 still allows each general practitioner to employ two whole time equivalent staff with 70% reimbursement of wages the number actually employed averages only 1.1 per doctor, and these are mostly receptionists. A general practitioner employing a nursing sister on scale II for 10 hours a week (who could cope with the follow up of all hypertensives and diabetics, do all the cervical smears and immunisations, and still have some time to spare for other work) pays out £39.80 a week, recovers 70% from the family practitioner committee reducing this to £11.94, and gets 40% tax relief on the remainder, leaving a final cost of £7.16. If she did only two reimbursable cervical smears a week, the practice would gain overall by £5.24. If all general practitioners employed their full complement of reimbursable staff we could add another 27 000 skilled workers to our present overworked teams, and as matters now stand neither the Treasury nor the DHSS could stop it. Given current government priorities we cannot assume that this unused opportunity will continue indefinitely.

Are there any risks in such a development? Granted that with the present contract it can proceed only on initiative from below, probably not; but if general practice were to move rapidly toward a variety of miniclinics there would be real danger of introducing the overstructured, impersonal style characteristic of many hospitals. The practice nurses presently employed by general practitioners seem to be working flexibly and imaginatively, without unreasonable pressure on patients to restrict their demands to those defined by the clinic, and preserving easy access to their own doctor for problems outside its scope. Innovative enthusiasm could, however, on a much wider scale degenerate into the familiar old conveyor belt. There is urgent and so far unmet need for inservice training for practice nurses,⁸ which few health authorities seem so far to have considered seriously. When they do there will be a shortage of credible teachers—that is, nurses who have themselves tackled the job. The enthusiasm of these nurses for their increasing autonomy in many practices, their readiness to adopt a self critical attitude through audit of their work, and their evident satisfaction with a new job, better done, are the best guarantees we could have against the dangers of excessive structure. Further up the nursing hierarchy, however, there seem to be a great many botanists but very few gardeners. Practice without theory may have been blind, but theory with vicarious practice is certainly sterile.

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Exercise and osteoporosis

Current gospel states that some exercise is good, and more exercise is better. The finding by Krolner *et al* that exercise could delay or reverse loss of trabecular bone from the vertebrae of postmenopausal women was welcomed¹; but when Drinkwater and her colleagues showed the abnormally low density of vertebral bone in young athletes with amenorrhoea it was time to think again.² Is exercise always good for osteoporosis, and if not, why not?

The size, structure, and mass of the skeleton result partly from its genetic make up and partly from the competing mechanical and hormonal demands made on it. Some individuals, some families, and some races have bigger skeletons than others, used bones have greater mass than unused, and immobility inevitably leads to bone loss.³ We perceive only dimly, however, why physical stress is osteogenic, and as a result bone research has concentrated on the firmer ground of hormone and mineral metabolism. In doing so it may well have neglected important lessons.

The activities of osteoclasts and osteoblasts—on which the viability of bone depends—are closely coupled, possibly by local hormones, whatever the turnover rate.⁴ In the so called bone multicellular units osteoclastic bone resorption is followed (after a pause) by osteoblastic bone formation. The continual activation of such units may be necessary to regulate the body's calcium content, to repopulate the skeleton with new cells, or to repair minor structural damage. Furthermore, it also provides a common mechanism to receive mechanical and hormonal messages.

If use increases bone mass—and disuse diminishes it—what are the appropriate stimuli, and which cells respond? Lanyon and Rubin investigated experimental weight loading systems in animals.⁵ They found that structurally useful remodelling of bone could be induced by changes in the amount and the distribution of strain well within the physiological range; and, further, that resorptive remodelling—which would otherwise lead to disuse osteoporosis—could be abolished by a fraction of the strains necessary for an uncoupled osteogenic response. From such data they suggested that osteogenic exercise should be made up of diverse, vigorous, but non-repetitive activity.

Others have looked at cell systems. The prime cellular candidate for receptor of mechanical signals is the osteoblast or its derivative the osteocyte. Its responses to mechanical or electrical stimuli were discussed in 1983 at the Kroc Foundation conference on functional adaptation in bone tissue.⁶ When tensile forces were applied to osteoblast rich cells grown on collagen ribbons they stimulated the production of prostaglandin E₂.⁷ Similarly, the direct application of physical strain by distortion of dishes containing cultured cells showed that osteoblast like cells specifically produced prostaglandin E₂.⁸ In this second system prostaglandin E₂ itself induced the production of cyclic AMP in several bone cell types but of DNA synthesis only in osteoblast like cells.

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