Jubilee Editorial

Cardiology: a transatlantic view (2)

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"Two nations, separated by the North Atlantic Ocean and a common language". And more, very much more.

As a near contemporary of Aubrey Leatham at St Thomas's my participation in the British Cardiac Society was meagre, since my activities in the years 1948-51 were focused on human physiology with Henry Barcroft, FRS, supplemented by the brief but inspiring interest of Sir Henry Dale. In the course of investigations in the "new" catecholamines, I enjoyed interaction with McMichael, Pickering, Grant, Sharpey-Schafer, and, newly returned from the army, Dornhorst and De Warden. Later Max Rosenheim encouraged a brief dalliance with the clinical aspects of pheochromocytoma. My 36 years in the United States have been spent at the Mayo Clinic (1951-65) and at Cedars-Sinai Medical Center (UCLA School of Medicine) in Los Angeles, and communication with British cardiology has been maintained through participation in the American College of Cardiology, as its President in 1972-73, and as a member of several of its committees which ensured continuing international contacts. From that perspective and through a continued interaction with many professional friends and colleagues in the United Kingdom, I should like to comment on the most apparent differences between cardiology in the United States and the United Kingdom.

To summarise the socioeconomic background of our specialty in each of the nations: the American medical "consumer" has greater expectations and makes greater demands on the providers of medical care than the "patient" in the United Kingdom. The optimal care in the United States is probably better than that available in other countries, but the worst

represents a sad level of underperformance. Access to health care in the United States is not uniform. Discipline to ensure adequate performance by physicians, including cardiologists, is negligible (in contrast with the serious efforts by surgeons and the surgical subspecialists). Health care expenditure in the United States exceed 11% of gross national product, whereas in Britain it has been frozen at 6.2% since 1981. This economic commitment is magnified by the considerably higher productivity per individual in the United States. So, taking into account the scale of investment, the British health system performs remarkably well, whereas that of the United States is disappointing.

Patient expectations and attitudes

Unlike patients in the United Kingdom, the average American patient is a "consumer" who is aware of the many interventions that are claimed to delay or moderate aging, disability, and death. The American patient will "shop around" actively and critically without necessarily accepting the recommendations of one physician. Second and even third opinions may be sought before an individual finds the opinion that accords best with, perhaps, some preconceived idea. In the United States health information is widely disseminated and broadly interpreted so that, for instance, many patients with heart disease may be better informed about the role of blood lipids in atherosclerosis than the average physician or even a reasonably well-read cardiologist. The complacent cynic might say that the concern of the American patient to receive optimal health care is well placed. But the continued search for an understanding of complex biological and clinical phenomena usually leads to an inadequate appreciation of the necessary limitations. The attitude "Why do you have to let grandma die?"

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(despite the fact she is 99) may not be discouraged by a physician whose income will be increased if the patient spends a few more days in an intensive care unit. On the contrary, in the United Kingdom effective interventions in the elderly, such as aortic valve replacement in an active 70 year old, are often inappropriately withheld because of a perceived need to husband scarce resources by categorical and arbitrary decisions. Now in my own seventh decade, I believe that attention should be given to the potential for recovery and for the continued enjoyment of life rather than social usefulness.

The health system in the United States is, in brief, a free-market enterprise. In general, physicians (and cardiologists) practise from a private office, alone or in a small group with several other specialists within or outside their own discipline. Most physicians have appointments at hospitals where they admit and treat their patients throughout a variety of illnesses—unlike the United Kingdom where the management of the patient is taken over by the hospital doctor. A trained cardiologist will see patients in his private outpatient office and also bring them to the hospital where he may conduct various specialist procedures. For example, most recently trained cardiologists believe that they are competent in diagnostic catheterisation, electrocardiography, echocardiography, coronary and critical care; and a smaller proportion claim expertise in coronary angioplasty, electrophysiology, arrhythmia management, nuclear cardiology studies, and cardiac rehabilitation. There are specialist referral systems and successful ones flourish—but no specific system is required. So the cardiological experience of an individual cardiologist may be diluted because many continue to act as general physicians treating the non-cardiac aspects of the patient.

True skills in procedures that require continued updating, experience, and a large patient volume such as coronary angiography and angioplasty, may be difficult to maintain. Specialist cardiological care is delivered in community hospitals and not at the large well-known referral centres. Many community hospitals provide all the services which are expected of a prominent university medical centre such as Stanford or a specialty clinic such as the Cleveland Clinic. The quality of diagnostic and therapeutic procedures in such community hospitals is satisfactory. It remains to be seen whether younger cardiologists will maintain sufficient skills, or whether there will be a fall out of the less competent so that with market forces only the best will continue. This "system" is clearly totally different from all but a few institutions in the United Kingdom, where a small number of specialists in cardiology are clearly defined and are in salaried posts rather than

receiving a fee-for-service payment. Physicians in the United States usually continue to practise into their late 60s and even mid 70s. In an unregulated system, this has benefits and drawbacks. Most technical procedures are, however, currently performed by much younger cardiologists who continue to update their training and particularly their technical skills.

Cardiovascular manpower and training

Approximately 15 000 physicians in the United States call themselves cardiologists. Most (perhaps 80%) are certified by the sub-board in cardiovascular diseases of the American Board of Internal Medicine. Cardiovascular training in the United States is regulated to an extent unknown in the United Kingdom. Applicants for training must have completed at least two, and preferably three, years of general internal medicine and require evidence of Internal Medicine Board certification or eligibility. The cardiovascular Boards require at least two years practice in cardiology with experience of coronary care, cardiac catheterisation, and laboratory techniques. In practice, however, most training programmes last three years, and training in certain techniques, such as coronary angioplasty, may require four years. Currently, cardiologists can train in any institution with an approved programme in internal medicine. Nevertheless, most programmes are conducted in institutions with larger clinical programmes in cardiovascular disease and usually several salaried or geographically (that is, those who practice at a hospital exclusively but charge and retain private fees) full time experts. A weakness in many American programmes is the lack of experience with outpatients, as most patients consult private physicians whose income depends upon their office practice. As in general internal medicine, this deficiency is recognised by the certifying boards and there are plans to correct it.

The usual training programme in the United States requires specific "time-block" rotation through several laboratories, unlike the activities of a cardiac registrar—the equivalent in cardiology training in the United Kingdom. This means that cardiologists will be trained by several experts with special skills. Familiarity with nuclear cardiology is obligatory and physicians in training can elect to spend time obtaining certification to conduct cardiac nuclear studies. Requirements for training in cardiac catheterisation vary greatly. Most programmes require 2–4 months of "familiarisation", including training in right heart catheterisation and experience of coronary arteriography and perhaps percutaneous transluminal coronary angioplasty. Physicians

who qualify and have a strong interest in cardiac catheterisation usually spend a full year in a catheterisation laboratory and become proficient in coronary arteriography. Physicians who intend to practise angioplasty train for an additional 6–12 months. Similarly, longer training periods are needed for cardiac pacing, where there is surgically supervised specialised training in techniques of implantation and electrocardiographic interpretation. Electrocardiographic departments in the United States also require expertise in dynamic (Holter) monitoring for both arrhythmias and myocardial ischaemia. These departments may be responsible for exercise testing (now often conducted in association with sections of nuclear cardiography and echocardiography). These various training programmes produce physicians with two to three years training in cardiology and modern therapeutics, including cardiac surgery, thrombolysis, and percutaneous transluminal coronary angiography.

Trainees also complete a research project lasting at least six months. Although few trainees will acquire expert research skills during the project they will be able to study a topic of special interest in depth. In several programmes research is done soon after starting training in cardiology and the trainee can continue to expand his or her interest throughout the programme.

Every two years the American Boards of Internal Medicine set examinations in which most (80%) of the 1500 candidates are successful. After certification the trainees usually join an established private practice. A few remain in their training programme or at university. Not many try to establish a new private practice in cardiology. Although most are paid by private patients on a fee-for-service basis (including those who are insured or covered by Medicare), physicians are increasingly seeking salaried employment. In addition to universities and university affiliated community hospitals, leading hospitals employ full time directors and providers of radiological services on a variety of terms. In addition, many private clinics (for example Mayo, Scott-White, and Cleveland), the Veterans' Administration, and pre-paid health plans such as the Kaiser-Permanente group employ cardiologists. In several of these organisations those with extra skills are paid more.

Thus the training programmes and career structures in cardiology in the United States and the

United Kingdom are different. The United States has a large number of trained cardiologists and most of them find work. There are probably several times as many cardiologists in greater Los Angeles as there are in the whole of the United Kingdom. Are they needed and do they improve cardiovascular health? I think they do. Much can be done to prolong life and improve its quality by prevention and effective and timely diagnosis and treatment of hypertensive, atherosclerotic, valvar heart disease, and arrhythmias. Is the continuing increase in cardiologists necessary to achieve these goals? Would outcomes be enhanced with *centres* for angioplasty, optimal use of cardiac pacemaking and cardiac surgery, and systematic and consistent treatment protocols? Under such circumstances could optimal services cost less? Again, the answer is probably yes. Indeed, in the United States, attempts to satisfy the administrative bureaucracy have become a fiscal nightmare. The primary overhead costs of health care (before physician, hospital, and other indirect costs) is in excess of 80 billion dollars. And many of the most needy—the poor, the immigrant, the elderly—never enter the medical care system because it is too complex and they just don't know how to.

In contrast, the National Health Service in the United Kingdom is largely understood by the citizens that it serves, although their demands on it are, comparatively speaking, small. It is probably "underproviding", but on a uniform basis. It is certainly grossly underfunded. Is American cardiology suffering from "excesses" of resources, equipment, procedures, and staff? Certainly basic and clinical research seem to be thriving. The developments of knowledge, particularly in basic science, will improve the ability of cardiologists to treat cardiovascular disease. Much of this advance is the result of the enthusiasm, vigour, and ingenuity of basic and clinical research in the United States. Every major medical journal in the United States contains new information and new insights, not only from the established university medical centres, but also from well-directed community facilities and from industrial laboratories. New ideas are often applied to treatment—many fail, but others lead to major advances in cardiovascular health care.

Yes, indeed, the differences are great. In the best of all worlds, however, the combination of the virtues and the exclusion of the vices (including bureaucratic waste and human greed) of each system will enhance the quality of life of our patients.