

Organisation of the specialty of cardiothoracic surgery*

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The establishment of cardiothoracic surgery in Britain was intimately connected with the brilliant work of Tudor Edwards, particularly at the Brompton Hospital. The specialty owes him a great debt of gratitude. It is regretted that in the interests of brevity much of this acknowledgement has had to be omitted. A study of the problems of the past, as well as illuminating his fine work, enables us to consider how best to meet those of the present day.

The history of the specialty can be divided into four stages: (1) establishment, (2) expansion; (3) accommodation for changes in clinical requirement, and (4) static state.

There were tremendous problems in the period of the establishment of the specialty, but there were also certain advantages in that exciting era. There was no difficulty in finding posts for all the trainees in the small but steadily expanding field. However, the great expansion immediately following the second world war led to a very large number of new appointments all filled with young men. Inevitably this was followed by a period of years with very few new posts. This cycle is not easily eliminated and is still influencing the timing of vacancies.

The way the specialty was able to adapt to reduced demands for tuberculosis surgery by changing to the treatment of cardiac and oesophageal disease is a lesson which must not be forgotten. It was possible only because the training of thoracic surgeons had been broadly based. Chest physicians were less well placed to meet this change in clinical requirement and consequently suffered greater hardship. Changes in clinical need will recur. The greatest possible attention must be given to higher surgical training so that the problems that lie ahead can be met in a sensible way. The fourth stage has been termed static, but it must of course be appreciated that this is only a relative term. A discussion of this stage and its developments forms the substance of this lecture.

The specialty of cardiothoracic surgery

There has been continual discussion as to whether the specialty should continue to encompass the surgery of the lung, oesophagus, and heart. Appropriately this has been given special attention by the Society of Thoracic and Cardiovascular Surgeons. In 1965 Professor Philip Allison advanced the case for returning pulmonary and oesophageal surgery to general surgery and for the specialty to continue as cardiac surgery only; the contrary view was developed by Mr Leslie Temple (1966). Finally, the society voted that it should continue to develop all three aspects. Discussion, however, continued, especially in view of the tendency outside Britain for pulmonary and oesophageal surgery to separate from cardiac surgery. It was also thought that on the previous occasion the time available for discussion had been inadequate. For this reason in 1974 under my presidency a special meeting of the society was called to consider the problem and its implications. Again the final vote was in favour of unity, which was taken as authority for the society's collaboration in the Joint Committee on Higher Surgical Training. It is for this reason that today the training programme is planned to give experience in the surgery of all structures within the chest.

A formal presentation on the same subject was made at the society's meeting at Leeds in September 1978. Unfortunately time was again limited, but there was no real doubt that the feeling of the meeting was still that the specialty's work should continue to involve the three elements. A number of eminent American surgeons attending the meeting were very much in favour of this view, particularly with regard to the general training programme. This was especially interesting as it is not in accord with their own practices.

The cardiothoracic specialty as part of surgery

Cardiothoracic surgery must be associated with the main stream of surgical thought and practice. My late colleague Professor A L d'Abreu used to

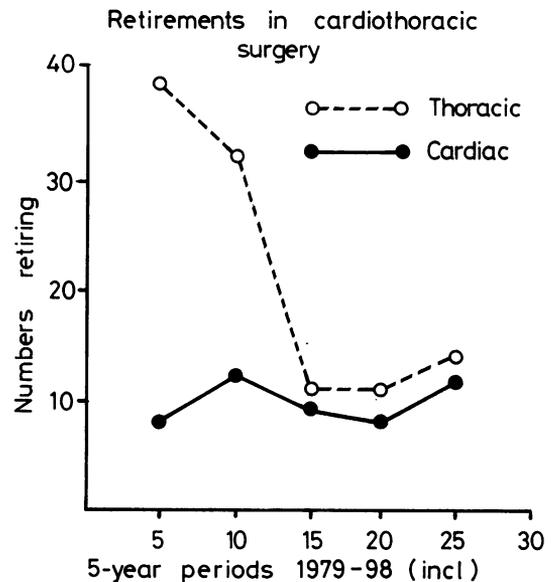
*An abbreviated version of the Tudor Edwards Lecture delivered at the Royal College of Surgeons on 12 October 1978.

say how dangerous he felt it was to get relegated to the attic or the cellar. He was emphasising that the specialty must not get out of touch with other fields of surgery and in particular general surgery. This is a special reason for welcoming the efforts by the Royal College of Surgeons to develop measures to improve higher surgical training. By allying with the other royal colleges, the Association of Professors of Surgery, and all the specialist societies, they have developed the best possible mechanism to avoid isolation. The Joint Committee for Higher Surgical Training and the special advisory committees are doing excellent work. In particular it is evident from this association that all the specialties find the same problem in that greater specialisation produces a loss of flexibility both for the young man in training and for the employing authorities who have to fill vacancies.

The phrase "loss of flexibility" requires further comment. With greater specialisation a trainee finds himself in a deep channel with no possibility for sideways movement. Previously, a young man could obtain a broad surgical training and could watch for a suitable avenue to follow. At any point he could branch off along a promising path and it was quite reasonable to leave it to the individual to make his own decisions. Today's highly specialised training makes this impossible. If we accept young men for training, largely to provide ourselves with assistance, we must accept responsibility for their future career prospects. Asking for registrar and senior registrar assistance without this in mind is irresponsible.

The work of the Joint Committee on Higher Surgical Training and the specialist advisory committees provides them with many of the facts about the current situation. However, these committees are concerned only with training and have no responsibility for or power over the establishment of new posts. The information they have collected concerning retirements is given in table 1 and the figure. The committees also have details of the type of consultant training that is required to fill

each of the vacancies. All this information has been regularly offered over the last four years to the Central Manpower Committee but to date this help has been ignored.



Retirements in cardiothoracic surgery 1979-98.

Cardiothoracic surgery within the medical profession

The specialty and its problems are set within a profession which is steadily increasing in size (table 2). By simple arithmetic, which can be expected only to give an approximation of the answer, the number required to fill annual retirement vacancies can be calculated. There are 80 000 doctors on the United Kingdom medical register and if they each work for 40 years 2000 replacements will be needed annually. I need hardly add that factors such as death, early retirement, immigration, and emigration must be taken into account if the conclusions are to be accurate. A simple calculation of annual vacancies and how they will be filled is shown in table 3.

Table 1 Retirements of cardiothoracic surgeons (UK including Northern Ireland)

1974	1	1983	8	1992	4
1975	4	1984	4	1993	2
1976	7	1985	10	1994	1
1977	4	1986	7	1995	1
1978	4	1987	8	1996	3
1979	7	1988	3	1997	3
1980	6	1989	1	1998	3
1981	9	1990	1		
1982	9	1991	3		
Total: 113 for 25 years					

Table 2 Number of doctors qualifying in Britain

1960	1844
1970	2190
1972	2289
1975	2749
1980	4000

Table 3 *Ultimate careers of newly-qualified doctors*

	Doctors qualifying	General Practitioners	Consultants	Armed Forces	Surplus
1966	1850	1100	600	150	Nil
1974	2700	1300	700	80	620
1980	4000	—	—	—	Large

The number of registrars and senior registrars needed to fill consultant vacancies can be similarly calculated (table 4). It is assumed that consultants work for 32 years, registrars for four years in training, and senior registrars for the same period. If our totals in all these categories were in balance the number in each group divided by 32 or four should give the same figure. As can be seen from table 4 the figure for senior registrars is too high but not excessively so, and might be acceptable if the other factors mentioned were taken into account. The figure for registrars, however, is much more unsatisfactory. These figures have not materialised by chance. The Health Service has an inbuilt force which produces them. All consultants want assistance in providing clinical care for their patients, and the time-honoured place from which this help is sought is from juniors in training. There is a conflict here between the praiseworthy desire of doctors to provide optimal care and what is possible without interfering with promotion prospects.

Table 4 *Annual totals of consultants and registrars*

Consultant vacancies	375	12000
		32
Registrars trained	1230	5000
		4
Senior Registrars trained	625	2500
		4

With proper planning, the figures in the centre column would be identical.

Cardiothoracic surgery in an international context

It may be hoped that disproportions that exist within our medical service could be resolved if we took an international view. In recent years the requirement for hospital junior doctors in Britain over and above that needed to fill retirement vacancies has been met by trainees from Eastern countries. The steady increase in numbers of doctors in all countries makes future adjustment by this means unlikely. Table 5 shows the accelerating increase in the numbers of doctors on the registers in Europe. The reason for such figures

is the steadily increasing number of medical schools throughout the world. Between 1960 and 1970 the number of these rose from 659 to 1190.

Table 5 *Increase in number of doctors on medical registers*

France	1960	45 000
	1970	85 000
	1985	125 000
Italy	1980	300 000

It might be hoped that these figures did not include the places where young men from Britain might seek posts when promotion prospects were poor at home. I refer particularly to the USA, Canada, Australia, and New Zealand, but it would appear that their medical registers have been filled in the same way by their own graduates, and generally in all directions the door to immigration is being closed. This again emphasises that the size of the product of higher surgical training must be planned and related to career prospects.

Cardiothoracic surgery in relation to the patient

It sometimes seems that in all the complexities of the administration of the Health Service the needs of the patient receive secondary consideration. The patients' first requirement is for the best possible medical care. They want high quality in doctors, nurses, supporting teams, and facilities. They would like all this to be provided near their homes so that their relatives could visit them, but first-class treatment comes first even if they have to travel. Advice from the press, local councils, and even from doctors is not always very helpful. Local pride and petty parochialism can be and frequently are put before the patient's best interest. A specialty such as cardiothoracic surgery is sought as a status symbol in their area by local authorities and medical schools rather than for the best interests of the Health Service. Such considerations regularly frustrate efforts for sensible rationalisation of health care in this and other countries.

Cardiothoracic surgery in relation to the established consultant

The load of work in the clinical care of a patient varies considerably from specialty to specialty. In some fields a doctor can work alone, but in cardiothoracic surgery this is plainly impossible. Attempts to function in that direction result either

in the individual consultant being grossly over-worked or in such a reduction in the volume of his practice that he cannot become expert. We must therefore consider the possible sources of consultant support.

The first source is the group of young doctors in training, including the senior registrars and registrars. If attention is focused for the moment on the senior registrar group, one can see immediately that a conflict of interests arises. The consultants will work for the same number of years as any other consultants and in consequence the rate at which retirement vacancies arise is the same for all specialties. Therefore the proportion of senior registrars required is the same in all specialties and yet there is a larger work load to be shouldered. The current figures of the numbers of consultants, senior registrars, and registrars in cardiothoracic surgery (table 6) show that in the specialty there are rather more senior registrars per consultant than the average.

Table 6 *Numbers of staff in post at each stage*

	<i>Consultants</i>	<i>Senior registrars</i>	<i>Registrars</i>
All specialties	12 000	2 500	5 250
Cardiothoracic	110	33	70

Senior registrar/consultant ratio: all specialties 1:5, cardiothoracic 1:3.

At the present time for reasons that have already been mentioned unusually large numbers of cardiothoracic surgeons are retiring, but over the average of many years extra assistance cannot be found from an increase in the senior registrar grade. In fact even with the present numbers our senior registrars work for far too many years in that category before becoming consultants. This is not really fair, yet it can hardly be reasonable to keep the same numbers and expect the work load to be shouldered by their working that much harder than their colleagues. Quite apart from the injustice this can lead to fatigue and lack of time for research and study. The same factors operate for registrars so that other sources must be found for the increased help that our consultants badly need.

It is frequently suggested that this might be avoided by appointing more consultants. Unfortunately, they are all individualists and although personal relations within the specialty are second to none, many find it difficult to work in teams. In part this is unreasonable and merely results from

undue conservatism. Small units with an isolated consultant are certainly undesirable. It would therefore seem that given a change of heart, mutual assistance in large units can help to carry some of the heavy work load, but it cannot be expected to provide the whole answer.

A new source has to be looked for. The only one that can be suggested is the introduction of a new grade of "technical assistant." There are technicians operating in this grade in various fields, such as heart-lung machine technicians. The new group would become assistants in the operating theatre of unsurpassed excellence and would know the habits and wishes of the related consultants to an extent unlikely to be achieved by any doctor in training. Such assistants exist in the USA and the good ones are highly prized and highly paid. Certainly if such a category were introduced here it could be successful only if the salary scale were adequate.

Cardiothoracic surgery in relation to the trainee

The potential trainee viewing the specialty as a career must consider three aspects: (1) the ultimate career, (2) career prospects, and (3) training arrangements.

The ultimate career

He will be bound to be influenced by the feelings of those around him towards the specialty. The desirability of the work will be determined by whether it is generally considered to be stimulating and interesting. He will also be influenced by the conditions under which the consultants work and the facilities for research. A recent questionnaire to members of our society showed that most felt that the biggest limiting factor to operative turnover was the lack of facilities. These findings will spread to the prospective trainees.

They are also bound to consider the financial rewards. It is well known that in private practice big operations do not bring a commensurate financial return. On this basis cardiothoracic surgery cannot be appealing. Apart from private practice the potential trainee will see that in other fields income can be augmented in various ways such as by examinations and reports, but the cardiothoracic surgeon lacks this source of income. On the credit side they will note that the proportion of consultants in the specialty who receive distinction awards is well above the average. This seems a fortunate compensation for the adverse factors and one which it is very much to be hoped will continue.

Career prospects

The specialty became unpopular in the 'fifties and 'sixties because after the large expansion there were very few vacancies. A new category of time-expired senior registrar made its appearance and created bad publicity.

Training arrangements

As cardiothoracic surgery is complicated and difficult training tends to be long (table 7). There is a much higher percentage especially of senior registrars still in post after three years' training in neurosurgery and cardiothoracic surgery than in other specialties. This represents an undue burden on these trainees which recently has been to some extent offset by overtime payments. Representatives from our society met officials of the department of Health and Social Security to request that the position be eased by permitting proleptic appointments. They agreed with the desirability of such appointments but offered no hope of financing them.

Table 7 Percentage of individuals in post for more than three years

	Senior registrar	Registrar
Anaesthesia	7	17
General surgery	23	20
Neurosurgery	44	27
Cardiothoracic surgery	45	23

The general picture therefore must be rather discouraging for the potential trainee. It is not surprising that only five students qualifying in Birmingham between 1940 and 1975 finally selected cardiothoracic surgery as their calling. The expected figure would have been 12.

That this is a reflection of the country as a whole is shown by the high proportion of overseas graduates obtaining consultant posts in recent years. It is certainly not suggested that they are other than of the highest calibre but their appointments demonstrate the unattractiveness of the specialty to local candidates.

Cardiothoracic surgery in relation to other specialties

The requirements of cardiothoracic surgery are heavy and inevitably units make large demands on local resources. These in general are accepted willingly, and gratitude is due to our colleagues for their compliance. Sometimes local support can have its disadvantages. For sensible organisation

of a specialty central planning, which must at least be regional, has to be accepted. Even the regional authority needs central support for this point of view, for otherwise parochial and vested interests can upset the best planning of the service.

Cardiothoracic surgery and finance

The prestige of Tudor Edwards and the very high level of ability found in his immediate colleagues so impressed the administration that they gave every possible help in the establishment of the specialty after the 1939-45 war. An excellent example is the generous provision for the specialty in the new hospital at Walsgrave, Coventry. Recent financial stringency has led to some dis-appointments. Often this disappointment has been at least in part of our own making. Parochialism and local jealousy have dissipated available resources so that ultimately the patient gets a diminished service.

When I discussed this point in Canada last year it was evident that not only were they very concerned about the service costs, but that they were also worried that economy could not be effected except by rationalisation into larger units. One would have thought that the NHS would have avoided errors in this direction. It is therefore very disappointing to see the lack of a central plan and the failure in so many cases to achieve rationalisation in the service. The Royal Colleges of Physicians and Surgeons in England have recently prepared two important reports relevant to this subject. I refer to the report on the requirements for a cardiac centre and also to the report on the training of a paediatric cardiac surgeon (1977). It is very much hoped that they will be well received and be given general support.

Conclusions

- (1) The specialty of cardiothoracic surgery should continue to embrace the treatment of the diseases of the lungs, heart, and oesophagus. Even though many individuals do most of their clinical work in a narrower field, the training programme should cover the three elements fully.
- (2) The organisation of higher surgical training has been greatly improved in recent years to the benefit of all. Even though it may bring problems it must be strongly supported.
- (3) The career prospects of our juniors must be supervised. This is a penalty of super-specialisation, and "laissez-faire" is no longer acceptable.
- (4) Consultants in this field have a hard task and

deserve special consideration. In view of the impossibility of unlimited manual assistance from trainees other provision must be made. This necessitates better facilities in units, bigger units, and the establishment of a category of technical assistant.

(5) Financial reward must match the demand made not only on the consultants but also on those in training. To this end the present level of extra funds for distinction should be maintained. Help to trainees from overtime payments should also continue and in addition proleptic appointments should be permitted.

(6) Big units are desirable from many points of view. Better treatment, better research, help from colleagues, and economy are some of these factors. For these reasons a rationalised service with larger units must be accepted.

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