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A review of anatomy education in Australasian medical schools

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A review of anatomy education in Australasian medical schools

Abstract

Changes to medical education in Australia include a proliferation of medical schools, shorter courses, shifts toward problem-based learning, and large-scale medical knowledge expansion. Students also spend less time on university campuses and more time at clinical teaching sites which are often non-specialised, regional and remote from the parent university. These changes leave little room for teaching anatomy as a pure discipline.

Keywords

schools, medical, review, australasian, anatomy, education

Disciplines

Medicine and Health Sciences

Surgical Education Program

**SE01
TOWARDS A CONSISTENT ASSESSMENT OF INTERNATIONAL
MEDICAL GRADUATES**

J. P. COLLINS

Royal Australasian College of Surgeons, Melbourne, Victoria

Each year a number of international medical graduates apply for a range of positions in Australia and New Zealand. Those applying for specialist positions including in surgery are assessed for employment and medical registration purposes on the basis of their education, training, assessment, experience, and their recency of practice.

In 2006 the Council of Australian (State) Governments (COAG) determined that a national process should be developed, consistent across all medical specialties and this was implemented in 2008.

Those applying for assessment for comparability to an Australian trained specialist are assessed against the relevant College standards. Those applying for an Area of Need position are assessed against the position description combined with an assessment of comparability. An applicant is classified as either “substantially comparable”, “partially comparable” or “non-comparable” to an Australian trained specialist in that specialty and the type of medical registration possible is linked to this outcome. Where an overseas trained specialist or specialist-in-training wishes to undertake a short period of training in Australia, the employer/sponsor submits an outline of the program to the relevant College which then advises the local Medical Board on the suitability of the training position/program being offered following which the Board makes a decision on medical registration. Applicants regarded as substantially comparable are regarded as eligible for fellowship without examination by the majority of Colleges provided they first complete a satisfactory period of practice under oversight.

The Medical Council of New Zealand uses a different process, seeks advice from the relevant College but is not obliged to accept this advice in making its final determination.

**SE02
AN ACADEMY OF SURGICAL EDUCATORS – WHY, WHO
AND HOW**

J. P. COLLINS

Royal Australasian College of Surgeons, Melbourne, Victoria

Major challenges now impact on the development, delivery and sustainability of programs provided by the College and its specialty partners, in surgical education, training and continuing professional development. In response to these challenges and to meet the increasingly sophisticated educational requirements involved in higher level education, an Academy of Surgical Educators has been established.

The purpose of the Academy is to promote high quality patient care by providing expert guidance and advice to the College and the Specialty Associations and Societies regarding the development and delivery of educational programs for trainees and Fellows and through the advancement and application of educational research.

The Academy will consist of an Executive, staff and membership. The Executive will include rotating representatives from the Specialty Associations and Societies and the Academic Departments of Surgery. Staff will include Fellows expert in surgical education. Membership will be open to all Fellows and trainees able to demonstrate their interest and proficiency in surgical education. The extent of an applicant’s involvement, achievements and experience in education will determine their category of membership. The Academy is entering into partnerships with universities to develop appropriate degree courses in surgical education to be delivered predominantly on-line.

The Academy will provide the means by which the College and its partner Specialty Associations and Societies will ensure those who develop the educational programs, provide the teaching and assessment and undertake educational scholarship will be equipped, supported, recognised and rewarded for their efforts so necessary to sustain surgical education, training and life-long learning.

**SE03
EVALUATION OF THE FIRST YEAR OF SET**

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RACS Trainees’ Association (RACSTA), Melbourne, Victoria

Surgical education and training has undergone major restructuring within Australia and New Zealand over the last three years. The previous two-part program consisted of a generalised basic training period, followed by competitive selection into specialty-specific advanced training schemes. The new surgical education and training (SET) scheme, introduced in 2008, enables streamlined progression through individual specialty programs from the beginning of training.

This session will review the origins of the SET program, and provide a current evaluation of its implementation to date. Focus points are the trainee experience with the SET program’s introduction, the improvements that the SET program offers to the training experience and challenges that have arisen for trainees and surgical educators.

This talk will be given from the trainee perspective.

**SE04
EDUCATION OF POSTGRADUATE DOCTORS BEFORE
SELECTION TO THE SURGICAL EDUCATION AND TRAINING
PROGRAM: THE ST VINCENT’S HOSPITAL PERSPECTIVE**

E. K. GRANGER, C. A. YOUNG, M. BERRY AND A. PILE

St Vincent’s Hospital, Sydney, New South Wales

We outline the establishment of a surgical education program for junior doctors prior to their acceptance on the Royal Australasian College of Surgeons Surgical Education Training (SET) program. Our experience reviews the use of practical workshops using animal models, simulators and small group tutorials to teach general surgery and most surgical specialties. The program aims to increase the surgical skill and knowledge of medical staff leading to safer hospital practices and smoother transition to formal surgical training. Initial results include excellent attendance, transition of significant numbers of doctors to SET positions and high demand for more workshops from junior doctors and even senior medical students. Feedback from surgical consultants has been positive, with subjective improvement in theatre assisting skills and peri-operative care of surgical patients. The program not only provides a solid surgical foundation for postgraduate doctors to build their future surgical career, but also improves patient care by up-skilling the medical workforce in basic surgical techniques and knowledge.

**SE05
GENERATING A MODEL TO EXPLORE DECISION MAKING IN
AN ACUTE SURGICAL SETTING**

S. C. RENNIE, A. VAN RIJ, K. HALL AND J.-C. THEIS

Otago University, Otago, New Zealand

Purpose: There is no current research in surgery that articulates what constitutes good or poor decisions in acute management of a surgical patient. The aim of this study was to define good and poor decision making to facilitate the teaching, learning and assessment of surgical trainees’ decision making skills.

Methodology: A qualitative web-based survey was delivered to global experts in Surgery, Medical Education and Cognitive Research. Half the participants were asked to list features of a good decision, characteristics of a good decision maker and essential factors in developing good decision making skills. The rest of the participants were asked to consider the same areas related to poor decision making. The free text responses were collated and grouped into themes.

Results: 29 (52%) experts responded. The free text comments for good and poor decisions were predominantly the inverse of each other. However some of the features of a poor decision included qualified statements; e.g. timing was important but some respondents felt a poor decision was characterised by being too slow and others by being too fast. The relationship between themes was considered and a model generated to illustrate acute surgical decision making. The model is composed of three major layers –central is the decision process, surrounded by the decision maker and the

decision environment. Each of these three layers is compiled of sub layers. From this model a second model was generated to consider how factors important in decision making might interact in real life.

Conclusions: Understanding decision making is vital for training surgeons. These models enable the factors that constitute decision making to be mapped in detail.

**SE06
RURAL RESIDENTIALLY-DELIVERED, SURGEON-FACILITATED, GROSS TOPOGRAPHICAL ANATOMY BY DISSECTION FOR SURGICAL TRAINEES – THE FIRST AUSTRALASIAN COURSE, ITS CONDUCT AND EVALUATION**

F. STEWART

University of New England, Armidale, New South Wales

For nine years, the author has conducted, annually, a highly regarded course in whole body, gross topographical regional anatomy by surgeon-facilitated dissection, with some application, for surgical trainees at basic and advanced levels of College training. Daily commuting and “hospital-call distractions” were “survey-negatives” for the Sydney course.

In 2008, the inaugural Australasian, surgeon-facilitated, rural residential whole body dissection course was conducted at the School of Rural Medicine, University of New England, Armidale, N.S.W. Course-candidates were pre-SET, SET, and “more advanced” trainees – products of anatomy-deficient curricula.

As for all previous courses, candidates were surveyed and tested before, and after, the course. Pre-course surveys examined the undergraduate curriculum – anatomy taught, its mode of teaching; teachers; surgical experience and hospital-resident’s surgical experience/rotations; procedures undertaken, success in procedure-execution, knowledge of “anatomy of the procedure” and pre-course-preparation. At registration, a regional anatomy “relations known” test was delivered.

The whole-body dissection course involved, “region” lecture, facilitated regional bones/prosection examination, regional dissection. Resident candidates shared meals, joined evening “study groups”, and accessed “school” material after-hours.

An extensive examination, covering regional anatomy, bones and images, followed by “feed-back”, and a post-course survey related to course-structure, teaching, “dissection-experience”, “value” of dissection and residential “experience”, was conducted.

**SE07
UPPING THE STAKES: RECRUITMENT AND RETENTION OF JUNIOR DOCTORS INTO SURGERY**

M. A. BONNING

Australian Medical Students’ Association, Canberra, ACT

It is generally agreed that many medical students who choose surgery as a career make this decision early during their education. This has previously allowed surgery to have a comparative advantage when it came to the recruitment and selection of trainees. However, the environment that allowed this advantage to exist is being threatened by the reduction of surgery in the undergraduate curriculum, active recruitment by competing procedural specialties and the pivotal missing linkage between undergraduate surgical education and vocational training.

In addressing this challenge, a comprehensive analysis of the reasons for this early and concrete self-identification as a “surgeon”, how this interest is nurtured, and why some are lost from the surgical educational pathway, must be undertaken. The assessment of these causes should drive the building of recruitment programs such as those that have been so successful in raising the interest of students and recent graduates towards many other specialties over the past decade.

Surgery still has a powerful draw as evidenced by strong student interest but the College and other stakeholders need to be more active in responding to the challenges identified in order to recruit, educate, train and provide tomorrow’s surgical workforce.

**SE08
PROSPECTIVE CONTROLLED STUDY OF THE EFFECTIVENESS OF STRUCTURED TRAINING IN ULTRASOUND GUIDED PERCUTANEOUS BREAST NEEDLE BIOPSY**

M. T. LAW AND I. C. BENNETT

Princess Alexandra Hospital, Brisbane, Queensland

Effective training is essential to ensure satisfactory performance in surgeon performed ultrasound (US) guided breast needle biopsies. We aim to determine the efficacy and optimal format of structured training in US breast biopsy.

Method: Consenting participants of the US for Surgeons Workshop at the General Surgeons Australia 2008 Annual Scientific Meeting were recruited. Theory assessment included a brief pre-test (control), lecture series then a post-test. Practical assessment involved US biopsies using turkey phantoms implanted with simulated lesions (olives). Pre-instructional biopsies were assessed, followed by structured instructions by qualified instructors and concluded with post-instructional biopsy assessment. Points rewarded for successful biopsies (defined criteria) and deducted for simulated chest wall hits (complications). Previous experience and training in US biopsy were recorded. Pre and post lecture/instructional results were compared and correlation tested using Student’s t-test (significance: $p < 0.05$).

Results: 14 participants recruited: 93% had none to moderate experience with US biopsies. Theory component: 27.4% improvement over pre-test ($p < 0.001$). Practical component: 26% improvement after instruction ($p = 0.004$); improvement most marked in the group with moderate experience (38%, $p = 0.003$). No chest wall hit were recorded following instructions.

Conclusion: Structured workshop is an effective tool in the training of US guided breast biopsy. Both theory & practical components demonstrated similar efficacy and should be considered integral components in training programmes. More importantly formal training may decrease potential complication rate, especially for the less experienced.

**SE09
THE DYNAMIC RELATIONSHIP BETWEEN SURGICAL COLLEGES AND THEIR TRAINEES: THE DEVELOPING ROLE OF TRAINEES’ ASSOCIATIONS IN SURGICAL EDUCATION AND TRAINING**

M. J. PETERS, J. PAPPALARDO AND A. B. CRESSWELL

Royal Australasian College of Surgeons, Melbourne, Victoria

Background: Traditionally, practicing surgeons have provided their intellect, experience and time to develop, deliver and review surgical education and training programmes. The recipient of these efforts, the ‘trainee,’ provided feedback through both workplace performance and formal assessment processes. With time this educational model has changed, as the trainee has become an integral part of the development and review process. The formation of surgical trainees’ associations has complemented this inclusion, the result being their incorporation into College processes. The authors’ aim is to provide an overview of the changing relationship between surgical Colleges and their trainees, and the developing role of trainees’ associations in surgical education and training.

Methods: A review of surgical trainees’ associations in Australia and New Zealand, the United Kingdom, and the United States of America was undertaken to qualify the relationship between surgical Colleges and their trainees, and the developing role of trainees’ associations in surgical education and training.

Results: Across the three regions reviewed, greater emphasis is being placed on trainee involvement in both College and training initiatives. Trainees’ associations provide this input, playing key roles in educational, occupational, and support and advocacy domains.

Conclusions: The relationship between surgical Colleges and their trainees has evolved. Previously, experiential opinion provided guidance, however modern-day collegiate practice encourages trainee input regarding relevant College activities. Trainees’ associations are developing within this changing environment, representing surgical trainees in both traditional and novel arenas.

SE10 THE EDUCATIONAL FRAMEWORK: IN PRACTICE

E. HEINEMAN, J. F. HAMMING AND I. H. BOREL RINKES

Maastricht University Medical Center, Limburg, Netherlands

Competency-based education in the field of medical specialties is attracting a lot of attention.

The CanMeds model has been adopted by many colleges in many countries.

In the Netherlands the 27 medical specialty colleges have been encouraged to redesign their curricula on the basis of the CanMeds model.

A proper framework was lacking and had to be developed. The result is a 'house' with a solid foundation ('support by peers') and 10 different rooms: 'legislation', 'profile of the health worker', 'competencies of the health worker', 'themes', 'operationalised competencies', 'assessment', 'educational method', 'educational activities', 'educational material', 'and 'quality control'(educational process, check on legislation, professionalizing trainers and trainees, research of education).

This educational framework has been put into practice. It has shown to be a very useful instrument to encourage otherwise not educationally trained medical specialists to embark on the trail of competency-based curriculum development.

The model as employed in the field of surgery will be presented and discussed.

SE11P A REVIEW OF ANATOMY EDUCATION IN AUSTRALASIAN MEDICAL SCHOOLS

S. J. CRAIG, N. TAIT, D. MCANDREW AND C. GEORGIU

The University of Wollongong, Wollongong, New South Wales

Introduction: Changes to medical education in Australia include a proliferation of medical schools, shorter courses, shifts toward problem-based learning, and large-scale medical knowledge expansion. Students also spend less time on university campuses and more time at clinical teaching sites which are often non-specialised, regional and remote from the parent university. These changes leave little room for teaching anatomy as a pure discipline.

Aims:

- (1) Analyse contemporary anatomy teaching and assessment in Australasian medical schools.
- (2) Develop problem based, clinically integrated anatomy teaching as an extension to pure discipline anatomy instruction, and as an adjunct to undergraduate and Pre-Set surgical education.

Methods:

- (1) Using a mailed questionnaire survey to the 21 Australian and New Zealand medical schools, examine the time-allocation, content, delivery and assessment of anatomy for 2008.
- (2) A problem based, clinically integrated approach to teaching anatomy developed at The University of Wollongong Graduate School of Medicine will be presented as a generic template and a worked example.

Discussion: Currently, without reliable evidence, the degree of divergence between anatomy curricula at the various Australian medical schools is unclear. The questionnaire survey findings will help clarify this, and could be used to inform an RACS policy or consensus statement on anatomy teaching in our medical schools. Our example of a clinically integrated approach to teaching anatomy may serve to illustrate adjustment of anatomy teaching from a pure to a clinically integrated discipline and may also be of pedagogical benefit to anatomical and surgical educators in Australian medical schools.

SE12P ENCOURAGING STUDENTS TO CONSIDER A CAREER IN SURGERY – EXPERIENCES FROM THE UNIVERSITY OF AUCKLAND SURGICAL INTEREST SOCIETY

A. H. SEGAR, P. INSULL AND A. DARE

The University of Auckland, Auckland, New Zealand

Student interest in surgery is of paramount importance to the future of New Zealand's surgical workforce. Internationally, the proportion of graduates pursuing surgical training has fallen over recent years, with a shift towards "lifestyle" specialties. Furthermore, the changing medical undergraduate curricula, stretched teaching and clinical capacity, and changes to the apprenticeship model of training all pose challenges to creating a meaningful undergraduate surgical experience.

With the support of the University of the Auckland Department of Surgery, we founded the University of Auckland Surgical Interest Society (UASIS) as a means to supplement the undergraduate surgical experience and encourage surgery as a career option. Although similar developments have occurred at overseas medical schools, this student led initiative is believed to be the first in New Zealand and possibly Australia.

The UASIS has five core aims. These were to develop student interest in a surgical career, promote excellence in surgical anatomy, provide greater exposure to all surgical fields, promote student involvement in surgical research and create and maintain professional and academic relationships between students and surgeons. In the first three years, membership has been overwhelmingly high and feedback very positive.

The aims of the group will be described and the extent to which these were achieved. Lessons learnt from this initial experience will also be discussed in order to facilitate similar initiatives at other medical schools. We believe by working together with students, surgeons and the College; the UASIS and other surgical societies will help to promote a strong, competent and sustainable surgical workforce.

SE13P OPEN DISCLOSURE PROGRAM: SHOULD ALL TRAINEE SURGEONS BE EDUCATED?

M. A. MEMON AND B. MEMON

Ipswich Hospital, Ipswich, Queensland

Open disclosure is the open discussion of incidents or errors that results in harm to a patient while receiving health care. Disclosing medical errors respects patient autonomy, and truth-telling is desired by patients and their surrogates and is endorsed by ethicists and many professional organisations. Despite this, recent research would suggest that, the full disclosure of errors to patients by physicians especially by trainee doctors is very low (i.e. 24%). The question remains how can one change this culture?

A two day open disclosure consultant training program introduced by Queensland Health was attended with the sole purpose being to establish a working group of senior clinicians to lead institutional open disclosure. To our knowledge no such programme exists for trainee doctors. Introducing open disclosure education during the early part of training may alleviate concerns of the trainees in terms of support the institution would provide should medical errors occur. The implementation of such programmes may also encourage junior doctors to report errors more openly without fear of repercussion. The knock on effect would be a more 'open disclosure' orientated culture which fosters greater trust from patients and their surrogates.

We strongly believe that training in open disclosure should be an integral part of the surgical training program and health care institutions and organisations should strengthen their support for these programs. This we hope will improve the clinical incident management and will facilitate more consistent and effective communication following an adverse event.

**SE14P
USING DVDS TO ENHANCE THE TEACHING OF
HUMAN ANATOMY**

D. BRIGDEN, P. DANGERFIELD AND M. A. MEMON

Ipswich Hospital, Ipswich, Queensland

One of the recognised problems in learning anatomy comes from trying to form a three dimensional mental picture without three dimensional learning tools. Few people are able to create mental images that are three dimensional by looking at either pictures in books, slides on a screen or static images on a computer monitor; all these modalities support a learning experience that is in only two dimensions.

While it is considered that the best three dimensional learning experience comes from dissecting the human body itself, today, access to that facility is becoming more difficult. To overcome these problems the authors have reviewed a DVD selection that presents freshly dissected human anatomical specimens in three dimensions. The DVDs are based on cadaveric material which has not been embalmed so that tissues retain the colour, texture and mobility of the living body. The dissections used have also been undertaken by skilled clinical anatomists, using the finest surgical and even micro surgical techniques.

Each DVD has a clear, clear concise narration throughout, making them a saving aid to first time learning, an effective way to build on existing knowledge of anatomy, an efficient tool for revision and, for clinicians in training and in practice, a swift renewal of anatomical knowledge.

The authors' succinct appraisal of the DVDs reviewed has demonstrated that they are a means of enhancing the teaching of anatomy and facilitation of learning.

**SE15
PRINCIPLES AND CRITERIA FOR REVALIDATION**

J. COLLINS

Melbourne, Victoria

Revalidation or the process by which a surgeon demonstrates their right to practice has long been established in the United States and Canada and is currently being introduced in the United Kingdom. Its primary purpose is to demonstrate that surgeons continue to meet the standards that apply in their discipline. Secondary purposes are to promote continuing professional development, encourage improvement in the quality of healthcare and the identification of surgeons for whom there are significant concerns about their fitness to practice and to alert for early signs of deteriorating performance. Finally it is to reassure the public, colleagues and employers that individual surgeons are up to date and fit to practice.

Although there are different methods for undertaking revalidation, experiences on the use of self-regulation have shown that it can be effective and maintain the public trust. This method would seem preferable to the development of a testing culture based on summative examinations.

Important principles for revalidation include the College and specialty associations setting of standards and the evidence required and the importance of surgeons gathering the evidence in their personal portfolio. The process should be locally based and include a responsible person who can provide assurance of an individual's continued fitness to practice. The College and specialty associations must provide support and advice to surgeons going through the process.

A number of criteria are used including professional standing, evidence of lifelong learning and up to date clinical knowledge primarily through self-directed learning and self-assessment. Evaluation of performance in practice can be drawn from outcome data, patient feedback and observations of practice and simulator tests.

**SE16
POST-FELLOWSHIP TRAINING AND THE SURGICAL
COLLEGES – HAS THE HORSE ALREADY BOLTED?**

J. COLLINS

Melbourne, Victoria

A large percentage of surgical trainees on completion of their specialty education and training program seek further experience and instruction frequently in a sub-specialty area. It frequently leads to a narrowing of the spectrum of surgical service the individual will provide with significant workforce implications. This "progressive specialisation" or voluntary narrowing of scope of practice which in the past occurred gradually over the course of most surgeons' careers is now increasingly linked to post-fellowship training. It is driven by patient demands and the emphasis on health-care quality, the constant growth in new modalities of treatment and personal factors by the surgeon. With the exception of a few areas like colorectal surgery the arrangements surrounding this training tends to be haphazard.

In order to achieve the best outcome for society and the individuals embarking on this training a number of important issues must be addressed. These include workforce considerations within a particular specialty, the accreditation of suitable posts, wide advertising, selection and subsequent allocation of successful applicants, the provision of a formal education and training program with appropriate assessment in the subspecialty area, and recognition of completion of this program by a post-fellowship qualification.

Clearly the College in partnership with the specialty associations should sponsor administer and monitor these programs and issue appropriate qualifications. However "when the wind blows, some build walls, others build windmills". The winds of change have been too fast for some and complicated by turf protection. Into this void has entered the universities which now offer degree programs in Minimally Invasive Surgery with others soon to follow.

The horse has already bolted but in the long run society will be best served by proactive and cooperative partnerships between the many stakeholders involved.

**SE17
SURGICAL EDUCATION AND TRAINING: A QUEST FOR
EXCELLENCE IN A CHANGING SOCIETY**

J. COLLINS

RACS, Melbourne, Victoria

In 2008 a leading UK medical correspondent wrote: "the royal colleges must up their game – or die" because of their lack of influence in the debacle over medical training. Surgical education is at a crossroads and the sustained production of surgeons including surgical scientists faces many challenges. It might well be asked how the Royal Australasian College of Surgeons and its partner surgical specialties are responding to the winds of influence blowing their way.

The seeds of surgical education must be planted and nurtured in medical school, watered and fertilized after graduation by the Postgraduate Medical Councils and helped to prosper and bloom by the surgical colleges for those who choose surgery as a career. Meaningful and collaborative partnerships are therefore essential for the development of an integrated approach across the continuum of learning.

The College has responded to the many factors now influencing training by developing and implementing a new integrated surgical education and training program (SET), new processes and criteria for accreditation for hospital posts for training, more valid and reliable selection and new competency-based curricula and assessment including workplace-based assessment. A new and comprehensive foundation surgical skills course has been introduced and new courses implemented to help supervisors.

A major challenge surrounds sustaining the delivery of surgical programs and courses. Surgeons are faced with the conflicting priorities of clinical practice, education, research and administration. Research and patient care have become the dominant source of resources and prestige with a decline in the recognition and value of surgical education and teachers. An Academy of Surgical Educators is being developed by the College and its partner specialists to renew and reinvigorate surgical education, equip and support teachers and educational researchers all of which are vital to sustain the future of surgical education and continuing professional development.