Inaugural Developing a Career in Academic Surgery Course

Tuesday 5 May 2009
Plaza, P2
Brisbane Convention and Exhibition Centre

Proudly sponsored by

The Association for Academic Surgery in partnership with the RACS Section of Academic Surgery
Developing a Career in Academic Surgery

Co-chairs:
Professor John Windsor    Associate Professor Scott LeMaire
RACS Section of Academic Surgery  Association for Academic Surgery

Course Convener:
Mr Richard Hanney

Program

0700  Convene and breakfast
0720 – 0730  Welcome and introduction
Ian Gough, RACS President

The Surgeon Scientist
Chair - Andre van Rij and Kevin Staveley-O’Carroll
0730 – 0750  The surgeon-scientist
Scott LeMaire
0750 – 0805  Why be an academic surgeon?
Noel Tait

Types of Surgical Research
0805 - 0830  Basic science research (including molecular biology: tools of the trade)
Kimberly Kirkwood
0830 – 0855  Clinical and translational research and the surgeon
Mark Smithers
0855 – 0920  Surgical outcomes: RCT’s, equipoise & preference studies
Michael Solomon
0920 – 0945  Medical education research: a time for renewal
John Collins
0945 – 1000  Panel discussion (including revenue generation issues)
1000 – 1015  Morning tea

Surgical Research
Chair - Chris Christophi and Melina Kibbe
1015 – 1040  Developing a research program
Peter Nelson
1040 – 1110  Design, power and statistics
Lillian Kao
1110 – 1135  Running clinical trials
John Fletcher
1135 – 1150  Panel discussion
1150 – 1230  Lunch

Writing and Presenting Research
Chair - Susan Neuhaus and Kimberly Kirkwood
1230 – 1310  Nuts and bolts of scientific writing
Melina Kibbe
1310 – 1335  Writing a successful grant application
David Watson
1335 – 1400  Effective research presentations
Kevin Staveley-O’Carroll
1400 – 1415  Panel discussion
Afternoon tea

Building a Successful Career in Academic Surgery
Chair - Andrew Hill and Scott LeMaire
1430 – 1450  Becoming an effective surgical teacher
Jeffrey Hamdorf
1450 – 1510  Life-work balance
Max Schmidt
1510 – 1530  Academic surgery and the RACS
Ian Civil
1530 – 1550  A career in academic surgery: motivation and mentors
John Windsor
1550 – 1600  Discussion with participants
1600  Course concludes
Association for Academic Surgery Invited Speakers

Kevin Staveley-O’Carroll, MD, PhD

Kevin Staveley-O’Carroll, MD, PhD, is Chief of Surgical Oncology and Associate Professor of Surgery and Microbiology/Immunology at the Penn State University College of Medicine. He received his BS degree in Chemistry from the University of Notre Dame and his Medical Degree from the University of Oklahoma. He subsequently completed his surgical residency and a fellowship in surgical oncology at the Johns Hopkins Hospital, and received a PhD in Pharmacology and Molecular Biology from the Johns Hopkins School of Medicine.

He accepted a faculty appointment at Penn State University in 2000. He is the Director of the Penn State Cancer Institute’s Program for Liver, Pancreas, and Foregut Tumors; as such, he oversees a multidisciplinary clinical program, directs clinical, translational, and basic science research, and is the Director of the hepatobiliary fellowship.

His research effort, focusing on the immune system’s response to cancer, is funded through the National Cancer Institute/National Institute of Health. Dr. Staveley-O’Carroll currently serves as the President of the Association for Academic Surgery, the largest collection of academic surgeons in the world. He has 4 children ages 9, 13, 15, and 16.

Scott LeMaire, MD

Scott A. LeMaire, M.D. is Associate Professor and Director of Research in the Division of Cardiothoracic Surgery, Michael E. DeBakey Department of Surgery at Baylor College of Medicine, and an attending physician on the Cardiovascular Surgery Service of the Texas Heart Institute at St. Luke’s Episcopal Hospital in Houston, Texas.

Dr. LeMaire graduated from Northwestern University Medical School in 1992 and completed residency training in cardiothoracic surgery at Baylor College of Medicine in 1999. His primary clinical interest focuses on the management of patients with thoracic aortic disease, with a particular emphasis on treatment of aortic dissection and thoracoabdominal aortic aneurysms. His corresponding research program focuses on organ protection during aortic surgery, genetic aspects of thoracic aortic disease, and molecular mechanisms of aortic degeneration.

He has received funding from the National Institutes of Health and the Thoracic Surgery Foundation for Research and Education for his research studying the role of matrix metalloproteinases in aortic dissection. Dr. LeMaire is currently serving as Secretary of the Association for Academic Surgery. He has been married for 16 years and has two children.

C. Max Schmidt, MD, PhD, MBA

Dr. C. Max Schmidt, MD, PhD, MBA, FACS is associate professor of surgery and biochemistry and molecular biology at Indiana University. He is fellowship-trained pancreas surgeon who actively takes care of patients with pancreatic neoplasia. He also performs clinical trials and translational research directed at discovering novel biomarkers and targeted treatments for patients with pancreatic neoplasia. Dr. Schmidt’s research is funded by the National Institutes of Health (NIH), the Veteran’s Affairs (VA), the American Cancer Society (ACS), the American Association for Cancer Research (AACR) and the Pancreatic Cancer Action Network (PanCAN). Dr. Schmidt is an internationally recognized expert on precancerous cystic lesions of the pancreas. He is the surgical director of the Indiana University Pancreas Cyst Clinic which coordinates the care and follow-up of nearly 1000 patients with precancerous cystic lesions of the pancreas. Dr. Schmidt currently holds a national surgical office as the Treasurer (2007-2010) of the Association for Academic Surgery.

Melina R. Kibbe, MD, RVT

Dr. Kibbe is an Associate Professor of Surgery at the Northwestern University Feinberg School of Medicine, Division of Vascular Surgery as well as Staff Physician and Director of the Vascular Laboratory at the Jesse Brown VA Medical Center. She received her MD degree from the University of Chicago in 1994, completed her general surgery residency at the University of Pittsburgh in 2002, and vascular surgery fellowship at Northwestern University in 2003. She is board certified in both General Surgery and Vascular Surgery. She received her RVT certification in 2003 and RPVI certification in 2007.
Dr. Kibbe is an active member of the Society for Vascular Surgery, the Association of Women Surgeons, the Society of University Surgeons, the Association for Academic Surgery, the North American Vascular Biology Organization, the American Heart Association, the Society for Free Radical Biology and Medicine, and the Nitric Oxide Society. She is also reviewer for several general and vascular surgery journals, and is on the editorial board of the Journal of Surgical Research.

Dr. Kibbe’s clinical efforts focus on open and endovascular surgery, with a particular interest on carotid and peripheral arterial endovascular interventions. Her research interests focus on nitric oxide vascular biology. Specifically, she is studying how nitric oxide inhibits vascular smooth muscle cell proliferation by focusing on the role of nitric oxide in regulating the cell cycle, the ubiquitin-proteasome pathway, and apoptosis. She is also developing and evaluating nitric oxide-based pharmacological and bioengineering approaches to inhibit neointimal hyperplasia following vascular interventions, including bypass grafting and peripheral angioplasty/stenting. Her hope is to have a positive effect on patency rates of these procedures, thereby effecting millions of patients that undergo coronary artery or peripheral artery revascularization procedures.

Kimberly Kirkwood, MD

Dr. Kimberly Kirkwood specializes in the treatment of pancreatic cancer as well as tumors of the stomach, spleen, gallbladder, bile duct and gastrointestinal tract. A skillful laparoscopic surgeon, she is an expert in applying minimally invasive techniques to treat abdominal tumors and has a particular interest in improving outcomes for patients after pancreas surgery. Dr. Kirkwood is a member of the UCSF Helen Diller Family Comprehensive Cancer Center and participates in Cancer Center Clinical Trials.

Dr. Kirkwood earned a medical degree at the University of Pennsylvania and completed a surgical residency and a fellowship in advanced general surgery with a focus on pancreatic surgery at Massachusetts General Hospital. She also completed a three-year surgical research fellowship at UCLA in hepatobiliary disease. Dr. Kirkwood is active in many national societies including the Pancreas Club, Society for Surgery of the Alimentary Tract, Association for Academic Surgery and she is on the Executive Council of the Society of University Surgeons. Her NIH-funded research focuses on pancreatic inflammatory pain and on the many factors which may improve outcomes for patients following resection of pancreatic tumors. She is a professor of surgery at UCSF.

Lillian Kao, MD, MS

Lillian Kao, MD, MS is an associate professor of surgery and critical care at the University of Texas Health Science Center at Houston. She has a Masters Degree in Clinical Research and is on the faculty of the UT-Houston Center for Evidence-Based Medicine and Clinical Research. She co-directs the Clinical Trials course and is faculty for several other courses. She has received two career development awards (NIH K23 and Robert Wood Johnson Physician Faculty Scholars Award). Her research interests are surgical infections, quality improvement, patient safety, and advanced research methodologies.

Peter R. Nelson, MD, MS

Dr. Peter Nelson obtained his BS from Tufts University and his MD from the University of Massachusetts Medical School. Dr. Nelson then completed general surgery residency at UMass during which he took dedicated time out for the two-year Harvard-Longwood Vascular Surgery Research T32 Fellowship. He was named Resident Teacher of the Year twice, and the H. Brownell Wheeler Outstanding Chief Resident Award on graduation. He then went on to complete his vascular surgery fellowship at Dartmouth Medical School. Finally, Dr. Nelson has earned a Masters Degree in Clinical Investigation this past year through the Advanced Postgraduate Program in Clinical Investigation (K30) at the University of Florida.

Dr. Nelson is currently Assistant Professor of Surgery at the University of Florida College of Medicine. He practices at both the Shands Teaching Hospital as well as the Malcom Randall Veterans Administration Medical Center. His clinical interests include endovascular AAA repair and percutaneous peripheral intervention, as well as minimally invasive treatment for venous disease as Director of the UF Vein Center. Approximately 75% of his clinical practice is dedicated to these interventional approaches. He is also active in clinical trial activity ranging from endograft trials, to new approaches to peripheral intervention, to pharmaceutical trials, and to stem-cell research. He serves on the national Society for Vascular Surgery Clinical Research Committee and the Veterans Administration PAD Advisory Panel. Dr. Nelson has lectured nationally on a variety of topics pertaining to endovascular intervention.

Dr. Nelson’s research interests focus on the role of systemic inflammation in the failure of vascular intervention. He is an NIH-funded investigator with a grant entitled “Genomic and Proteomic Determinants of Lower Extremity Revascularization Failure” funded through NHLBI. Through this effort, he studies the relationship of a patient’s innate immunity or their systemic inflammatory response to lower extremity procedures to the
subsequent success or failure of their revascularization. Early results have been presented at the Arteriosclerosis, Thrombosis, Vascular Biology meeting and the Academic Surgical Congress. These have demonstrated molecular differences pre-operatively that may predict success of failure of lower extremity intervention.

In addition, distinct inflammatory differences have been seen contrasting angioplasty/stenting and vein bypass surgery, all suggesting the potential to individualize treatment for lower extremity PAD based on patients’ molecular profiles. He eventually hopes to expand this to a multi-center trial investigating systemic inflammation, its possible interventions, and treatment for PAD. Dr. Nelson is also a part of a collaborative effort at UF to establish a Center for Excellence in Genomic Studies (CEGS) and is part of the UF Clinical and Translational Science Institute.

Dr. Nelson’s primary education interest is in understanding the issues surrounding medical student career decision-making regarding surgery and its subspecialties. He is faculty advisor for the UF Surgical Interest Group which provides pre-clinical students early exposure to surgery through a monthly lecture series, suturing and knot-tying clinics, and shadowing and research opportunities within the Department. He also serves on the Department’s Education Executive Committee. In addition, Dr. Nelson has obtained sponsorship from the AAS, SUS, ACS, and APDS, to develop a surgery information/recruitment project entitled “Redefining Surgery”. This project consists of a series of candid videotaped interviews with surgeons from all walks of life - medical students and residents, private practice surgeons, academic surgeons, international surgeons, early-career faculty, and senior leaders in surgery - responding to the important and relevant questions in surgery today. Topics such as “why be a surgeon?”, surviving financially in academic surgery, balancing research and clinical practice, technological advances in surgical practice, mentoring students and residents for a career in surgery, advances in surgical education, and how to balance life and family with a surgical career, are just some of the areas covered. They have over 90 hours of video recorded thus far and plan to deliver the final production as a multimedia presentation including DVDs, streaming video on the ACS web portal, and video podcasts nationally, perhaps internationally, to demonstrate the energy, enthusiasm, and innovation that truly embodies the field of surgery today.

Dr. Nelson has been a member of the AAS since 2002, is former Chair of the Membership Committee, currently serves as the Co-Chair of the Leadership Committee, and sits on the AAS Executive Council.

Dr Nelson is participating in the DCAS Course as an invited guest of the RACS Younger Fellows Committee.

**RACS Invited Speakers**

**Ian Civil MBE, CSJ, FRACS**

Ian is a graduate for the Auckland University School of Medicine and he completed his initial surgical training in Auckland. In the mid-80s he worked in the USA for three years, first as a vascular surgery fellow at the Cleveland Clinic and then as a trauma fellow in the Southern New Jersey Regional Trauma Center in Camden, NJ. After returning to NZ in 1987, Ian took up a combined University of Auckland/Royal NZ Army Medical Corps appointment in which he served for 5 years. From 1992 Ian has practiced as a vascular surgeon at Auckland City Hospital and has been the Director of Trauma Services throughout this time. He has been an instructor on the EMST/ATLS programme since 1985 and has had similar involvement with CCrISP since 1999. He has been on the editorial board of INJURY since 1993 and become Deputy Editor responsible for non-orthopaedic issues in 2005. He is also an associate editor for Traffic Injury Prevention, a member of the editorial board of the World Journal of Emergency Surgery and a senior editor for the Australian and NZ Journal of Surgery. He has been a RACS Councillor since 2003 and Chair of the Board of Basic Surgical training from 2005-2007. Ian is the current RACS Censor in Chief.

**John Collins FRACS**

Professor John Collins is Dean of Education at the RACS and Professorial Fellow in medical education at the Department of Surgery, Melbourne University. His main professional interests have been in surgical oncology and medical education. He has had major roles with the New Zealand Ministry of Health in the Breast Cancer Screening Programme and the Cancer Control Strategy. He held various senior roles in medical education at the University of Auckland before moving to Melbourne and his current role with the College. Professor Collins takes up his appointment as a Visiting Professor in Oxford in September 2009.
Developing a Career in Academic Surgery

John Fletcher FRACS
John Fletcher is Professor of Surgery and Head of the University of Sydney Department of Surgery, Director of the Westmead Vascular Biology Research Centre and Director of the Westmead Vascular Laboratory. He is also Western Sydney Area Director of Vascular Surgery.

Professor Fletcher’s clinical interests are the endovascular management of aortic aneurysm, the non-invasive investigation of vascular disease, and the prevention and treatment of venous thromboembolism. His research interests are the cellular mechanisms in atherosclerotic plaque formation, inhibition of intimal hyperplasia following vascular interventions, and prevention of prosthetic vascular graft infection.

Professor Fletcher has published extensively in peer-reviewed journals. He is a member of the Editorial Boards of the Journal of Thrombosis and Haemostasis, Acta Phlebologica, and Annals of Vascular Diseases. He is a member of the Court of Examiners in Vascular Surgery of the Royal Australasian College of Surgeons and is Chairman of the Australian and New Zealand Working Party on the Management and Prevention of Venous Thromboembolism. He was appointed President of the International Surgical Thrombosis Forum (ISTF) in 2008.

Jeffrey M. Hamdorf FRACS
Professor of Medical Education
Faculty of Medicine Dentistry and Health Sciences, The University of Western Australia

Professor Hamdorf undertook his undergraduate degree through UWA and then trained in surgery. After graduating from the surgical training program he spent two years at the University of New South Wales as a Visiting Academic and at the Prince of Wales Hospital in Sydney doing post fellowship training in upper gastrointestinal surgery and developed clinical interests in laparoscopic surgery and upper gastrointestinal malignancies.

He is considered an expert in laparoscopic upper gastrointestinal surgery particularly pertinent to adjustable gastric banding.

His academic interests have focussed on education and he has landmark publications in surgical education and skills acquisition. His position as the inaugural Professor of Medical Education encompasses the Clinical Education and Training Centre and a responsibility for the quality of education within the Faculty as well as directing the activities of the medical simulation centre.

Mark Smithers MBBS (Qld), FRACS, FRCS (Eng)
Associate Professor, University of Queensland
Director, Upper Gastro-intestinal and Soft Tissue Unit, Princess Alexandra Hospital, Brisbane
Chairman, Queensland Melanoma Project
Executive, Section of Surgical Oncology, RACS
Member, Scientific Advisory Committee of the Australasian Gastro-Intestinal Trials Group
Vice President, Australia and New Zealand Gastric and Oesophageal Surgeons Association.

Clinical interests: malignant and benign conditions of the oesophago-gastric region; management of patients with sarcoma and malignant melanoma. Clinical research programmes into outcomes from treatment for oesophageal cancer, GIST and melanoma. Investigator on grants assessing the epidemiology and management of oesophageal cancer (NIH, USA and NH&MRC) and aspects of the management of melanoma (NH&MRC, Cancer Council of Queensland).

Michael Solomon FRACS
Professor Michael Solomon is a consultant surgeon and visiting medical officer at Royal Prince Alfred in Sydney. He is a Clinical Professor of Surgery and Director of Colorectal Research, both for Royal Prince Alfred Hospital and the University of Sydney and is a past President of the Colorectal Surgical Society of Australia & New Zealand (CSSANZ). He is the current Chairman of the Post-FRACS Training Board in Colorectal Surgery of RACS & CSSANZ.

Professor Solomon has extensive experience in clinical research and has published over 150 papers. He is the Founding Director and Head of the Surgical Outcomes Research Centre (SOuRCe) at the University of Sydney which was established as a multidisciplinary, academic research unit dedicated to the advancement of evidence-based surgical practice through the conduct of outcomes-orientated surgical research. He teaches clinical epidemiology and research methods to postgraduate students and surgical fellows and currently supervises three PhD students and 6 Masters students, all of whom are academic surgeons. He has obtained over 7 million dollars in peer-reviewed funding for colorectal research.
Professor Solomon is a member of many national and international colorectal advisory committees. He Chaired the Australian NHMRC Guidelines for the Prevention, early detection and treatment of colorectal cancer in 2006. Professor Solomon is on the Editorial Board for the Colorectal Disease, the International Journal of Colorectal Diseases and Diseases of the Colon & Rectum. Professor Solomon’s surgical expertise is in multi-disciplined complex pelvic surgery for advanced and recurrent malignancy, inflammatory bowel disease and pelvic floor disorders as well as laparoscopic colorectal surgery.

Noel Tait FRACS
General Surgeon
Professor Tait’s special interests include acute general surgery, upper GI surgical oncology and undergraduate and post graduate surgical education and training.

His main career appointments were with the Westmead Hospital and The University of Sydney and to the Canberra Hospital and The Australian National University.

Professor Tait’s current appointment is Foundation Professor of Surgery at The Graduate School of Medicine at The University of Wollongong and as a consultant general surgeon at the Wollongong Hospital.

David Watson FRACS
Professor David Watson is Head of the Flinders University Department of Surgery. He has clinical and research interests in the area of benign and malignant oesophageal disease, including gastro-oesophageal reflux and oesophageal cancer. He has been active in the development of laparoscopic and endoscopic surgery in Australia, and has conducted 14 randomised controlled trials pertinent to this area. He also leads a molecular biology research group which is investigating the development of oesophageal adenocarcinoma. Professor Watson has published more than 200 refereed research papers, and he has obtained more than $10,000,000 of research grant funding over the last decade, including 8 NHMRC project grants, and grants from the Australian Research Council and NIH. Professor Watson has been a member of NHMRC project grant review panels, and was Chairman or Deputy Chairman of the Surgery panel from 2004 to 2008.

Professor Watson has been awarded the John Mitchell Crouch Fellowship from the Royal Australasian College of Surgeons. He is currently the Foundation President of the Australian and New Zealand Gastric and Oesophageal Surgery Association (ANZGOSA), and past-chairman of the HPB & Upper GI Section of the Royal Australasian College of Surgeons. He is a Senior Editor of the ANZ Journal of Surgery, and a member of the Editorial Boards of several journals, including the Journal of Gastrointestinal Surgery, the British Journal of Surgery and World Journal of Surgery.

John Windsor FRACS
Professor John Windsor has a personal chair in surgery and is Head of the Division of Surgery, Faculty of Medical and Health Sciences, The University of Auckland, New Zealand. Appointed as a Senior Lecturer in 1991, he founded the Pancreas Research Group in 1992, established the Surgical Skills Training Centre in 1993 and set-up New Zealand’s first HPB/Upper GI Unit in 1994. More recently has developed the Surgical Research Network to support and promote surgical research and train future academic surgeons.

His primary research focus is the pathophysiology of acute necrotizing pancreatitis. His interests in educational technology has led to the development of the Integrated Cognitive Simulator by Go Virtual Medical Ltd. He has received numerous grants, has contributed significantly to the peer reviewed literature and serves on several Editorial Boards. Currently serves as Secretary General of the IHPBA.
Abstracts

Scott A. LeMaire
Baylor College of Medicine and
The Texas Heart Institute at St. Luke’s Episcopal Hospital
Houston, Texas USA

The surgeon-scientist

Recommended Reading

Harken, Alden H. The role of basic science in the training of a surgeon. Ann Surg 1994; 220 [Issue 1 Suppl]: III-VI.

Noel Tait
Foundation Professor of Surgery, The Graduate School of Medicine at The University of Wollongong and Consultant General Surgeon at the Wollongong Hospital

Why be an academic surgeon?

As a general surgeon I have spent most of my career in private practice but I have been a staff surgeon, a clinical administrator and now, a clinical academic in surgery with the title of Professor at a new regional medical school. In private practice or in other forms of practice, all my appointments have included engagement with universities.

We learn the meaning of commitment at home and at school. We learn what it means in surgery from surgical mentors and exemplars; superb surgical academics and equally superb academically engaged surgeons in private practice. I believe that commitment as a surgical clinician is not only to one’s own practice but also to the advancement of the whole spectrum of surgical undergraduate and postgraduate education, training, research and system and service development wherever we practice.

Academic surgery and surgical academia can only survive and prosper on a strong platform of academic engagement by all surgeons. I shall endeavour to show you that the question as put is provocatively misleading. There are many interpretations of what being academic and being an academic may mean in surgery and these interpretations may change for you as your surgical career grows. Your understanding of the obligations and opportunities that an academically engaged surgical career presents should leave no place for pejorative presentations of options or labels or for separation of formal academic roles and titles from the quality and productivity of a full professional life in surgery.
Clinical and translational research and the surgeon

Clinical Research is attractive to the surgeon and can take the form of studies relating to operative procedures or techniques, as well as research into pathology treated by surgeons. This research will usually involve phase II or III studies. A translational researcher takes basic research to the patient measuring an endpoint which is relevant to general patient management. Typically this type of research includes phase I studies but may also include phase II and III trials. For clinical research to work there needs to be a worthwhile question, commitment from the investigators, a view that the study will be completed and good administrative processes that do not impact on everyday practice.

With respect to translational research the biomedical scientist and the clinicians involved need to believe each is capable of addressing the hypotheses and that the research can be performed in a safe, ethical clinical environment. Thus the issue of research teams is real in this environment. This includes the lab based and clinical investigators as well as the research co-ordinators, research nurses, statisticians and data mangers. There is with a need for regular meetings with mutual respect required between all those involved.

In Australia, to be involved in clinical and translational research a surgeon will need to have a background in basic research such as a higher degree and / or work in an academic environment achieving significant clinical experience in the area of research as well as the respect from colleagues who are likely to refer patients or agree to be involved in the research. This begins by engaging mentors who will assist with the design and progress of research projects accepting that, as in most aspects of life, leadership is earned and not passed freely to someone who wants it.

Michael Solomon
Clinical Professor of Surgery & Director of Colorectal Research
Royal Prince Alfred Hospital & University of Sydney
Director and Head of the Surgical Outcomes Research Centre (SOuRCe) at the University of Sydney

Surgical outcomes: RCT’s, equipoise & preference studies
The Surgical outcomes Research Centre was established as a multidisciplinary, academic research unit dedicated to the advancement of evidence-based surgical practice through the conduct of outcomes-orientated surgical research in 2002. SOuRCe teaches clinical epidemiology and research methods to postgraduate students and surgical fellows and supervises multiple PhD & Masters students, all of whom potentially are future academic surgeons.

Clinical surgical research utilises the gold standard of randomised controlled trials to test hypotheses promulgated by case series and other published weaker research designs. RCT’s have remained at 4-7% of the published studies and case series represent over 80% of the surgical literature. Feasibility issues such as patient and surgical preferences, uncommon conditions and lack of equipoise are the more dominant reasons for a lack of RCT’s rather than methodological issues such as blinding, rapidly changing technologies and standardisation of surgical techniques.

Outcomes research focuses on promoting and improving the standards of RCT’s where these should be performed (less than 40% of surgical effectiveness questions) and improving the standard of the alternative prospective and retrospective cohort research designs to assess surgical treatment effectiveness. Outcomes research includes preference and equipoise studies as well as the development of quality of life measures and decision tools for surgical patients.

The University of Sydney currently has 110 surgeons enrolled in the Masters of Surgery by coursework learning clinical research methodology combined with an original clinical research dissertation. An ambitious plan to further promote academic surgical pathways into practice is proposed by starting 5-10 post fellowship PhD’s in a programme of funded 3 year clinical and research scholarship in partnership with teaching hospital clinical units of research and education excellence. The National expansion of such programs will be discussed in more detail to promote academic surgery in Australia and New Zealand.

John P. Collins
Dean of Education, RACS and
Professorial Fellow, Department of Surgery, Melbourne University

Medical education research: a time for renewal
“...To be absolutely certain about something, one must know everything or nothing about it”

The rapid growth of biomedical research and patient care activities has resulted in these factors becoming the dominant source of funds and prestige for university staff. This has led to a decline in the recognition
and value of teachers, medical education and its scholarship. At the same time medical education research is said to lack scientific rigour, focus on the less important but easier to research questions and that its predominantly single institution nature fails to deliver generalisability results.

The Establishment of the Best Evidence for Medical Education (BEME) Collaboration initiative has endeavoured to circulate best evidence to support medical education and encourage a culture capable of nurturing more rigorous research and its funding. The creation of a critical mass of trained educational researchers to carry out multidisciplinary studies across multiple centres is now overdue. Although one accepts there is a need for research on the straight forward topics, the more pressing requirement is to focus on the association between the process of medical education and the clinical outcomes for patients. This type of research faces some daunting methodological challenges due to the many and complex confounding variables involved.

Unless multicentre studies using appropriate experimental design become the goal, medical education research will remain weak and unfunded and reforms leading to changes in how medical students and graduates are taught will continue on the basis of “nothing more than pragmatism, fashion and whim”. The many new and exciting innovative approaches to education now available across the continuum of learning deserve better. Professor Collins takes up his appointment as a Visiting Professor in Oxford in September 2009.

Peter R. Nelson

Developing a research program

For a surgeon-scientist, developing a sound research program is essential. With a busy clinical schedule, administrative duties, and teaching responsibilities all competing for your research time, it is a sound program that enables you to achieve success. The critical elements that go into such a program include: (1) designing your personal research training and development; (2) finding mentorship; (3) constructing a research team; (4) growing as a team leader/mentor; (5) developing multi-disciplinary collaboration; and (6) making the program “hum”.

Most important to this process is your passion and energy for your research. This can be for basic science, translational science, clinical trials, outcomes research, or research in education, all of which you will hear about. Your enthusiasm will motivate others around you. It will also make you more attractive to collaboration with nonclinical PhD researchers who are critical for both mentorship and team structure, as well as the synergy in research that results, making the sum greater than its parts. Inherent in this process is the environment in which you practice. The department philosophy has to include priority and recognition for academic and research pursuits and not solely a focus on clinical productivity. This is critical not only from the standpoint of commitment of resources, space, time, etc., but also for your acceptance into the greater mission of the department. You can sometime influence your environment, but is better if your priorities and goals are well matched.

Finally, research can bring significant resources to your department. Funding for your research activities is the “Holy Grail”. It is imperative, particularly in these tough economic times, that you demonstrate that you have a strong program that will succeed should investors grant you the funding. I will provide some personal tales, trials, and tribulations to help demonstrate these points.

Lillian S. Kao

Associate Professor of Surgery
University of Texas Health Science Center at Houston, USA

Design, power, and statistics

The objectives of this presentation are:

1. To briefly discuss alternatives for study designs
   a. Identify a research question
   b. Determine the study design that will provide the least biased answer for that type of study design
      i. Randomized controlled trials
      ii. Cohort studies
      iii. Case-control studies
      iv. Cross-sectional studies
   c. Determine an analytic plan

2. To discuss the rationale for sample size calculations and how to calculate them
   a. To review the necessary components for sample size calculations (Flowchart 1)
      i. Acceptable error rates: define Type I and II errors, one- and two-tailed alphas, power
      ii. Minimum clinically important difference
      iii. Predicted dropout rate
   b. To discuss strategies and their advantages/disadvantages for when subjects are scarce
      i. Accept greater uncertainty about treatment effects
      ii. Increase the signal/noise ratio
3. To review the key questions in determining which statistical test to use
   a. Univariate tests (one predictor and one outcome variable)
      i. Categorical outcome (Flowchart 2)
      ii. Continuous outcome (Flowchart 3)
   b. Regression analyses (multiple predictors and one outcome variable)
      i. Logistic regression
      ii. Linear regression
      iii. Survival analysis
4. To provide a list of resources for additional help

Flowchart 1: Calculating Sample Size

- What is your acceptable likelihood of error?
- Determine your Type I error rate or alpha (the likelihood that a difference is observed by chance alone)
- Determine whether to do a one or two-tailed test (testing a difference in one direction only or both directions)
- Determine your Type II error rate or beta (the likelihood of observing no difference when one truly exists)
- Is your primary outcome variable categorical or continuous?
  - Categorical: Determine the prevalence of the primary outcome in the control group
  - Continuous: Determine the variability of the primary outcome
  - Categorical: Determine the expected prevalence of the primary outcome in the intervention group
  - Continuous: Calculate the standardized effect size (expected effect divided by the standard deviation of the outcome variable)
  - Adjust for dropouts by a factor of 1/(1-proportion lost)

Flowchart 2: Choosing a univariate test for a categorical outcome

- Categorical
- Are the data paired or matched?
  [Yes] McNemar Test
  [No] Is the expected frequency of any square less than 5?
    [Yes] Fisher’s Exact Test
    [No] Chi-Square Test
Flowchart 3: Choosing a univariate test for a continuous outcome

**John Fletcher**
Professor of Surgery and Head of the University of Sydney Department of Surgery
Director of the Westmead Vascular Biology Research Centre and
Director of the Westmead Vascular Laboratory

**Running clinical trials**
A clinical trial requires a research plan which gives a clear outline of the potential impact of the intervention and its feasibility. The objectives define the specific aspects to be determined while the hypotheses are the specific predictions that a study is designed to test. The trial design determines what sorts of question the trial is able to answer and should cover the phase, blinding and any other distinctive features. The main purpose of a trial is to answer specific questions about the effects of a particular treatment. The design is important for determining validity. Phase 1 trials assess feasibility, phase 2 trials assess activity and adverse effects, phase 3 trials guide clinical practice by assessing benefits and harms of an intervention. The target population defines patients suitable for the intervention and inclusion and exclusion criteria should be carefully set. The trial setting defines the environment in which subjects will be recruited and treated. The nature of interventions and how they will be administered requires precise description. For drugs, this includes dose, titration, duration, modifications for toxicity, allowed and prohibited concomitant medication and rescue interventions. If best supportive care is to be used as a control arm, its nature and details should be described. Outcomes are the consequences that may occur in response to an intervention. The larger the number of outcomes tested, the greater the likelihood of spurious results. A single primary outcome should be distinguished from the remaining secondary and tertiary outcomes. A positive result on a single primary outcome selected before the data are examined provides much stronger support than a similar result selected from a multitude of outcomes after they have been tested. Early involvement of an experienced statistician is vital to address sample size, analysis plan, study duration and methods of dealing with multiple outcomes, missing data and attrition. Feasibility, especially of recruitment, is a key consideration. Sources of funding that may be appropriate for the proposed trial must be secured and include industry, local, state, national and international granting bodies.
Melina Kibbe  
Associate Professor of Surgery  
Division of Vascular Surgery  
Northwestern University Feinberg School of Medicine  
Chicago, USA  

Nuts and bolts of scientific writing  
This talk will discuss how to write a scientific article. Topics that will be covered include how to compose a precise title, concise abstract, purposeful introduction, descriptive methods, results section, and an appropriate discussion. In addition, how to write with clarity using precise and simple words will be discussed. And, how to avoid common writing flaws will be addressed.

David Watson  
Flinders University Department of Surgery  

Writing a successful grant application  
A grant application is a request for money! The proposal must be “sold” to the reviewers of the proposal. It must be targeted to the requirements of the funder, and it must be easily understood. Members of grant review panels do not always work in the specific area of your research, and they might not understand discipline specific language, jargon and abbreviations – keep it simple! You must be able to convince the assessing panel that your proposal is better than the others, and that your research is worth funding. Read the instructions, and comply with all format, page limits, structural requirements etc. Failure to do this will impact adversely on how your application is assessed.

In general, successful applications will be tailored to the requirements of NHMRC. This is the major funder of medical research in Australia, and its review processes are used by many second tier funders such as Cancer Australia, Heart Foundation etc. Most University internal funding schemes also use NHMRC assessments to guide funding priorities.

NHMRC assesses applications against 3 criteria – Science, Significance and Innovation, and Track record. 50% of the assessment based on the scientific merit of the proposal. However, it is important to score well against all 3 criteria.

Significance and Innovation – is the proposal addressing an important health problem? – i.e. what is the impact of the relevant disease burden on the community? If it isn’t important, it won’t be funded. Is the work innovative? – the proposal needs to be at the cutting edge.

Science – The proposal should be hypothesis driven. State the hypotheses clearly. Make sure the methods make sense, and that they address the hypotheses. Demonstrate that you can do the proposed research – i.e. it is feasible. Preliminary data and track record demonstrate feasibility. Assessor need to be convinced that there will be an outcome from your proposal, that the proposal is realistic (not overambitious), and that they will be investing wisely in your research.

Track record – A good track record convinces the assessors that the work will lead to an outcome. A poor track record suggests that an outcome is unlikely. If you don’t have a good track record, you need to take a strategic approach to getting one! Alternatively “buy” track record by including other investigators. Even better – do both! A good track record demonstrates that you have achieved useful outcomes in the past. What is considered?

Publications (only the last 6 years) – at least some should be relevant to the proposed research. For NHMRC the first investigator should have at least 20 listed – many have 50+. If you only have 1 or 2, you shouldn’t be a Chief Investigator.

Grants held currently and over the last 6 years. Previous NHMRC support is rated highly, but you must be able to link publications to grants – i.e. previous grants must have been used productively.

If your track record is not adequate, someone else needs to be the first chief investigator, even if you had the idea and wrote the grant!

Assemble a good team – few people have the expertise to do everything. A multidisciplinary team of researchers with complementary skills will tend to be rated better than a single investigator.

Structuring the application
Aims
Background
Sell the problem
Describe what you have done to look at this problem
Hypotheses
Methods
Developing a Career in Academic Surgery

Must match the hypotheses.
Don’t try to do too much or speculate too much

Feasibility
Show how you will be able to recruit patients or collect tissue samples etc. Even better, the trial has already started and patients are accruing, or the samples are already in the fridge!

Significance
What will the impact of funding your research be? Why should the money be given to you?

Jeffrey M Hamdorf
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Becoming an effective surgical teacher
The surgical academic engaging in teaching will find substantial challenges and rewards associated with building a vocational position in academic surgery. A significant burden of teaching responsibility generally falls to academic clinicians and whilst there a broader expectation that the academics would be good teachers, there are a few for whom teaching excellence is a “natural phenomenon”. Yet elements of effective teaching techniques may be drawn from the principles of adult education and may be identified in observing those who are seen as more effective amongst the teaching fraternity.

There are short courses which academics may participate in which promote improvement in teaching through theoretical and analytical means. Such courses are hosted by organisations including the RACS (Surgeons as Educators and Surgical Teachers Courses), as well as modular courses such as Teaching on the Run which is available through Australian teaching hospitals.

The teaching academic is generally then considered responsible for other issues pertinent to academic education including curriculum development, assessment and programme evaluation. In addition the academic will be responsible for tasks such as co-ordination of both formative and summative assessment exercises such as short case examinations and OSCE examinations.

Academics with a vocational interest in education will then consider further higher order activities whether they be at the undergraduate or postgraduate level. Such activities might be within one’s medical school faculty with involvement in core activities pertinent to education quality. The academic with a vocational interest in education will need to consider the research – teaching nexus and through this the manner by which one’s academic track record grows through the establishment of both research and teaching portfolios.

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Academic surgery and the RACS
The Foundation Members of the RACS were a mix of academic and non-academic surgeons but they recognized the need for research. This need was outlined as the fourth in a series of hierarchical objectives outlined in the original Memorandum of Association. This goal can be achieved either within or outside a University appointment but the College must prepare trainees for any of the varied career pathways available to the graduating Fellow. Thus, the College must equip trainees for a life of academic surgery as comprehensively as any other career path and then offer the opportunities for appropriate continuing professional development for the academic surgeon.

Does the College meet these goals?
At a Fellowship level, many of the academic activities, such as the ASC and various State, regional and specialty meetings offer the opportunities for academic surgeons to present their work and be supported in their activities. The Section of Academic Surgery offers specific opportunities with a particular objective being to enhance career pathways in academic surgery. The College therefore meets its objectives in relation to the academic surgery Fellow.

While the training process is academically intensive it is the demand for research endeavours which specifically equips the trainee for a potential life as an academic surgeon. In that regard the 9 specialties are quite different. Some of the College courses (CLEAR and STATS) form a very useful introduction to a potential career as an academic surgeon. However, while these are mandatory components of some specialty training programmes, the are not required in others. With regard to research output, mandatory requirements vary between a structured research year and merely presenting a paper at a State or NZ meeting. It goes without
saying that the graduate from programmes at these two extremes will have significant differences in their potential preparation for academic surgery.

So it is clear the one of the cornerstone objectives of the College is to support research and in doing so, academic surgery. What the College needs to do better is to decide what generic preparation trainees should have for a possible career in academic surgery and ensure all graduates have met this minimum standard.

John A Windsor
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A career in academic surgery: motivation and mentors
Academic surgery is the lifeblood of surgery; upon it the future of surgery depends. The rewards of academic surgery are sometimes overshadowed by the challenges and there is a misperception that academic surgery is struggling for survival. There is a collective responsibility to ensure that academic surgery doesn’t just survive, but thrives. Those committed to the acquisition of new knowledge and the transmission of that knowledge are academics, irrespective of their employer.

Research and education are the academic pillars of surgery, but this represents a narrow view of academic surgery, which encompasses other domains, including health services, quality and safety research. But above these is the higher calling for academic surgery departments and that is to train and equip the future leaders of surgery. Pivotal to successful leadership training is the recruitment and retention of our finest students into academic surgery. Recognizing and fostering the motivations and attributes of the successful prospective academic surgeon is also important in the recruitment process. The successful launch of a career in academic surgery also requires a commitment to high quality mentorship, and we will explore what this means in practice.
For further information

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