The Irish Heart Foundation 1972-1979: paediatric cardiology — a personal perspective

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Measures for reducing cardiac arrest

At the time of the institution of the Irish Heart Foundation in 1966, Risteárd Mulcahy embarked on an educational programme that focused specifically on the prevention of cardiac deaths from coronary heart disease. For the two previous years, a planning committee had been at work devising a structured approach that would harness the skills and philanthropic interests of a group of lay people and, at the same time, focus the attention of the medical profession on measures aimed at reducing the incidence of risk factors in the community.

Throughout the six-year period of Risteárd Mulcahy's presidency, the Foundation's Medical Committee clarified priorities and identified the specific measures that should be taken to try to reduce the effects of smoking, obesity, lack of exercise and hypertension on the known high Irish mortality from coronary heart disease. My role as his successor was to implement the agreed programme.

It is gratifying to observe that a recent authoritative study by Dr Kathleen Bennett and others has shown a fall of 47% in mortality from coronary heart disease in Ireland over the period 1985-2000. Increasing awareness of risk factors and, very importantly, medical intervention for correctable conditions such as hypertension and hypercholesterolaemia has improved life expectancy significantly. It is good to look back and to remember the early days of the mobile screening programme and the good reception accorded to the mobile caravan and screening nurses who travelled to factories and country towns offering blood pressure screening and overall risk assessment.

Risk factors in childhood

The Foundation's research programme made it possible to investigate the possible operation of risk factors in childhood, although, as is well known, death from coronary heart disease in childhood is a very rare event.

Congenital abnormalities of the coronary arteries are so rare that they are seen no more than once or twice in a medical lifetime. Raised serum cholesterol can be inherited in families, passing down from one generation to the next. The possibility of identifying affected infants at the time of birth by examining cord blood raised false hopes and, disappointingly, a follow-up study of newborn infants showed that there was no relationship between the cord blood cholesterol level at birth and levels in later infancy. The conclusion was that preventive action must take the form of universal education rather than population screening.

Another occasional cause of coronary artery abnormality is Kawasaki disease. In this condition, as well as high fever, enlarged glands, a rash and sore mouth, blood vessel wall damage may affect the coronary arteries. The condition cannot be prevented, but an adverse outcome can be averted by appropriate treatment at the time and this has been emphasised to the medical public.

Through its schools education programme, the Foundation endeavoured to highlight the dangers of smoking, the long-term risk of obesity and the need for exercise. Included in this was the development of the Skipathon activity programme in schools. Long-term studies carried out by Professors Lloyd and Woolf in Great Ormond Street Children's Hospital in London in the 1960s confirmed that obese children were at high risk of becoming obese adults and so of developing coronary heart disease, hypertension and diabetes. Worldwide studies have confirmed these findings but there is mounting evidence that the educational programme will have to be strengthened if the long-term consequences of the increasing incidence of childhood obesity are to be avoided.

Sudden death in childhood

Although the main thrust of the Foundation's activity was the development of a preventive programme that would reduce the number of deaths from coronary heart disease, other aspects of prevention were also addressed through research funding. In 1964, the first description of deaths in children from a hitherto unidentified familial disorder of cardiac rhythm attracted attention in the medical press.

The underlying disorder in the movement of chemical ions across the wall of heart cells led to the frequent description of the condition as a channelopathy, emphasising that channels in the heart wall were defective. This is referred to in all textbooks of genetics as the Romano Ward or Ward Romano syndrome,

identifying its independent description in Italy and in Ireland.

A Foundation research grant made it possible to establish with certainty that the condition was directly inherited through a dominant gene, distinguishing it from a similar condition, which affects only a group of individuals with congenital deafness.

Professor Peter Froggatt of Queen's University Belfast co-operated actively in collaborative support. It is known that affected individuals may be symptom free until provoked by exercise or by distress, and sudden death may occur unexpectedly. As the incidence is only approximately one in 10,000, there is no place for universal screening. Some authorities, however, suggest that it may account for 10-20% of deaths in infancy.

The family of every young person dying suddenly and unexpectedly should have genetic screening done, complex though this is; in other countries, a doctor performing a post-mortem examination in such a case without sending material for testing in a genetics laboratory is at risk for a legal action on grounds of malpractice.

Rheumatic heart disease

At the time that the Foundation began its work, rheumatic heart disease accounted for approximately 25% of cardiac deaths. Cardiac surgery was required for large numbers of adult patients suffering from rheumatic damage to their mitral and aortic valves. Robert Collis, the Irish paediatrician, had identified the beta haemolytic streptococcus as the provocative agent that induced attacks of rheumatic fever. The advent of penicillin accordingly made it possible to protect susceptible individuals from the risk of recurrence.

As a matter of Irish interest, Dr PJ Burke of West Cork County Infirmary was one of the first physicians to establish, by a controlled study, that prophylactic penicillin was an effective preventive measure. The Irish Heart Foundation funded a major clinical survey of 160 cases, identifying optimal treatment and also showing how difficult it was to ensure the patients took their long-term penicillin as directed. The widespread acceptance of the use of antibiotics for streptococcal sore throat has led to a remarkable decline in the incidence of rheumatic fever in Ireland overall and special institutions reserved for its treatment such as St Gabriel's Hospital and Linden have closed.

Cardiac surgery

During the early evolution period of the Foundation, cardiac surgery was growing apace. By agreement between the surgeons and their hospitals, open heart surgery for adults was centralised in the Mater Hospital and later developed in St James's Hospital, while children's services were based in Our Lady's Hospital for Sick Children, Crumlin.

In 1973, Sir Maurice Campbell reviewed the natural mortality of congenital heart disease and he found that even for such simple lesions as ductus arteriosus the mortality in the first year of life was up to 20%. Surgery was the answer. The development of surgical, and medical and support staffing, the funding of high-quality intensive care and the designation of dedicated facilities in Our Lady's Hospital all contributed to an extraordinarily high surgical success rate.

The special contribution of the Irish Heart Foundation to cardiac surgery was the funding of the National Cardiac Surgery Register, which monitors the success rate of cardiac surgery on a national basis. In parallel, the results of surgery for children are compared with the UK National Registry. The Dublin success rate equals or exceeds that of the UK. This has been due to a judicious progression from simple to more complex procedures, facilitated during their development period by the good offices of Christopher Lincoln in the Brompton Hospital, a graduate of the Royal College of Surgeons in Ireland.

The availability and later re-examination of the hearts from failed operations contributed greatly to raising the success rate of surgery. Hopefully the adverse publicity surrounding some instances of communication failure will not jeopardise further surgical advances in the future.

Patrons of the Foundation

Serving as president in succession to Risteárd Mulcahy was a challenge. He had established the role of the Foundation, and he had recruited a formidable group of supporters. Things were going well when I followed him into office. I had the benefit of the guidance and the administrative dedication of Commdt Finn Monahan who served as Director of the Foundation throughout my period of office. The first responsibility of the incoming president was to engage the support of President Erskine Childers.

President De Valera had agreed to be the first patron of the Foundation and the Foundation hoped that this had set a precedent. When it fell to me to approach Erskine Childers to succeed President De Valera, he responded enthusiastically. His son Rory was a distinguished cardiologist and this no doubt ensured that he understood fully the aims of the Foundation.

His successor, Cearbhall O'Dalaigh, also accepted office. Like Eamonn De Valera, he preferentially spoke in Irish and perhaps it was to the benefit of the Foundation that its president at the time was able to meet his wishes in this respect. His term of office was short and it was then a pleasure to approach Dr Paddy Hillery, whose own medical background gave him special insight into the working of the Foundation.

It is an honour to join in the 40th anniversary celebration and to extend good wishes to our President, Professor Eoin O'Brien. A medical scientist of international standing, a medical historian with a clear idea of the historic inheritance of Irish cardiology and a world authority on hypertension, the Foundation is fortunate to have him in office at this time.