small group of patients with NYHA class II and III chronic heart failure.

Thus there is now unequivocal evidence that digoxin can reduce the cardinal symptoms (dyspnoea and fatigue) and signs (cardiomegaly and peripheral and pulmonary oedema) of heart failure in patients with sinus rhythm who are alrady receiving diuretics. The effect on exercise tolerance is less clear cut; there is at least a trend in favour of improved exercise performance. Perhaps the most important benefit for the patient and the hardest to prove for the practising clinician is that treatment with digoxin reduces hospital attendance rates (admission and casualty visits).[11] These studies also show that, contrary to perceived wisdom, digoxin usage seldom leads to side-effects (in no study were adverse effects significantly more frequent than with placebo), even though higher than conventional doses are often needed to achieve therapeutic plasma levels (often 0·375 or even 0·5 mg).[11-14,16]

Unfortunately, solution of the problem posed in 1985 means that digoxin now has more questions to answer. Firstly, how does the benefit from digoxin compare with that from other treatments. Existing data provide partial answers. Each of the major studies compared digoxin with another agent. Digoxin was more effective and safer than phosphodiesterase inhibition in the Milrinone Multicenter Trial Group report, although this study selected digoxin responders.[14] Digoxin was less effective than xamoterol.[12] However, the German and Austrian Xamoterol Study Group appeared to select digoxin non-responders and randomised in a 2:1:1 xamoterol: digoxin: placebo fashion. Moreover, many patients in this study may not have had primarily systolic left ventricular dysfunction and about half had angina pectoris. Xamoterol might be expected to be better than digoxin for patients with diastolic dysfunction or myocardial ischaemia.

However, the most important comparison is with angiotensin converting enzyme (ACE) inhibitors.[11] Captopril appeared to offer greater benefit than digoxin, but the design of this study selected digoxin non-responders for randomisation. Nevertheless, when intention to treat analysis was used, the major advantage of captopril—increased exercise tolerance—was lost. Furthermore, there were more adverse effects reported with captopril than with digoxin. The Enalapril Versus Digoxin French Multicenter Study Group lately reported that substitution of enalapril for digoxin was no better than continuation of digoxin in patients with NYHA II/III diuretic-treated heart failure,[17] but a new German study suggests captopril is more beneficial than digoxin in patients with mild heart failure (56% NYHA class II, LVEF 52%, treated with thiazide diuretics).[18] Thus, on balance, ACE inhibitors may be more effective than digoxin in improving symptoms and exercise tolerance. There may also be a prognostic argument for preferring ACE inhibitors to digoxin.[19] However, digoxin increases LVEF and there is reason to believe that LVEF may be a useful surrogate for mortality (an answer should be provided by the North American multicentre trial that has lately been established to evaluate the effect of digoxin on mortality in heart failure).[20]

Thus digoxin has no advantage over ACE inhibitors in mild-to-moderate chronic heart failure, and ACE inhibitors improve symptomatic status (and mortality) in patients with severe heart failure who are already receiving digoxin.[19] There is an important question outstanding—does digoxin have anything to offer in patients already receiving ACE inhibitors? Theoretically, the effects of digoxin and ACE inhibitors should be additive. Gheorghiade et al have shown that this is true, at least in terms of acute haemodynamic and neuroendocrine responses.[21] A comparable chronic dosing study, examining symptoms and exercise performance, is long overdue.

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Irish Electorate Speaks on Health

IN March, 1987, Charles J. Haughey, the leader of Ireland's longest ruling party, Fianna Fail, was elected Taoiseach (Prime Minister) on the casting vote of the speaker after a tied vote in the Dail (Parliament). Because of the grave financial problems facing the country, the major opposition party, Fine Gael, agreed not to bring down the Government provided its fiscal policies were directed towards reducing national expenditure. This striking departure from traditional opposition tactics was supported to varying extent by Labour and the Progressive Democrats. There were defeats for the Government, but none on issues that called for an election. This unique form of government by consent worked surprisingly well insofar as inflation was kept at well under 4%, and the huge national debt of just under IR£25 billion (requiring over 80% of all revenue from income tax merely to service) was stabilised, with an upsurge of confidence in the economy. However, the price was high in that massive cuts were made in expenditure on health (overall expenditure reduced by IR£0·2 billion in two years) and education and new jobs were not created to cope with the country's 17·9% unemployed

labour force and the large exodus of young people out of the country. Ignoring the obvious lack of enthusiasm in the country for a change of government, Haughey, nonetheless, called a national election to coincide with the European elections on June 15, 1989. His basic message to the country was that he had to have a majority to govern as he wished. The essence of democracy is that it is the people who decide how they should be governed and the Irish electorate bluntly told Haughey that he could not be trusted with the power he sought. His Fianna Fail party was returned to parliament with three seats less than in the previous election and Haughey became engaged in tortuous discussions with the leaders of the opposition parties in an effort to remain as Taoiseach of the next government.

Such was the general pattern of events but, of course, elections are won and lost on specific issues. Although education, unemployment, and emigration were important issues in this election, it was health that dominated debate and discussion. In fact, if any one moment can be identified as the turning point in the campaign it was Haughey's admission that he had not realised the full extent of the hardship caused by the draconian revamping of the health services by his Minister of Health. In less than two years Dr Rory O'Hanlon, a country general practitioner, together with his civil servants in the Department of Health, had laid siege to the hospital services throughout the country, most especially in Dublin, without consultation with the professional bodies responsible for manning the hospitals and without heeding the protests of the medical and nursing professions. In his headlong pursuit of fiscal rectitude he showed a disregard for the future needs of health care in the country by consistently refusing to offer any long-term plan—simply because he did not have one. The result of this assault on what had been an efficient health service, albeit one in need of reorganisation and financial readjustment, was closure of twenty-four hospitals with a drastic reduction in hospital beds. The effects on patients and on those working in the hospital service were soon felt: extra beds are now so much a part of hospital life, even in the quietude of the summer, that they no longer qualify as "extra", except for the unfortunate patients in them; patients are being discharged prematurely to make way for those needing admission, much to the disquiet of medical staff who see the medicolegal cloud gathering menacingly around them; waiting lists for so-called elective operations have doubled, with the effects being most noticeable in children and the elderly; the closure of so many hospital beds, which previously served to accommodate the elderly, without long-promised developments in community services, has caused particular hardship not only for the aged but also for their families; and inordinate delays in accident and emergency departments, where patients may spend up to 10 hours on trolleys, have been especially harrowing for staff, who are now forced to make diagnostic decisions based on a cursory assessment rather than on sound clinical principles.

The long-term effects of Dr O'Hanlon's reign are the demoralisation of staff, due not only to their inability to practise good medicine but also to the lack of career prospects caused by the indefinite embargo on staff recruitment. Consequently, many trained nurses and doctors have departed. O'Hanlon has also brought clinical research to a standstill with an ill-conceived and unnecessarily restrictive clinical trials Bill, which even he agrees needs to be amended. He has upset the delicate balance that existed between private and public services, so that patients entitled to hospital care are forced to seek quicker treatment in the private sector. His administration has left the hospital services under such pressure that a major catastrophe, or even an influenza epidemic, could bring about their collapse.

The irony of it all is that the election has forced agreement from all parties that more money (commitments vary from IR£30 million to IR£80 million) must immediately be poured back into the health services, with yet more to follow. But such has been the demolition of basic structures that restoration to what was previously enjoyed may not now be possible. The message for the medical profession in Ireland (which may not be without relevance elsewhere) is that the health services, which have developed over many years through the cooperation of generations of doctors, nurses, religious orders, and voluntary agencies acting altruistically in the interests of the ill and infirm, have bequeathed a valuable legacy to the nation. When such a national asset is seen to be mismanaged by what is, in effect, a small group of civil servants whose skill and training may leave much to be desired, it becomes the responsibility of the nursing and medical professions, together with other involved groups, to protect the best features of the system while being prepared to seek means of improvement to suit changing times and the financial exigencies of the day.

PHOTODYNAMIC THERAPY

INTERACTION of light with the green pigment, chlorophyll, in plants results in photosynthesis and forms the basis of our survival on this planet. Yet this existence is precarious, since simultaneous phototoxic reactions[1] occur and would be rapidly lethal were they not quenched by the plants' orange and yellow pigments (carotenes). Similar phototoxic reactions have lately been used for the treatment of cancer—photodynamic therapy. This technique therefore exploits naturally occurring but normally suppressed reactions. A photosensitising agent given to a patient with cancer is subsequently activated in the tumour by light (usually from a laser) to produce a local cytotoxic reaction. The photosensitisers are porphyrins or synthetic agents of similar structure; chlorophyll, a magnesium porphyrin, could be used and some bacterial chlorophylls are being investigated.

1. Foote CS. In: Pryor W, ed. Free radicals in biology. New York: Academic Press, 1976: 85.