

## The making of a surgeon

**Associate Professor Michael Hollands**  
 President of the Royal Australasian  
 College of Surgeons

*Michael is a General Surgeon at Westmead Hospital, and Clinical Associate Professor of Surgery at Western Clinical School of Sydney University. He has post-graduate training in gastro-oesophageal and hepatopancreatobiliary surgery. Michael trained at St Vincent's Hospital in Sydney and later at The Royal Postgraduate Medical School and Guys Hospital in London. He then worked in Beth Israel Hospital and Harvard Medical School, Boston and Queen Mary's Hospital, Hong Kong before joining Westmead in 1986. He has Fellowships of The Royal Australasian College of Surgeons, Royal College of Surgeons of England and American College of Surgeons and was elected to Council of RACS in 2006, was Treasurer 2010-2011 and elected President in 2012.*

Surgery is a therapeutic response to a sometimes critical need for technical intervention. In ancient times, there were tried and sometimes true procedures – nothing else was known. The barbers had basic instruments and could be awfully quick. Early references to surgery talk of fixing fractures, trephining the skull or the removal of arrows. Thus, early surgeons were dependant on experience and technical expertise. A detailed medical knowledge was not required. As surgery the profession developed, surgical training was apprenticeship-based, with no structured curriculum and trainees were not encouraged towards individual thought. What the chief surgeon did, they repeated without question.

During the first part of the 20<sup>th</sup> Century, people actually survived appendicectomy and gangrenous war wounds. In 1930, the simple nasogastric tube transformed the management of bowel obstruction. After World War II there was an explosion of scientific advances profiting both the profession and society. Safer anaesthesia, antibiotics, an understanding of fluid and electrolyte balance all made surgery safer. The boundaries of operations were expanded. Aged and less fit patients became candidates for surgery. In parallel the costs of medical care rose exponentially and government increasingly assumed a greater responsibility for the costs, as well as regulation of the providers of healthcare. Patients have become more assertive about the quality and provision of healthcare provided, within their own societies. These historical forces have shaped the profession surgical trainees choose to enter.

Surgery is no longer just the practice of technical expertise on a background of medical knowledge. Surgeons are not barbers armed with 21<sup>st</sup> Century knowledge. The surgeon's non-technical skills are now rated equally with his or her technical ones. Surgeons must be able to communicate, collaborate, be sensible with their own lives, demonstrate leadership, assume managerial roles when required and teach the next generation(s) – all wrapped in a calm professional exterior.

In Australia and New Zealand, potential surgeons enter training within the programs of Specialist Surgical Societies, in partnership with the Royal Australasian College of Surgeons, proceeding on to a Fellowship of the College after an exit examination. Selection to surgical training in Australia and New Zealand is based on a national selection process undertaken once a year. Applicants are assessed



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on the basis of curriculum vitae, referees' reports and an interview. Training is conducted in one of nine surgical specialities (Table 1). Applicants may apply to more than one surgical specialty. Application for a position in the SET Program may be made as early as the second postgraduate year (PGY2) and training can start in PGY 3. There are certain eligibility criteria – which vary between the specialities - and these are available on the College website (<http://www.surgeons.org>). Because it is a national selection process, a requirement of the ACCC

**Table 2: 9 Surgical Competencies**

- Professionalism
- Teacher and Scholar
- Health Advocate
- Manager and Leader
- Collaborator
- Communicator
- Medical Expertise
- Judgement – Clinical Decision Maker
- Technical Expertise

and AMC, trainees from Victoria, may for example, be appointed to a training position in Western Australia. Applicants considering more than one specialty must apply to each specialty.

Successful applicants commence the Surgical Education and Training program (SET). Education implies acquisition of knowledge and via training the acquisition of skills. The SET Program aims to train surgeons based on the nine competencies outlined by the Royal Australasian College of Surgeons (Table 2). Medical knowledge and technical expertise are only two of the nine competencies.

The SET Program aims to produce surgeons of a competent standard, capable of independent practice and of functioning with other health professionals, within a multi-disciplinary clinical team.

**Table 1: Specialist Surgical Societies**

- Cardiothoracic Surgery
- General Surgery
- Neurosurgery
- Otolaryngology Head and Neck Surgery
- Orthopaedic Surgery
- Paediatric Surgery
- Plastic and Reconstructive Surgery
- Urological Surgery
- Vascular Surgery

The duration of training is dependent on achieving competence and is usually five years. Trainees are allocated to accredited training positions by the specialist society responsible for their training. They will complete a number of placements or rotations across a number of areas of clinical practice. They are assessed on their performance by the consultants for whom they work, overseen by the designated supervisor of surgical training. Trainees will also be rotated to a variety of hospitals giving them exposure to urban referral hospitals, major suburban hospitals and regional/rural hospitals. Progression through training is seamless providing clinical progress occurs across the nine competencies. Typical progress has been mapped by College research, noting variation in individual competency levels due to individual and rotational differences. In brief, experience cannot be standardised.

Successful completion of training is not determined solely by satisfactory clinical performance. Training is assessed in an objective fashion also. Within the first year of training trainees must complete a generic and a specialty specific science examination, as well as a generic clinical (OSCE-style) examination. This ensures all trainees have a core of scientific knowledge applicable to the clinical practice of surgery. Increasingly trainees seek additional training in anatomy and a variety of opportunities are available for this. In some Australian States anatomy courses are provided for junior doctors, who may in turn practise a variety of medical disciplines apart from surgery.

Trainees are expected to complete a number of courses during their training. These may include ASSET (Australian and New Zealand Surgical Skills Education and Training), CCriSP (Care of the Critically Ill Surgical Patient), EMST (Early Management Severe Trauma) and CLEAR (Critical Literature Evaluation and Research). Details about these courses are available on the College website.

Objective clinical assessment is on-going throughout training. Assessment includes review of logbooks and mid- and end of - rotation assessments. Clinical assessment is based on DOPS (Direct Observation of Clinical Skills), Procedure based assessment (PBS) and directed clinical examination scenarios (mini-CEX). These assessments are used to inform the individual rotation consultants and supervisors of surgical training how the trainee is progressing. Progress is discussed with the trainee both at mid- and end of- term. Such discussions facilitate goal setting in general, as well as to identify any areas for remediation

All the training programs also predicate a research component. The requirements vary with the different programs but generally require the trainee to present a paper at a significant clinical meeting, and in some societies to have a paper accepted for publication. Although sometimes perceived as a further hurdle preparing a piece of research entails collecting and analysing data, reviewing the associated literature critically and collating ones thoughts logically.

As the completion of training approaches the supervisor of training approves the trainee to sit the Final Fellowship Examination. Approval is based on attaining clinical competence, which includes satisfying all 9 competencies and research requirements. The Final Examination aims at documenting a competent surgeon in his or her chosen speciality. There are several modules which particularly evaluate medical knowledge, judgement and clinical decision making, as well

as communication and professionalism. Technical skills, collaboration, the scholar and teacher, health advocacy, leadership and management are continually assessed through the SET program. These assessments depend significantly on the surgical supervisors.

It is important that trainees take some ownership of their training. Identify what YOU need to know and where to find it. Set goals, engage YOUR surgeons (the trainers!) and use the assessment tools. Goal setting can be characterised by the acronym SMART: specific, measurable, attainable, relevant and time-bound. Setting goals, especially at the start of a six-month rotation, begins the dialogue about one's needs and thus future progress.

At the completion of surgical training surgeons should be able to practice independently: competently and safely. The new surgeon cannot expect to be proficient as an expert in every aspect of their field. Many will seek further training in an area of special expertise. For example a general surgeon may sub-specialise as a hepatobiliary surgeon, an orthopaedic or neurosurgeon as a spinal surgeon. The College does not undertake or supervise this training but appropriate training programs are organised by surgical societies. Examples include the Spine Society or the Australasian Hepatopancreatobiliary Association. This post-Fellowship training is undertaken as a 'Fellow', something akin to the UK Senior Registrar system.

Opportunities also exist for young surgeons to travel overseas for further training, whether in defined overseas 'Fellowships' or quality service roles, which provide supervised experience. The availability of such training is dependent on the registration requirements of the nation involved. Academic surgery is also a possible career choice and the College provides over \$800,000 in scholarships annually to facilitate this. Similarly many surgeons opt to go into rural, regional or outer metropolitan practice.

At the completion of training a surgeon in Australia and New Zealand has a wide range of skills which enable him or her to function competently. Proficiency in the field, or expert practice requires time in the chosen field of practice. Ongoing clinical work, supported by senior colleagues where appropriate, enables the development of that expert proficiency. Completion of (SET) training is just that – it marks the beginning of a professional life, to be continually refined and developed throughout one's years of clinical practice. The College encourages involvement of Fellows in its activities. Hopefully each generation of new surgeons will, in the years to come, continue to participate in the evolving educational programs of the College, and The College facilitates this opportunity through the Academy of Surgical Educators, providing surgeons with skills as educators as well as the skills expected of a surgeon.

Some surgeons, once their training is complete, will achieve proficiency and do good works outside of Australia and New Zealand, be they in less fortunate countries or the prominent centres especially in the Northern Hemisphere. Surgery is global, and political and immigration regulations aside, the RACS expects its diplomates to be noted as ambassadors for the College in particular, and Australia and New Zealand in general.