and the well tried principle of partnership that has always guided the affairs of family practitioner committees may be at risk. The flavour of some new lay appointments to family practitioner committees has been decidedly party political—not a new phenomenon but not one the profession wants to see extended. Furthermore, in many areas so few of the former members have been reappointed that continuity is seriously at risk, a particular drawback in medical service committees, where experienced members are essential if complaints by patients are to be fairly and expeditiously dealt with. Alongside these changes in membership the introduction of more rigorous financial and accounting arrangements between family practitioner committees and the DHSS will encourage them to be more thorough and assertive in their search to secure value for money.[1] A tougher approach to policing the contracts of the professions is already apparent. At the same time there is greater emphasis on a wider public accountability. The wish to see a stronger local consumer voice in defining the aims and policies of family practitioner services accords with this government's declared commitment to consumerism.

Has family practitioner committee independence merely set a stage for introducing other more radical changes in general practice? Speculation is rife about the promised Green Paper on general practice, with rumours that at least three different versions are circulating around Whitehall—one of which may have been influenced by the Prime Minister herself. Press reports have suggested that ministers are favourably disposed towards the experimental scheme for private general practice provided by the Harrow Health Care Centre, and that serious thought has been given to the introduction of a voucher scheme into NHS general practice (though this has been quickly denied by the Secretary of State), again in the cause of competition and consumerism.

The most worrying aspect of the rumours is their nature rather than their actual content, for they will remind doctors of Westminster's penchant for panaceas. Politicians search for easy and readily achievable solutions to complex issues and for ideological levers that can be pulled to provide quick remedies. One obvious example is the use of cash limits as a monetarist tool both to contain inflation and to reduce government spending. A major danger facing general practice is that politicians and civil servants are thrashing around for a simple remedy to contain costs and make it more accountable to Whitehall, conveniently ignoring the complexities of this branch of medical care.

The profession has a daunting educational task on its hands. Politicians will need reminding (yet again) that Britain has one of the most cost effective and comprehensive primary care systems in the world, the envy of other developed countries.[2] One reason for this is Britain's facility for compromise: in this instance the ability to combine the entrepreneurial talents of independently employed general practitioners with the logistical and financial strengths of a nationalised health service. It would be a tragedy if a government dedicated to the entrepreneurial ideal were to destroy this valuable and effective compromise. By thoughtlessly applying its ideological precepts the government could too easily inflict lasting damage on general practice.

If they are wise ministers will allow the newly independent family practitioner committees to run themselves in before advocating further changes in general practice. For the Green Paper to be of help to patients and general practitioners it will need to be carefully prepared, to contain a wide range of options, and to be given ample time for widespread discussion. For in proposing any subsequent changes in primary care the politicians must have not only the support of the public but also the confidence of the profession.

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Regular Review

Current place of coronary angioplasty

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Coronary angioplasty is an alternative to aortocoronary bypass grafting for some patients with angina resistant to medical treatment. The statement agreed by the recent consensus development conference in London suggested that services for coronary artery bypass grafting should be expanded in Britain.[1] Angioplasty was mentioned as a suitable form of treatment for patients with single and double vessel disease. The panel of experts thought, however, that angioplasty should undergo continued evaluation in the centres in which it had been developed before being more widely applied.

The remodelling of the lumen of diseased arteries by using coaxial dilating catheters was first reported by Dotter and Judkins in 1964.[2] The results were good, but a decade elapsed before Gruentzig developed a system for the mechanical dilatation of stenosed peripheral arteries using balloon tipped catheters introduced through the skin.[3] As these balloon catheters were made smaller lesions in the proximal parts of the epicardial coronary arteries could be treated by the technique of angioplasty.[4] The first percutaneous transluminal coronary angioplasty was performed by Gruentzig in Zurich in 1977,[5] and since then throughout the world over 10 000 patients have been treated in a similar manner. So popular has this approach become in the management of patients with angina that some observers believe that it may alter the conventional approach to their

care.[6] Certainly, percutaneous transluminal coronary angioplasty is effective for relieving anginal symptoms,[7] and it improves myocardial perfusion and left ventricular performance.[8,9] Angioplasty is less expensive to perform than coronary artery bypass grafting,[10] and it has proved to be extremely popular with patients because it is much less traumatic and the time spent in hospital may be as short as three or four days. No prospective randomised trial has yet been undertaken, however, of the efficacy and safety of coronary angioplasty when compared with medical or surgical treatment. Such a trial would require multicentre participation, and would need to take account of difficulties including the varying case load from one centre to another, the varying experience of individual operators, and the changing techniques and equipment used to perform angioplasty. Most candidates for percutaneous transluminal coronary angioplasty have had single vessel disease, and their survival when treated either medically or surgically may be expected to be excellent.[11,12] Thus any clinical trial designed to show an improved survival after coronary angioplasty as compared with, say, conventional surgical treatment would require very large numbers of patients—and, presumably, a considerable period of follow up. Despite the absence of objective clinical trial data in support of coronary angioplasty, enthusiasm for the procedure is such that patients with multiple vessel disease are now being considered for treatment by dilatation of all the affected arteries.[13]

Initially the most serious complication in the performance of percutaneous transluminal coronary angioplasty had been thought to be acute and abrupt occlusion of the vessel.[5] Careful selection of patients, increasing experience, and the use of independently positioned guidewires and catheters with very low profile balloon segments have all helped to reduce the incidence of unexpected occlusions to less than 5% of cases.[14] Some occlusions are thought to result from traumatic dissection of the artery during attempts to place the balloon segment of the dilating catheter within the stenosis. The occurrence of these acute coronary occlusions has raised the difficult issue of whether or not a surgical team should be standing by during percutaneous transluminal coronary angioplasty. While we remain unable to predict which patients will require emergency surgery, the facility for immediate coronary artery bypass grafting should always be available while coronary angioplasty is being performed, though not necessarily with the surgical team actually standing by.[15] The only exceptions are those few patients whose general medical condition may preclude open heart surgery and in whom coronary angioplasty may be undertaken without surgical cover.

The mechanism by which angioplasty relieves arterial constriction remains unknown. Dotter's original theory was that the lumen was enlarged by compression or displacement of the atherosclerotic material,[2] which was considered to be a "cold flow substance." Overstretching of the media might also occur. These mechanisms may explain the fact that no distinctive plaque morphology has been seen after percutaneous transluminal coronary angioplasty.[16] Overstretching of the vascular media and adventitia might also explain the favourable response to balloon dilatation of arteries narrowed by diseases other than atherosclerosis—for example, fibromuscular dysplasia.[17] Data obtained from necropsy studies suggest, however, that in some cases angioplasty splits the atherosclerotic plaque.[18,19] Released from the splinting effect of the plaque, the surrounding media may then be able to undergo some overstretching.[20] The angiographic appearances immediately after percutaneous transluminal coronary angioplasty are said to support this interpretation[21]: a fuzzy, hazy, or frankly dissected appearance may often be seen—but it does not seem to be an essential prerequisite for the long term success of angioplasty.[22] Traumatic rupture of plaques might be expected to lead to atherosclerotic debris forming emboli. Clinical reports of embolism are rare,[23,24] and experimental evidence has tended to show that dislodgment of material is more likely to be seen as a result of manipulation of the catheter than after inflation of the balloon.[25] Yet whatever the initial mechanism of angioplasty proves to be, some degree of overstretching of the media is undoubtedly the cause of serious degrees of dissection, occasional formation of aneurysms,[26] and even vascular rupture.[27]

The mechanisms by which the artery "heals" after the injury produced by high pressure balloon trauma seem even more mysterious. This particular mystery requires an early solution because of the high incidence of recurrence of the stenosis which may be expected after percutaneous transluminal coronary angioplasty: at least one third of the patients reported by the National Heart, Lung, and Blood Institute registry had a substantial return of the dilated stenosis at between one and 12 months after successful angioplasty.[28] Furthermore, recurrence after the successful dilatation of mild stenoses (say, of less than 60% diameter reduction) often seems to be associated with constriction of increased severity.[29] This observation together with the knowledge that intimal debridement may often lead to stenosis—and indeed is used to create stenoses in animals—has led some observers to suggest that recurrence of a stenosis may be the result of accelerated local atherosclerosis.[20] That theory, however, raises the question of why every patient treated by coronary angioplasty does not develop recurrent stenosis.

The great challenge, then, in coronary angioplasty is finding treatments or interventions which may reduce the unacceptably high incidence of restenosis. Higher balloon inflation pressures (up to 12 barometric atmospheres) and longer periods of inflation (in excess of 60 seconds) have been said to produce better initial results, as judged by improvement in the angiographic appearances and in the coronary artery pressure distal to the stenosis.[30] Whether or not a better initial result implies a good outlook long term is, however, unknown. These long periods of balloon occlusion do not seem to damage the ventricular muscle.[31]

An alternative approach to restenosis has been with drugs intended to prevent coronary vasospasm or modify platelet behaviour, or both, after the angioplasty. There is some evidence that angioplasty may "unmask" variant angina,[32] and studies in animals have shown that platelets quickly adhere to an injured area after balloon trauma.[33,34] What is now required is a clinical trial to show whether or not drugs such as aspirin and dipyridamole reduce the incidence of restenosis. The only information available is that patients treated for nine months after percutaneous transluminal coronary angioplasty with either 325 mg aspirin a day or warfarin had a similar incidence of recurrence.[35]

Coronary angioplasty has come a long way since the first report,[36] but a fair comparison has yet to be made with medical treatment and with bypass grafting. It is cheaper than coronary artery bypass grafting and, despite the high incidence of restenosis, it may be used for repeated interventions within the same patient over many years. Evaluation of the individual patient's progress after

coronary angioplasty by non-invasive means may help to reduce the need for repeated coronary angiography.[37] But until we can be certain of the mechanisms by which angioplasty exerts its favourable (and on occasions unfavourable) effects on the coronary arteries we shall not be able to predict exactly which patients will benefit from the procedure and where we may expect stenosis to recur. Some light may be shed on these issues by angioscopy.

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