The ANZCA Council has announced funding of $861,168 for research projects in 2012. The funding supports 14 project grants, two novice investigator grants, two continuing project grants including a scholarship, one simulation/education grant, one academic enhancement grant and the pilot grant scheme.

These exciting research initiatives will be carried out in leading hospitals and universities in Australia, New Zealand and Hong Kong and will continue to advance ANZCA’s mission of serving the community by promoting safety and quality patient care in anaesthesia, intensive care, pain medicine and perioperative medicine.

Research awards

The Harry Daly Research Award has been awarded to Dr Neil Pollock for his project “Malignant hyperthermia: exome sequencing for gene discovery” (12/022).

The Mundipharma ANZCA Research Fellowship was awarded to Professor Michael Paech for his project “Methylnaltrexone to prevent intrathecal morphine-induced pruritus after caesarean delivery: a randomized clinical trial (The MEAN ITCH Trial)” (12/014).

The Pfizer ANZCA Research Fellowship has been awarded to Dr Philip Finch for his project “Investigating the adrenergic component of neuropathic pain” (12/024).

The St Jude Medical ANZCA Research Fellowship has been awarded to Dr Paul Wrigley for his project “Neurophysiological assessment of residual thermonociceptive sensation following spinal cord injury – a pilot study” (12/010).

The John Boyd Craig Research Award was awarded to Professor Paul Myles for his project “ENIGMA-II trial long term follow-up study” (12/008).
**Project grants**

**Malignant hyperthermia: exome sequencing for gene discovery**

Despite extensive research since the discovery of the main associated gene, malignant hyperthermia (MH) remains a potentially fatal complication of general anaesthesia in Australia and New Zealand, and across the globe. An MH episode can be avoided by use of specialised non-triggering anaesthesia in individuals known to be MH-susceptible.

Prior diagnosis can be made following a muscle biopsy, which is a highly invasive procedure requiring anaesthesia or preferentially by DNA testing, which requires only a small blood sample. The latter is available however in a limited number of families only.

The investigators have identified causative mutations and developed and implemented DNA-based diagnostic testing for many, but not all Australian and New Zealand families. This approach has been hindered because of the genetic complexity of the disorder as well as the observation that 20-50 per cent of affected families worldwide (including in Australia and New Zealand) do not have mutations in the main gene associated with the disorder.

This research will identify new genes associated with MH and characterise causative mutations, thus increasing the repertoire of DNA-based diagnostic tests available for prediction of MH-susceptibility.

Using state-of-the-art DNA sequencing technology, the genes in the human genome of MH-susceptible patients will be examined to identify novel genes associated with the disorder. Any identified variant will be tested for co-segregation with MH-susceptibility and exclusion from the general population. This information will provide the opportunity to develop and implement new DNA-based diagnostic tests for MH-susceptibility.

**Dr Neil Pollock, Palmerston North Hospital, New Zealand, Dr Robyn Gillies, Royal Melbourne Hospital, Australia, Dr Kathryn Stowell, Massey University, New Zealand, Dr Terae Bulger, Palmerston North Hospital, New Zealand**

$161,180 over three years

**ENIGMA-II trial long-term follow-up study**

This study will compare the long-term mortality/morbidity and persistent pain of patients enrolled in the ENIGMA-II trial who were randomised to nitrous oxide-free or nitrous oxide-containing anaesthesia.

ENIGMA-II is a large NHMRC-funded trial in 7000 patients, investigating the effectiveness of removing nitrous oxide from the anaesthetic gas mixture in patients with coronary artery disease undergoing major surgery.

The primary study hypothesis is that in patients undergoing anaesthesia for major surgery, avoidance of nitrous oxide will reduce the incidence of cardiac complications, stroke or death when compared with otherwise identically managed surgical patients receiving nitrous oxide as a component of their anaesthesia. It is strongly suspected that patients receiving nitrous oxide-free anaesthesia have lower rates of long-term morbidity and mortality than patients receiving nitrous oxide as part of the gas mixture for anaesthesia.

A follow-up study of the ENIGMA-II trial patients represents a unique opportunity to assess the effect of omission of nitrous oxide on long-term morbidity and mortality.

This study will undertake a medical record review and contact with patients to identify if any of the primary endpoints have been met. This will be a composite of death and major cardiovascular events and/or physical disability measured at one year after surgery. It is also planned to measure and compare the incidence of persistent pain after surgery.

**Professor Paul Myles, Alfred Hospital, Professor Kate Leslie, Royal Melbourne Hospital, Professor Matthew Chan, the Chinese University of Hong Kong, Prince of Wales Hospital, Associate Professor Phillip Peyton, Austin Hospital**

$180,000 over three years

**Methylnaltrexone to prevent intrathecal morphine-induced pruritus after caesarean delivery: a randomised clinical trial (The MEAN ITCH Trial)**

The majority of caesarean deliveries performed in developed countries are conducted under spinal anaesthesia. Intrathecal morphine has been used for pain relief after surgery, especially caesarean section, for several decades. The major limitation to this very effective way of relieving pain is the high incidence of morphine-induced side effects, especially itchiness, nausea and vomiting. Spinal morphine causes itch (pruritus) in 70-90 per cent of women: 20 per cent describe it as severe and 25 per cent request treatment to reduce its severity. This type of itch is particularly difficult to prevent or treat. Although itch is thought to be mainly a result of changes in the central nervous system, peripheral mechanisms outside the central nervous system also appear to be present.

Methylnaltrexone is a new type of drug, which was developed to stop the peripheral side effects (for example, constipation) of opioids such as morphine, without reducing pain relief. This study is the first designed to investigate the potential effect of methylnaltrexone in reducing intrathecal morphine-induced itch.

The study will establish whether this new drug is a useful means of addressing a very common and difficult to manage clinical problem.

**Professor Michael Paech, King Edward Memorial Hospital for Women, Western Australia**

$40,273
Long-term anaesthesia cognition evaluation (LOTACE) study

Changes in memory and thinking are known to occur after surgery and anaesthesia, especially in the elderly, but the full extent of these changes over the longer term has not been studied. Since over a million anaesthetics are administered in Australia every year to individuals over 60 years old (those at risk), the investigation of cognition changes after anaesthesia and surgery is an important problem with far-reaching implications.

It is planned to test elderly patients two years after anaesthesia and surgery to identify if these changes in cognition persist over a longer time period. This is important because if patients do not fully recover all their mental function after anaesthesia and surgery, this may impact on their normal daily activities. Furthermore, it is planned to identify the severity of the changes in cognition. If the cognitive changes become so severe that the patient is unable to carry out simple tasks then such consequences become problematic. Specific tests will be administered after two years, which will test cognition, but will also detect if the patient has declined to the point of dementia.

The second part of the study addresses the cause of the cognitive decline. After many years of research, we know that cognitive decline is not the result of bad anaesthesia, low oxygen or poor blood flow. The most prominent explanation now appears to be that these individuals are susceptible to a form of Alzheimer’s disease.

There is sound animal laboratory evidence that anaesthesia and surgery promote the Alzheimer’s disease state. In humans, the fluid around the spinal cord carries certain proteins, which can identify who will get Alzheimer’s disease. This is present many years before symptoms become evident but is able to identify those who will get the disease many years in the future.

We hypothesise that patients who develop cognitive changes in the longer term already have these proteins in the spinal fluid. Therefore, spinal fluid samples have been taken when spinal anaesthesia was administered for surgery. By analysing the proteins in these samples, patients who are susceptible to Alzheimer’s disease will be identified. Thus, by comparing the spinal fluid results with the assessment of cognition two years after the surgery, we will be able to assess if the decline in cognition or presence of dementia was related to the incipient presence of Alzheimer’s disease.

Associate Professor Brendan Silbert, Associate Professor David Scott, St Vincent’s Hospital, Melbourne

$60,000

Development of a behaviourally anchored rating scale to assess use of the WHO surgical checklist: the WHO’s BARS Study

Patients continue to be harmed during anaesthesia and surgery (as well as in other fields of healthcare). Interventions involving checklists, the promotion of teamwork, briefing and debriefing and education to promote changes in culture related to patient safety have been shown to improve the safety of surgery.

One such intervention, The World Health Organization (WHO) Safe Surgical Checklist has been widely adopted around the world and is believed to substantially improve patient safety, but it is not known which, if any, of the above elements is critical to achieving its potential to save lives and reduce harm.

The aim of this project is to develop and validate an instrument, a Behaviourally Anchored Rating Scale (BARS) to evaluate how the WHO surgical safety checklist is being used in operating rooms.

It is planned to develop a BARS through an interactive process of consultation with the experts who developed the checklist. Observers will be trained to use the BARS using videos with simulations illustrating desirable and undesirable use of the checklist. Videos made from high fidelity simulations of appropriate anaesthetic and surgical scenarios will be used to validate the BARS.

Professor Alan Merry, Associate Professor Jennifer Weller, Associate Professor Simon Mitchell, University of Auckland, New Zealand

$47,000

The influence of inspired oxygen concentration on oxidative stress, resolution of inflammation and lymphocyte subsets in human sub-lethal reperfusion injury

The focus of this investigation is to examine the effects of different concentrations of oxygen administered during surgery, on inflammation and perioperative infection risk. The immune system (particularly Natural Killer (NK) cells) becomes substantially deranged at the time of surgery. Usually this derangement is designed to cause inflammation which promotes healing. However, sometimes it can paralyse the ability of the body to defend against infection. Since infections following surgery have a dramatic impact on patients’ long-term outcomes, it is important that we understand the effect of a simple and universal intervention on the immune system. Our preliminary work demonstrates that it is now possible to measure tissue toxicity directly attributable to oxygen tension, using compounds called isofurans. We will further explore the relationship between immune function and oxygen-specific free radicals in the perioperative period.

Associate Professor Tomas Corcoran, Professor Martyn French, Professor Trevor Mori, Professor Anne Barden, Professor Emile Mas, Royal Perth Hospital, Australia

$48,000
The optimal timing of preoperative smoking cessation

This project aims to determine the optimal timing of preoperative smoking cessation in patients undergoing a broad range of surgery. It is generally accepted that smoking increases the risk of surgery and that preoperative smoking cessation should be encouraged. However, acute abstinence from tobacco may precipitate withdrawal syndrome and could complicate postoperative recovery. A large, prospective cohort study will be conducted to determine the optimal period of preoperative smoking cessation and the impact of smoking (and its abstinence) on postoperative outcome. The study will identify the risk of smoking and will recommend an appropriate period of preoperative smoking cessation. As millions of smokers undergo surgery each year, this will facilitate decision-making and will guide perioperative management worldwide.

Dr Matthew TV Chan, the Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong

$43,000

Tissue perfusion monitoring in paediatric liver transplantation using near infra-red spectroscopy

This project aims to improve the safety of liver transplantation in paediatric patients by developing a Near Infra-Red Spectroscopy (NIRS) tissue oximetry-based protocol for hepatic monitoring post-operatively to ensure adequate hepatic perfusion after the transplantation process. During and after liver transplantation, poor blood flow to the transplanted liver can have catastrophic consequences, including liver failure, brain damage and death. In liver transplantation, the health of the transplanted liver is assessed using daily ultrasound of the liver blood vessels and blood tests checking the liver’s function. A continuous, real-time assessment of hepatic oxygenation status would be very helpful in guiding management and detecting acute vascular insufficiency.

NIRS uses optical techniques to assess average tissue haemoglobin oxygenation levels and thus assessment of the adequacy of blood flow in real-time. NIRS is used clinically in cardiac surgery to assess brain oxygenation during heart operations, and is used in many different areas of research into tissue oxygenation and perfusion. The investigators are interested in applying this technology to monitor patients undergoing liver transplantation. A porcine model of acute hepatic ischaemia will be developed to test the ability of NIRS based tissue oxygenation monitoring to detect significant changes in hepatic blood flow.

Dr Justin Skowno, Dr Jonathan Karpelowsky, Professor David Little, The Children’s Hospital at Westmead, Australia

$41,000

An exploratory study of perceived risks, benefits and barriers to the use of selective decontamination of the digestive tract in Australasian ICUs (SuDDICU)

Selective decontamination of the digestive tract (SDD) is a therapy to decrease hospital-acquired infection, which may reduce mortality in ICU patients. SDD involves the application of antibiotic pastes to the mouth, throat and stomach and a short course of intravenous antibiotics. Despite strong evidence from randomised controlled trials and systemic reviews, this intervention has not been widely adopted by the ICU community in Australia and New Zealand due to fears that perceived overuse of antibiotics will lead to infections such as MRSA and Clostridium difficile. This research program will involve parallel studies in Australia, New Zealand, Canada and the UK to explore and compare local and international perspectives on SDD. The aim and objectives of the study are to identify the views of stakeholders (including intensive care consultants, senior nurses, microbiologists and ICU directors) about the current evidence relating to the use of SDD, with respect to clinical benefit, clinical risk, environmental risk and cost-effectiveness, the strategies that may overcome perceived barriers to the implementation of SDD and the acceptability and feasibility of conducting a randomised controlled trial of SDD in ICUs.

Dr Ian Seppelt, Professor John Myburgh, Dr Parisa Glass, George Institute for Global Health, Dr Andrea Marshall, University of Sydney, Professor Jeffrey Lipman, Royal Prince Alfred and Women’s Hospital, Dr Jillian Francis, University of Aberdeen, Scotland, Professor Brian Cuthbertson, Sunnybrook Health Sciences Centre, Canada

$42,000

Neurophysiological assessment of residual thermoceptive sensation following spinal cord injury – a pilot study

Injury to the spinal cord occurs more commonly in the younger population and has lifetime consequences for health and productivity. Neuropathic pain remains one of the most difficult consequences of spinal cord injury (SCI) to manage. It is a major cause of suffering and adds to the physical, emotional and societal impact of the injury. Despite the use of best available treatments, two-thirds of people experiencing neuropathic pain following SCI do not achieve satisfactory pain relief. Clinical examination has a limited capacity to detect partial fibre tract preservation following SCI. While neurophysiological tests are more sensitive, none are routinely available that assess temperature and pain transmission. A consensus approach for the assessment of sensory preservation following SCI, particularly subclinical spinothalamic tract preservation is yet to be achieved. Improved sensory assessment tools are desperately needed for ongoing SCI pain research. This pilot project aims to determine whether contact heat evoked potentials (CHEPS) are able to detect subclinical spinothalamic fibre (STT) preservation following spinal cord injury (SCI). Aberrant activity from preserved spinothalamic tract fibres is proposed to be a crucial contributor to the maintenance of central neuropathic following SCI. This research will improve our capacity to assess more objectively the neurophysiological pathways affected by SCI particularly those associated with the development of neuropathic pain. This in turn will assist in the development of rational treatment pathways for SCI neuropathic pain.

Dr Paul Wrigley, Associate Professor Philip Siddall, Pain Management Research Institute, Royal North Shore Hospital, Sydney

$28,000
ANZCA announces 2012 funding for medical research continued

Investigating the adrenergic component of neuropathic pain

This study will investigate a crucial but neglected element in the mechanism of chronic pain that develops after injury to the central nervous system or peripheral nerve trauma.

In certain patients, a primary sympathetic deficit or secondary changes in sympathetic activity may alter blood flow and intensify inflammation. In addition, injury may increase the expression of α1-adrenoceptors on intact or regenerating nociceptive neurons, which, in turn, heightens their excitability to the sympathetic neurotransmitter noradrenaline. Interaction between these mechanisms could cause pain to spiral upward.

To test this hypothesis, skin samples will be obtained from patients in Australia, Germany and/or the USA with complex regional pain syndrome, painful diabetic neuropathy or post-herpetic neuralgia. Immunohistochemistry will be used to determine:

1. Whether the expression of α1-adrenoceptors is altered on keratinocytes or nociceptive afferent fibres in the skin of patients with sympathetically maintained pain.
2. Whether heightened expression of cutaneous α1-adrenoceptors is associated with immunohistochemical signs of chronic inflammation.

Neuropathic pain is a common condition that is frequently misdiagnosed, difficult to treat and poorly controlled, as the mechanisms are not well understood. These studies will clarify the mechanism of sympathetically maintained pain in patients and open up new avenues for treatment.

Dr Philip Finch, Professor Peter Drummond, Murdoch University, Western Australia
$30,000

“Light” versus “deep” sedation for elective outpatient colonoscopy: recall, procedural conditions and recovery

Colonoscopy is one of the most common medical procedures performed worldwide and in Australia it is usually performed under sedation administered by an anaesthetist.

Currently it is unclear what depth of sedation should be provided to optimise the balance between patient comfort, lack of procedural recall and safety.

While serious complications during sedation are rare, colonoscopy is performed so frequently that a strategy that is acceptable to patients, but results in fewer complications, would have a major impact on patient safety.

Colonoscopy is usually an outpatient procedure and so a sedation approach that allows rapid return to normal function without residual cognitive impairment is also desirable.

In this trial, consenting patients undergoing elective outpatient colonoscopy under sedation at The Royal Melbourne Hospital will be randomly allocated to receive either “light” (BIS 70-80) or “deep” (BIS < 60) sedation. Endpoints, including recall, complications, satisfaction and cognitive function will be assessed.

This study will provide guidance to anaesthetists aiming to deliver an optimal sedation strategy balancing patient amnesia, avoidance of complications and fast recovery. It is currently unclear how sedation for colonoscopy should be targeted with these goals in mind and this study will add to the current state of knowledge.

Dr Megan Allen, Professor Kate Leslie, The Royal Melbourne Hospital
$19,000

Predictors of persistent postsurgical pain following total knee joint arthroplasty

Knee joint replacement is a common surgery, often performed in people with chronic arthritis. While knee joint replacement is an effective procedure in most people, many have ongoing pain lasting months or years after the surgery.

This study, involving researchers at North Shore Hospital, AUT University and the University of Adelaide, will try to better understand what factors predict the development of ongoing pain after knee joint replacement.

Three hundred patients scheduled for primary total knee joint arthroplasty will be included in the study. Patients will undergo preoperative testing of psychological, neurophysiological and genetic factors that may influence post operative pain outcome. Individual clinical information also will be collected.

The study will follow up knee replacement patients for six months to see how many still have pain at this time and which of the previously measured factors are significant and independent predictors of ongoing postsurgical pain.

Determining key factors that predict ongoing postsurgical pain will assist in the identification of at-risk patients who may benefit from targeted preoperative interventions, alternative anaesthetic or surgical protocols or more aggressive, individualised postoperative pain management protocols.

Dr Michal Kluger, North Shore Hospital, Professor Peter McNair, Dr Gwyn Lewis, Dr David Rice, AUT University, New Zealand, Professor Andrew Somogyi, University of Adelaide, Australia
$18,000

Recovery and wellbeing after major surgery: complications, functional recovery and the measurement of disability-free survival

Anaesthesia studies typically focus on physiological measurements and recovery times, but this overlooks much of what the patient considers to be important in a good outcome after their surgery.

Adverse events are reported, but most are minor and transient. Cognitive functions are sometimes tested, but these have an unclear relationship to true dementia or disability.

Outcome studies suggest that a substantial proportion of people undergoing major surgery, particularly those who are elderly or have pre-existing morbidity, never fully recover and seem to have accelerated disability in the months and years that follow.
This project will evaluate a range of psychometric instruments measuring quality of recovery, quality of life and disability for up to one year after undergoing major surgery in order to develop a generic, validated measure of disability-free survival for patients.

Professor Paul Myles, Ms Sophia Wallace, Alfred Hospital, Dr David Mclroy, Columbia-Presbyterian Medical Center, New York, USA, Dr Mark Shulman, Royal Melbourne Hospital, Professor Jennie Ponsford, Monash University

$30,000

Novice investigator grants

Hyaluronidase and peripheral nerve block– influence on onset time, extent of block and plasma local anaesthetic levels

This study will investigate the efficacy of hyaluronidase in the Fascia Iliaca Compartment Blockade (FICB) regional anaesthesia technique, examining the effect of hyaluronidase on the speed of onset and extent of blockade as well as the venous blood levels of the co-administered local anaesthetic.

In the FICB, local anaesthetic is delivered in the proximity of three target nerves – the femoral, obturator and lateral cutaneous nerve of the thigh – and it must spread a variable distance to block each of these. Frequently it doesn’t reach one or more of these nerves in sufficient quantity to provide adequate anaesthesia.

This study will investigate the hypothesis that when hyaluronidase is added to a pre-operative, ultrasound-guided FICB in patients undergoing unilateral knee arthroplasty it will increase the likelihood of successful nerve blockade.

Patients undergoing total knee replacement surgery will be tested in a randomised, controlled, blinded clinical trial. All patients will undergo ultrasound-guided FICB before the commencement of surgery with half of the patients having hyaluronidase added to the standard local anaesthetic.

The success of the blockade will be determined by testing sensation of the thigh and strength of the thigh muscles. Venous blood samples will be collected and plasma ropivacaine levels determined by gas chromatograph mass spectrometry. The effect of hyaluronidase will be established by comparing groups with appropriate statistical tests.

Dr Andrew Lansdown, Royal Prince Alfred Hospital, NSW

$12,215

The paediatric pharmacokinetics and pharmacodynamics of parecoxib

Parecoxib is a non-steroidal anti-inflammatory drug used in paediatric practice, however the effectiveness and the appropriate dosing are unknown in children.

Two groups of children will be invited to participate in the study: children having tonsillectomy and children having orthopaedic and general surgery.

Children having tonsillectomy will be randomly divided into three groups. Each group will be given a different dose of the drug and pain following the tonsillectomy will be assessed and correlated with the blood concentrations of the drug and its metabolite.

The other group of children undergoing orthopaedic and general surgery will receive a 1mg/kg dose of parecoxib and blood assays taken over a longer period of time. This later group will allow the modelling of the elimination of parecoxib from the body.

This study will establish pharmacokinetic and pharmacodynamic data which will assist in the safe and effective use of parecoxib in children.

Dr Elsa Taylor, Starship Children’s Health, Auckland, New Zealand

$8000

Simulation/education grant

Disposition of sedative, analgesic and antibiotic drugs during simulated extracorporeal membrane oxygenation

Extracorporeal membrane oxygenation (ECMO) is a salvage therapy for critically ill patients where a large percentage of the cardiac output flows through a circuit located outside the body. Oxygenation and carbon dioxide removal occurs and blood is returned providing respiratory and/or circulatory support. This is like a cardiopulmonary bypass machine but is continued for weeks rather than hours.

The extracorporeal circuit has been one of the major advances in modern medicine. Experience with adult ECMO is limited but use appears to be increasing.

Despite its major benefits, ECMO can induce a wide variety of pathophysiological changes in the body as the blood comes into contact with the non-endothelial artificial surfaces of the circuit. This may then substantially affect the pharmacokinetics of various medications. These changes can lead to therapeutic failure or drug toxicity both of which are deleterious to the patient.

It is believed that numerous patient and circuit factors play a role in altering the drug pharmacokinetics during ECMO. However these factors have not been fully evaluated in the context of current ECMO technology in critically ill patients.

The aim of this study is to describe the disposition of commonly used sedative, analgesic and antibiotic drugs during simulated extracorporeal membrane oxygenation in order to assist clinicians to develop evidence-based dosing schedules and better sedation protocols.

The study will aim to achieve the objective of determining the degree of sequestration of sedative, analgesic and antibiotic drugs in simulated extracorporeal circuit using a centrifugal pump and hollow fibre membrane oxygenators.

Dr Daniel Mullany, Dr Kiran Shekar, Professor John Fraser, The Prince Charles Hospital, Dr Jason Roberts, The Royal Brisbane and Women’s Hospital, Professor Maree Smith, The University of Queensland

$35,000
Grant review process

Thank you to all reviewers listed below who reviewed a grant, and in some cases two, for your invaluable contribution to the grant process. The ANZCA Research Committee is extremely grateful for your assistance.

Each year, the ANZCA Research Committee reads the grants, selects three reviewers for each grant on the basis of their expertise and relevance to the project, reads the reviews, collates the information and acts as spokesperson for each grant and a recommendation to the ANZCA Council.

The grant review process is rigorous and transparent. Conflicts of interest are recorded and members of the committee are excluded from consideration of any grants for which they have a conflict.

The presence of Dr Angela Watt, our community representative, adds an extra safeguard.

Research Committee members are:

Professor Alan Merry, Chair
Associate Professor David Scott, Deputy Chair
Dr Andrew Davies
Professor Tony Gin
Dr Chris Hayes
Professor Paul Myles
Professor Michael Paech
Professor Tony Quail
Professor Stephan Schug
Associate Professor Tim Short
Associate Professor Philip Siddall
Associate Professor David Story
Professor Bala Venkatesh
Dr Angela Watt, community representative
Associate Professor Jennifer Weller
Dr Dan Wheeler

Grant reviewers for the 2012 grant round

Professor Tony Absalom
Dr Christopher Acott
Dr Carolyn Arnold
Associate Professor Robert Baker
Dr Maryanne Balkin
Dr Michael Barrington
Dr Guy Bashford
Dr Vanessa Beavis
Dr Stephen Bolsin
Dr Simon Body
Dr David Bramley
Dr Roger Browning
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Professor Matthew Chan
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Professor Colin Goodchild
Dr Roger Goucke*
Dr Keith Greenland
Professor Russell Gruen
Dr Philip Guise
Dr Kerry Gunn
Dr Richard Halliwell
Associate Professor Michael Harrison
Professor Robert Helme
Dr Brien Hennessy
Dr Malcolm Hogg
Dr Jason Holland

Academic enhancement grant

Cognitive decline following anaesthesia and surgery – is inflammation the cause?

Cognitive decline is a frequent morbidity and a major cause of poor quality of recovery following anaesthesia and surgery.

However, it is an area that could be targeted for interventions. Drugs aimed at modulating the inflammatory process can be tested in both animal and human experiments to identify if cognitive recovery can be improved. Successful follow-on translational research could improve recovery for a vast number of patients with flow on effects for less suffering and better use of national resources.

This project is a vital “proof of concept” investigation to determine if inflammation is an important cause of cognitive decline. The clinical significance is that further research can be done to investigate interventions to reduce the inflammatory response.

By giving drugs, or using different techniques it may be possible to reduce the impact of anaesthesia and surgery on brain recovery. We have already identified that the anaesthetic drug is an unlikely candidate as the most important cause of cognitive decline, but it is possible it may act as a promoter and enhance the potential for cognitive decline in susceptible individuals.

A surgical group will also be tested with two different anaesthetics to identify whether there is a greater degree of cognitive decline in the surgical preparation than just the inflammation preparation.

This academic enhancement grant will not only help to achieve this important piece of research, but will also help to build capacity for anaesthesia clinicians to embark on basic science research to improve their understanding of drugs and techniques that are used in everyday practice.

It will also provide capacity for anaesthetists to do research higher degree training.

Professor Colin Royse, The Royal Melbourne Hospital, The University of Melbourne

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*Reviewed more than one grant