

So you want to be ... a cardiac surgeon

Cardiac surgery emerged as a specialty in the 1950s following the development of diagnostic angiography, the heart–lung machine and cardioplegic solutions to provide reversible cardiac standstill. Bioengineering laboratories contributed prosthetic heart valves, vascular grafts, pacemakers and artificial hearts. Many of the great pioneers had the courage to fail: deaths were frequent and regarded as inevitable. This gradually changed throughout the 1980s with improved cardiopulmonary bypass technology, blood conservation techniques and critical care (Westaby, 1997). Publication of cardiac surgical outcomes in the USA (Burack et al, 1999) and the Bristol Inquiry in 2001 then changed the landscape irreversibly.

The heart is an unforgiving organ and death is an easily defined end point. Faced with complex technical challenges, intense public scrutiny and no differential financial incentive, few UK graduates have entered cardiac surgery in the last 10 years. Equally the USA cannot fill training programmes, even with overseas candidates. This is regrettable because cardiac surgery offers an exciting and enormously satisfying career for those who can hack it.

Who should consider cardiac surgery?

Cardiac problems are investigated and diagnosed by the cardiologist who provides the surgeon with details of the pathological anatomy and a ‘to do’ list which must be interpreted with caution (Velmurugan and Holdright, 2009). Cardiac surgery is a very practical subject. Teamwork and leadership are more important than in any other specialty. The surgeon must orchestrate anaesthesia, perfusion and intraoperative imaging while performing the operation itself. Friction within a team is an important risk factor. Cardiopulmonary bypass, prolonged anaesthesia and blood transfusion are all damaging so a high degree of manual dex-

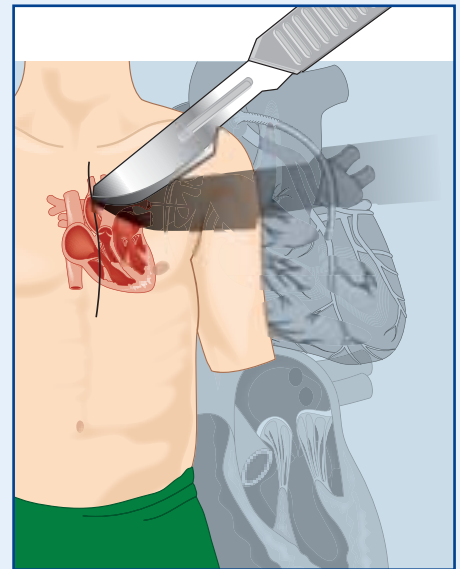
terity, clinical judgement and the ability to work expeditely under pressure are imperatives. The first is innate, the others learnt. Average technicians struggle and publication of outcomes has added to the pressure.

UK training programmes are currently termed cardiothoracic but the two domains now share little more than geography. Specialization in cardiac surgery used to follow basic surgical training where sewing and tissue handling were learnt on more forgiving tissues. While 90% of US surgeons still complete a 5-year general surgical residency, more than 50% of European trainees now directly enter cardiac, cardiothoracic or thoracic surgery programmes. Generally UK trainees complete the 2-year foundation rotation followed by 2 years as a core surgical trainee before entering a 6-year cardiothoracic rotation. Almost 80% of European trainees eventually work in cardiac or thoracic surgery but not both.

Given the huge range of congenital and acquired cardiac conditions and operations the scepticism about abbreviated training programmes and the European Working Time Directive is justified. Shorter training programmes coincide with trainers who are unwilling to jeopardize their outcomes by allowing trainees to operate. It has also been suggested that junior surgeons should not participate in intensive care training, relinquishing this aspect to anaesthetists or intensivists. This is a fatal mistake.

Cardiac surgery is split into congenital and acquired sub-specialties, both of which interface with rapidly evolving interventional cardiology. Correction of congenital heart defects is the most compelling and satisfying domain but access is severely restricted. Increasingly adult cardiac practice includes sub-specialist areas such as thoracic aortic surgery, mitral valve and heart failure surgery. The most common operation is coronary artery bypass grafting designed to relieve angina; numbers of operations are decreasing with competition from coronary angioplasty performed by cardiologists.

Most senior cardiac surgeons and the Royal College of Surgeons have reservations about the ability to train within the time



limits and constraints of expected surgical outcomes. Newly appointed consultants are vulnerable given the range of emergency conditions encountered out of hours. Some are already unable to work independently.

Career opportunities

There are 35 regional cardiothoracic centres in the UK, 12 of which currently undertake surgery for congenital heart disease. Over the past 10 years there has been an important mismatch between trainee numbers and availability of consultant posts. Many trainees have no realistic prospect of a career in the UK and it is difficult to foresee an improvement in the near future. Nevertheless determined individuals with skill and commitment will succeed and realize what a great privilege it is to operate on the human heart. **BJHM**

Conflict of interest: none.

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KEY POINTS

- Cardiac surgery demands a high level of technical skill and determination given the media scrutiny of mortality statistics.
- Access to training in congenital heart surgery is severely restricted.
- Many consider that fully independent cardiac surgical practice is not feasible at the conclusion of abbreviated training programmes under the European Working Time Directive.

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