chaotic fashion destined to give results that could not be assessed. Indeed, even while these studies were starting warning voices were suggesting that data from research on animals could not be used to develop a treatment for human tumours.

Naturally occurring cancers differ from the experimental models in several ways. They are weakly antigenic and are less susceptible to immunological attack. In addition, experimental immunotherapy in animals works only when small numbers of tumour cells ($<10 \times 10^6$) are injected. As Old and Boyse⁷ wrote: "Despite the evident antigenicity of a variety of [tumours in] experimental animals, it is a fact that no immunological measure is known that will cause the rejection of an established malignant tumour." Experimental tumours, in contrast to most human cancers, grow rapidly with short doubling times and are biologically different from spontaneous tumours. The evidence also suggests that host resistance is more complex than was at first thought.⁸⁻¹¹ These difficulties led Alexander¹² to point out that we need more realistic models before we can hope to get the best out of clinical immunotherapy.

Given the shaky foundations of the subject, what have we achieved in two decades of endeavour? Clinical immunotherapy may be divided into various types—specific active, non-specific active, and passive immunotherapy. Most clinical studies have used a non-specific approach, usually administering BCG. Though many early non-randomised studies gave favourable results, most recent controlled trials have failed to show any benefit from immunotherapy. Some positive features have emerged, however. Firstly, injections of BCG or *Corynebacterium parvum* into the tumour or local application of dinitrochlorobenzene causes regression of nodules of malignant melanoma or breast cancer but without any useful systemic effect. Secondly, one randomised study¹³ of intrapleural BCG given as adjuvant treatment showed an improvement in the survival of patients with stage 1 lung cancer who had undergone complete removal of their primary tumour. This study is always quoted in support of immunotherapy—but the benefit of the treatment in routine use has not been established. Thirdly, some early studies of adjuvant BCG suggested that it improved survival in patients after resection of malignant melanoma that had spread to regional lymph nodes. These findings have not been supported in recent trials. Other trials with positive results have been either non-randomised or too preliminary and unsubstantiated, or have been contradicted by other trials.

Adjuvant immunotherapy is fraught with difficulties: the mechanisms of host resistance are not understood, microscopic tumour deposits cannot be monitored, and the correct dosage and timing of immunotherapeutic agents is unknown. Many new clinical tools are now available,¹⁴ including exciting developments such as idiotype antibodies and antibodies conjugated to drugs and toxins. We must not repeat the mistakes of the past 20 years. The first step must be to improve our understanding of the detailed mechanisms of various types of immunotherapy. Secondly, careful trials are essential: only then will we know whether immunotherapy is a sound treatment of cancer. Barber¹⁵ has written that "the principal disadvantage of immunotherapy is that it does not work very well, and often does not work at all." He might have said that we do not know whether it works because we have yet to test the hypothesis.

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Preventive medicine in general practice

General practitioners and other health professionals providing primary care must take the main share of preventive medicine in the next decade. Co-operation with community physicians will become increasingly important as they evolve roles which expand far beyond those of the pre-1974 medical officers of health (though the contribution by medical officers of health to prevention of disease by technical means was remarkably successful). Nowadays, however, health education and promotion have become important growing areas in preventive medicine, posing different problems from those of the past but ones in urgent need of solution.

How is the general practitioner to meet these challenges? Many already accept their obligation in prevention and recognise the unique opportunities that general practice provides. But they and their less persuadable colleagues may protest, with justification, that they are so occupied in the business of triage, diagnosis, and treatment and support of the chronically sick that they are unable to devote more than a small fraction of their time to prevention. The preventive efforts they do make are likely to be confined to traditional measures, such as simple screening procedures and immunisations. The report by the Royal College of General Practitioners¹ is right to assert that "The promotion of health is the part of preventive work furthest from most doctors' habits of thought and action. It entails helping people to learn and to accept responsibility for their own well-being."

The first hurdle to be cleared is, indeed, a psychological one. Doctors have to recognise that their independence and intellectual prowess may need to be tempered by the ability to function in a team, to learn the skills of communication, and, perhaps most important, to assume an equal status with members of the public as well as other health professionals.

The medical curriculum should be reviewed and, where necessary, changes should be made to ensure that it reinforces and enhances these necessary qualities without reducing its core content of medical science.

Byrne and Long² and others have shown that many doctors know too little about mental illness and psychology, have not developed adequate coping skills, and lack insight into the dynamics of, and tend to follow set patterns of, consultation. Again the curriculum needs improvement, with the introduction of such topics as interpersonal relations—not to mention more attention to human sexuality, nutrition, and alcohol abuse. Paradoxically, though doctor means teacher, medical training ignores both the theory and practice of education, and even the teaching of skills in communication has been developed in medical schools only in recent years.

Attitudes are all important. Balint³ quotes a New Zealand doctor: "In order to deserve the privilege of talking to your doctor you need to satisfy the essential precondition of being sick"; which, if true, would represent a total barrier to what the Royal College of General Practitioners terms "anticipatory care." In the words of the report, "The term anticipatory care hides choices and changes for the doctor. However, we are convinced that it should not mean only care by the doctor or even by the primary care team; it should increasingly imply the basic responsibility of every person to care for his or her own health and future." We need to ask how many patients on a practice list will visit their doctors when well in order to discuss preventive measures such as diet, exercise, or means of changing a health-threatening habit and how much time or informed discussion general practitioners will be willing to devote to the interview.

Many doctors have real doubts about the value of some screening measures described as preventive medicine. They have a point. Many screening procedures have been shown to be of little or no value, the corrective measures carry risks as well as potential benefits, and the benefits of much of what is called health education and promotion today have yet to be proved either by the hard criteria of reduction of sickness and disability or by improvement in that intangible, "quality of life." Well-designed trials and evaluations are urgently needed in this area.

On the other hand, the college report can point to some outstanding successes. General practitioners can be very effective in giving advice or help about habits such as smoking.⁴ Antenatal care provides almost unrivalled opportunities for health education. The quality of life in the elderly may be much enhanced by recognising and treating disabilities which they do not present to the doctor⁵ and also in other groups of chronic disease.

The second reorganisation of the Health Service is now upon us. What might be done to help the general practitioner devote more of his professional time to prevention, since this is widely regarded as imperative? One essential is time to plan and develop co-operative working links with community physicians, nurses, health visitors, health education units, and

others. Team work must prevail, and organisational skills will be required. Group practices might designate one member of the group for postgraduate training in management skills. There are no data by which to predict whether work loads will change—but unless redistribution of the load is unexpectedly successful the likelihood is that they will increase. This provides a strong argument for smaller lists without financial loss. But, above all, doctors must retain flexibility and use regular review and evaluation to meet the needs created by changing patterns of primary care, reflecting an ever-increasing component of prevention.

The Royal College of General Practitioners is now looking into the implementation of its 1982 report, and its working party, on which the DHSS is represented, is generating increased publicity as well as plans for effective action. By devoting a series of articles to prevention in practice the *BMJ* hopes to reach a receptive readership and to induce doctors to contribute to the necessary changes. How best such bodies as the Open University and the Health Education Council may contribute programmes directed to health professionals in primary care is being studied. The recent growth of university-based courses in health education should in time have an effect on practice in primary care. The present "give up smoking" campaign, in which general practitioners nationally have been provided with appropriate material by the Health Education Council, is proving popular and successful in getting the message across. Another stratagem designed to release the practitioner for preventive activities is the provision of do-it-yourself pamphlets for patients, such as the most recent *Minor Illness. How to Treat it at Home* by the Health Education Council.

What more can central government do to help? The DHSS has already published its own booklets and papers on prevention and priorities and has provided financial support for publications by other bodies such as the Royal College of General Practitioners. Despite the move towards decentralisation in the NHS, the DHSS will continue to exert considerable influence on the activities of health professionals nationwide. Its message for prevention, including health education and promotion, should be clear and insistent.

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