



# Planning a career in surgery?

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A few years back a friend was killed in a car crash. He was a surgeon. Another colleague who was holidaying in the area was asked to speak at his funeral. He went to a local menswear shop looking to buy a suit to wear to the funeral, but when the manager heard why he needed the suit he said, 'just take any suit in the shop and bring it back after the funeral' – such was the standing of the deceased surgeon within that community.

Being a surgeon means different things to different people. For some there is a huge involvement in community, and often much kudos attached to this role. For others, there is the pursuit of academic excellence or participating in ground-breaking research. Many gain immense satisfaction from curing people by the action of their own hands. No doubt some see it as a pathway to significant income or at least the reassurance of having financial security for their family. Almost all surgeons feel they have a significant role in the training of their successors.

We each have our reasons for choosing our path and we each develop these at different stages in our careers. Some enter medical school knowing what their vocation will be; others discover it along the way. For those who aspire to a surgical career, the Royal Australasian College of Surgeons (RACS) provides oversight of the professional development and certification of surgeons in Australia and New Zealand, and delivers the only training programmes in surgery in these two countries.

RACS is a not-for-profit organisation that represents more than 7000 surgeons and 1300 surgical trainees and international medical graduates across New Zealand and Australia. It is the leading advocate for surgical standards, professionalism and surgical education in New Zealand and Australia, supports health care and surgical education in the Asia-Pacific region and is a substantial funder of surgical research. The attributes that surgeons aspire to are: service; integrity; respect; compassion; and collaboration. Most surgeons have a high degree of situational awareness and manual dexterity that complement these values.

## Training in surgery

RACS has training programmes in cardiothoracic surgery, general surgery, neurosurgery, orthopaedic surgery, otolaryngology head and neck surgery, paediatric surgery, plastic and reconstructive surgery, urology, and vascular surgery. Each of these training programmes has a comprehensive curriculum and expansive syllabus. The training programmes are accredited by the Medical Council of New Zealand (MCNZ) and the Australian Medical Council, and a Fellowship of RACS is recognised as one of the qualifications for vocational specialist registration by the MCNZ.

A career pathway in surgery starts with medical school years (one to five), followed by a trainee intern year (six) (Figure 1). Both postgraduate year one and two (PGY1 and PGY2) are rotating house officer positions through medical and surgical specialties, and PGY3 and PGY4 are usually rotating registrar positions in surgical specialties. This is followed by application to an advanced surgical training programme overseen by RACS, which can be done at from PGY3 onwards. Each specialty training board has a different set of requirements and prerequisites prior to application, but all require a curriculum vitae and references. The specific specialty selection requirements are listed on the RACS's website under 'Selection Requirements and SET Application'.<sup>1</sup> Some training boards require applicants to have undertaken some basic research prior to application.

Applicants are then shortlisted and interviewed prior to acceptance. There are limited numbers of accredited training posts, so the process is competitive, especially in the smaller specialties such as cardiothoracic surgery and neurosurgery. Orthopaedic surgery is also a sought-after specialty. Workforce planning and the number of funded and accredited posts available will determine the number of applicants accepted onto the various training programmes. If accepted on to an advanced programme, Surgical Education and Training (SET) trainees then undertake an advanced surgical training programme for between four to six years, depending on the chosen specialty.

Each of the nine surgical specialties has a similar programme of requirements that need to be met during training. Assessments include specialty-specific exams, direct observation of procedures, clinical encounters (MiniCEX), in-training examinations, quarterly supervisor assessments, mock examinations, and completion of a logbook. Training sessions and pre-examination courses are common. All nine specialties hold a summative end-of-training examination called the Final Fellowship Examination that includes both written and clinical components. If all the requirements of training are met, trainees are awarded a Fellowship of RACS.

The surgical training programmes are both competency- and time-based. Training is usually full time, although many programmes have some degree of flexibility. Competency is based on the CanMEDS Framework's principles and for RACS these are: medical expertise; technical expertise; judgment and clinical decision making; communication, collaboration and teamwork; professionalism and ethics; scholarship and teaching; health advocacy; and finally, management and leadership.

Post-Fellowship subspecialty training for one to two years is often undertaken to improve surgical skills, widen experience, increase exposure to surgical procedures, and promote networking. Many surgeons undertake their post-Fellowship training overseas in centres of excellence.



Figure 1 Timeframe for progression through training to be a Consultant Surgeon

Following post-Fellowship training, most surgeons then take up a consultant position in either a public or private practice (or both).

### The practice of surgery

Surgeons need a high degree of technical expertise, particularly visual-spatial ability, psychomotor ability, and a strong working memory.

In addition to medical knowledge and technical skills, non-technical skills are essential to surgical practice. Of particular importance is situational awareness, especially in a busy operating theatre where there are many things happening at the same time. Surgeons work as part of a team so their communication and leadership skills need to be exceptional. Surgeons are expected to be decisive, as events in the operating theatre happen quickly and decision making is critical. Learning to do a procedure well takes practice, so simulation of procedures has become commonplace.

The rapid expansion of the internet has resulted in open access to an enormous growth of information. The use of written material has diminished and it is now commonplace to instantaneously access information on conditions, data, guidelines, and treatment protocols, not only in the operating theatre but also the consulting room. Auditing and data collection to optimise clinical outcomes has enhanced evidence-based surgical practice.

The old concept of 'see one, do one, teach one' is long gone and the future of surgical teaching combines both technological advances and modern educational principles. The flipped classroom, e-learning materials, the use of mobile devices such as tablets, fast mobile internet, and artificial intelligence are all gaining popularity. Super-high definition multimedia, including video lectures and virtual tutorials with rich educational content, supplements simulation and high-impact clinical experiences. Streamed student progression occurs in an adaptive curriculum with rigorous standards-based assessment – it is benchmarked internationally and has resulted from increasing global collaboration.

### The future of surgery

The current generation of surgeons have seen considerable change and so will the next generation of surgeons. The practice of surgery is in evolution. Public expectation has changed. Patients are now more demanding of autonomy than they used to be. Patients tend to be more educated and are less tolerant of poor surgical performance. Disability as a result of injury or disease is much less tolerated. Life expectations have changed, there are many more active elderly patients with the expectation that they will live well into their 80s in good health and enjoying life. Urbanisation has resulted in more people living together in stronger communities and collaborating together to support each other. Average remuneration has increased, but this has not kept pace with spending on health care, so in the public sector the breadth and scope of publicly funded health care has changed. As most surgical training occurs in the public sector, this change in scope has narrowed the scope of conditions seen during training. The gender balance is also changing in the surgical workforce – in generations past, surgery has been a male dominated profession. This is now changing for the better with both an increase in gender and cultural diversity.

Not only has there been a change in the demographics of surgeons, so has there been a change in their patients. Obesity and comorbidities such as diabetes mellitus, hypertension, and other cardiac conditions, are all on the increase. These conditions have increased the risk of performing surgery, particularly the risk of perioperative complications.

The rapid expansion of knowledge has led to an increase in specialisation. In the last 100 years we have seen the practice of surgery move from the generalist, to the emergence of obstetric, maxillofacial, ophthalmic,

cardiothoracic, vascular, plastic, urology, orthopaedic, ear, nose and throat, and neurology surgeons. Within each of those specialties, sub-specialisation has occurred, especially in metropolitan areas. However, there are still many parts of the world where a surgeon is needed to perform a caesarean section, do an emergency laparotomy, and stabilise an open fracture.

The biologic manipulation of disease will no doubt change the role of the surgeon of the future. As we have seen in the past with infectious diseases, many conditions can be eliminated. One day there may be ways of treating degenerative conditions, lessening the need for reconstructive procedures such as joint arthroplasty and destructive surgeries for cancer.

Imaging of the body for disease and injury has made huge advances in the last 20 years. We have seen the emergence of the computed tomography and magnetic resonance imaging scan. The future will bring even less -invasive imaging modalities to probe every nook and cranny of the body for the early detection of conditions amenable to medical and surgical treatment.

Many of these changes are positive and the future of surgery is exciting. A career in surgery will not only be challenging, but also very rewarding.

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## References

1. Royal Australasian College of Surgeons. Selection Requirements and SET Application. [Internet] Available at: <https://www.surgeons.org/becoming-a-surgeon/surgery-as-a-career/selection-requirements/> [Accessed 19 Apr 2018].

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