want to know specifically what to recommend, and to members of the public, many of whom want to know how little they can get away with while still reaping the benefits.

Studies suggest that increasing one's activity reduces the risk of coronary heart disease even if the recommended dose is not achieved. There is no apparent threshold, and each increment further reduces the risk.¹² Among people who are already active, vigorous activity probably adds benefit, but how much and at what risk is uncertain. Injuries, and sudden death, may increase more with intensity than volume.¹³

Developing a more active society will not be easy. Industrialised society systematically excludes physical activity from our daily lives. Even walking, the simplest and most natural of all activities, can require the commitment of a salmon swimming upstream to spawn. Many American communities have few pavements, no cycle paths, inaccessible stairways, inadequate public transport systems, problems with safety on the streets, and stores, schools, and workplaces that are many miles from homes. All of these factors make staying at home or driving cars more attractive than walking or bicycling.

Highly individualised messages will be necessary. Despite their inadequate representation in the research literature, non-white men and women of all racial and ethnic groups seem to accrue the same relative benefits from activity as white men. However, attitudes and behaviours are significantly influenced by sex, age, weight, marital status, socioeconomic status,

retirement status, and other factors. Therefore, promotional efforts will need to be specifically targeted.

In spite of these and other barriers, a more active population is possible. The gradual decline in cigarette smoking and blood cholesterol values in the United States indicates that widespread behavioural change can be achieved. In addition, researchers are learning more about what makes individuals decide to be more active¹⁴ and are refining guidelines to help practitioners shape and target their counselling.¹⁵ Finally, people are more likely to stick with an activity they enjoy,¹⁶ and activities of moderate and vigorous intensity offer a wider range of enjoyable options than vigorous activity alone. As a result, an active life will be less miserable not only because it is healthier but because the activities are fun.

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A primary care market?

May bring benefits but needs thorough evaluation

It is a fact universally acknowledged that primary care is one of the great strengths of the British health care system. The NHS reforms initiated by Margaret Thatcher in 1989 have shifted the balance of power towards primary care and resulted in more services being provided by general practitioners and colleagues in primary care. This in turn has led to the emergence of new kinds of primary care organisation. These include fundholding practices, multifunds, total purchasing projects, commissioning groups, and out of hours cooperatives. The formation of these organisations is beginning to break down professional isolation among general practitioners and is creating opportunities for greater collaboration. Paradoxically, it is also opening up the prospect of increased competition between primary care providers.

Of particular importance in this context is the establishment of unified health authorities in England and Wales in April 1996 and the responsibility given to these health authorities to promote the government's policy of a primary care led NHS. There is already evidence that those heading the new authorities are keen to move beyond the traditional model of general

practitioners working through partnerships to deliver a standard range of general medical services. For example, some authorities have negotiated agreements with practices to offer a wider range of services and have diverted money from hospital and community health services budgets for this purpose.¹

At the same time, other authorities have encouraged the setting up of total purchasing pilots in which fundholders take responsibility for buying the full range of services for patients. In the case of the Bromsgrove total purchasing project, for example, this includes establishing a "hospital at home" scheme, increasing the use of a general practitioner ward at a community hospital, and contracting for the use of nursing home beds instead of using acute hospitals to provide respite care for patients (C Heath, personal communication).

NHS trusts are also promoting innovations in primary care. The City Health NHS Trust in Newcastle is employing general practitioners to provide general medical services on a salaried basis and is managing their practice staff. Elsewhere, many community trusts are working closely with general practitioners to integrate more effectively the work of primary care

teams with that of staff such as district nurses and health visitors. Acute services trusts are also trying to be more responsive to the needs of general practitioners, such as by offering to provide specialist outreach clinics in their surgeries. As this happens, integration between primary care and community health services staff is developing in parallel with specialisation as general practitioners are encouraged to offer services in fields where they have particular expertise. An example is the Birmingham Multifund, in which general practitioners with specialist skills and training receive referrals from their colleagues as an alternative to hospital referral (G Corser, personal communication).

These initiatives show how collaboration between general practitioners is developing in parallel with competition to provide services. Yet if competition is to develop further, there must be a move away from the current national contract for general practitioners to greater discretion on the part of health authorities to negotiate agreements at a local level. The agreements between health authorities and general practitioners for the latter to provide services beyond those covered by the national general medical services contract indicate the shape of things to come. Extending this approach to part or all of the general medical services could quite rapidly stimulate a market in primary care as general practitioner partnerships, NHS trusts, and the new primary care organisations compete to win business from health authorities. There is every prospect of this happening in the light of the government's consultation document on the future of primary care,² which signals support for local flexibility in the provision of primary care services.

Increased competition could also occur if the government accepts the BMA's argument that the core of the general medical services contract should be defined more clearly. This raises the possibility of providers other than general practitioners entering the market to deliver non-core services. In effect general practitioners would become specialists in family medicine and much greater reliance would be placed on other staff

(including general practitioner assistants) to carry out work that is currently the responsibility of general practitioners. This outcome may not be the one envisaged by the medical profession but it has obvious attractions to politicians concerned to squeeze ever increasing efficiency out of limited health care budgets.

The potential benefits of a primary care market are greater choice for patients and increased responsiveness to their needs. There may also be gains in efficiency. These could arise through competing general practitioner based delivery systems or from the substitution of nurses for doctors where this is appropriate. Quality of care may rise too as new entrants to the market stimulate existing providers to improve their performance and as innovative approaches are adopted to tackling low standards of service provision in deprived areas. But a major risk is that transaction costs will increase as local contracting replaces national negotiation. There is also a danger that competition will set doctor against doctor and make it difficult to build a culture of cooperation and collaboration and to break down professional isolation still further. And at a time when policy makers seem increasingly disillusioned with experience of market oriented reforms,³ any attempt to promote competition in primary care should be viewed with caution. All of this suggests that localised contracts and the primary care market need to be thought through carefully. At a minimum, they should be accompanied by evaluation to ensure that the effects are properly assessed and that policy making is evidence based.⁴

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Vitamins in early pregnancy

Not too little, not too much

Two vitamins have been making headlines in recent years because of their relation to congenital malformations: folic acid because it can prevent some, and vitamin A because it can cause them. In both cases the crucial issues are how much should be consumed in early pregnancy, and whether the vitamins should come from food, pills, or both.

There is now unimpeachable evidence that an adequate consumption of folic acid before conception and during the first two to three months of pregnancy significantly reduces the risk of neural tube defects.^{1,2} There is increasing evidence that folic acid may also reduce the risk of some other birth defects.³ The health departments of many countries have advised women who may become pregnant to increase their folic acid intake by 0.4 mg (400 µg) daily. This amount seems to be both safe and effective.

Unfortunately, although surveys show that the implementation of these policies is gradually increasing, only a minority of women are aware of them. There are also difficulties in achieving the desired results by adjusting diets. It is not easy to find out exactly how much folic acid there is in food, especially when high speed shopping. Foods which declare their folic acid content do not indicate the proportions of free folate, which can be absorbed immediately, and polyglutamates, which must first undergo enzymatic breakdown in the gut. The final difficulty is that 0.4 mg extra folate from food seems

not to raise plasma folate concentrations as effectively as the same dose in a pill.⁴

Vitamin A was the first vitamin to be shown to be teratogenic in animals, initially in pigs⁵ and later in several smaller species. Occasional case reports have linked human birth defects with large doses of vitamin A in early pregnancy, but it was the incrimination of the vitamin A analogues isotretinoin and etretinate, used for the treating severe acne, as a teratogen in the 1980s⁶ that renewed interest in naturally occurring vitamin A (retinol). It is now accepted that vitamin A in sufficient dose is teratogenic in humans, although carotenoids, which are vitamin A precursors, are not.

A recent cohort study by Rothman *et al* analysed birth defects in the offspring of almost 23 000 mothers in relation to their vitamin A intake shortly before and during early pregnancy.⁷ A total daily intake from all sources in excess of 15 000 IU was associated with a significantly increased risk of birth defects, notably of structures arising from the cranial neural crest (craniofacial, central nervous system, thymic, and heart defects). (3.33 IU = 1 µg retinol equivalent.) Very few women achieved an intake in excess of 10 000 IU from food alone, and, although there was a suggestion of an increased rate of birth defects in their offspring, the exact vitamin A intakes of the five mothers of abnormal babies were not specified.