Our Structure and Governance

The Burns Trauma & Critical Care Research Centre (BTCCRC) was established in 2004 in response to the Bali bombings. The devastation and tragedy of this event focused national and international attention on burns victims and emphasized that there was a critical need to improve the early and ongoing treatment and outcomes of burns and critically ill patients. The outstanding response from the critical care, burns, emergency medicine and anaesthetics teams of the RBWH and UQ highlighted the skill and expertise we possess in this area.

Our Centre is directed by Prof Jeffrey Lipman and co-directed by Dr Michael Rudd, who are directors of their respective hospital departments and carry an extensive clinical and administrative load. The Chair is Prof André van Zundert, Professor of Anaesthesia within the School of Medicine (SOM) and the research manager is Dr Sia Athanasas. The Director, Chair, research manager and research theme leaders meet regularly to discuss the running of the centre and to ensure that all obligations to UQ/SOM are met.

The governance structure of the Centre has been formalised through the creation of an advisory board to steer the Centre’s strategic direction, and to clarify accountability with collaborators and funding bodies in order to attract large-scale and international funding. The stability of the BTCCRC exists by virtue of our major supporter, the RBWH Foundation and our major partners the Queensland Government and the Australian Defence Force.

The research within the centre is continually expanding and is now divided up into six core themes.

- Critical Care—Management and outcomes of critically ill patients.
- Drug Dosing and Pharmacokinetics—Antibiotic dosing, distribution and pharmacokinetics in critically ill patients.
- Burns — the overall management and outcomes of burns patients.
- Anaesthesia—evaluating new procedures and safety of procedures for anaesthetising critically ill patients.
- Emergency Medicine—improving outcomes and evaluating new processes for treating patients in the Emergency Department.
- Military Medicine—managing pre-hospital care, trauma and rehabilitation medicine.
Our Mission

The BTCCRC was established to further advance and improve the level of treatment and care given to burns and critically ill patients through world-class research-based clinical practice.

It began as a collaborative venture between the Royal Brisbane & Women's Hospital (RBWH) Burns and Intensive Care Units, The University of Queensland (UQ) and has incorporated the Departments of Anaesthesia and Emergency Medicine. In recent years the centre has undertaken research into military medicine.

Our Aims

The main aims of our research centre are to:

- Improve both the survival and outcome of patients by conducting high quality research in the area of Burns, Trauma, Critical Care, Emergency Medicine, Military Medicine and Anaesthesia in general.
- Provide a research-driven evidence base that informs clinical practice and policy in the above research themes.
- Establish local, national and international collaboration in these areas thereby increasing research opportunities.
- Enhance the research training and knowledge base of postgraduate students and staff in the above areas.
Researchers Creating Change in Patient Care

The Laureate of the 1937 Nobel Prize in Physiology or Medicine for the discovery of vitamin C, Albert von Szent-Györgyi, stated: “Research is four things: 1) brains with which to think; 2) eyes with which to see; 3) machines with which to measure; and 4) money.” Healthcare is struggling worldwide due to increasing demands, escalating economic constraints and unsatisfactory quality despite the hard work of well-trained and well-intentioned clinicians. It’s time to change our strategy fundamentally: maximising value for patient-centred care which is organised and tailored around what patients need. This will allow healthcare to achieve best patient outcomes as efficiently as possible and at the lowest cost. Important outcomes in a high value health care delivery system, based on team work.

Few doctors can tell you about their patients’ outcomes, especially their long term quality of life. When these outcomes – that matter to patients – are collected, measured comprehensively and reported publicly, other providers face tremendous pressure to improve and adapt their practices. The transformation to value-based healthcare can be further enhanced through fundamental good research. Rapid improvement in any field requires measuring results. Team work improves and excels by tracking progress over time and comparing their performance to that of peers.

Health care organisations (e.g. hospitals) are flying blind and battle over arbitrary cuts in deciding how to improve processes and redesign care while trying to improve its value. Researchers can make a huge difference as the community benefits from patient-oriented research. Every industry knows that investment in research provides new ideas and new products that are needed in the pipeline to contribute to their survival. Good medical research provides a huge economic return on investment, measured in terms of jobs created, saved health costs, reduced morbidity and disability and the substantial gains in life expectancy (mean age for Japanese people nowadays is 83 years!), resulting in longer and more productive lives. This dramatic increase in life expectancy (3 additional months each year) results in a numeric surge in the aging population, which brings with it, an increasing burden of chronic non-communicable diseases. The sheer number of people entering old age will challenge national infrastructures, such as healthcare. The longer we delay adequate steps, the more costly and less effective the solutions are likely to be. But if you think research is expensive, try disease.

Rapid advances in medical knowledge constantly improve state of the art healthcare. Researchers are stakeholders in overall healthcare of patients. Without research there is no progress in medicine. Research needs to be better coordinated if we are to discover the most cost-effective ways to maintain healthy lifestyles. The question that needs to be answered remains to be: what is the value of good research? Value is the ratio of the quality (or good outcome) conferred to cost expended. Rigorous systematic measurement of results is the single most important step in improving health care outcome. Data-driven, outcome-oriented practice will be instrumental in the quest for sustainable healthcare in the future. Furthermore, collaborative research pairs science and clinic to the benefit of patients.

We at BTCCRC are cultivating leaders in the field who will champion translational research and bring the professional medical standard to the highest level. Yet, we also need young researchers, driven by intellectual curiosity, and passion for quality and research. Research is exciting and fun, and each contribution counts in solving the sheer endless mystery of medicine. However, life is not always a bed of roses. The burden of finding funds can result in headaches, sleepless nights, disappointment and frustration. We, as scientists, need to inform the community (e.g. politicians, institutions, benefactors) regarding the importance and benefits of investing in research through funding.

As medical researchers we aim for better, longer and healthier lives and are dedicated to the most important person we care for, our patient. What matters in healthcare is excellence in outcomes and pride in the value we deliver. People who are driven by passion in research, will change the world.
2016 was again a fruitful year for BTCCRC and a year of much growth. We welcomed Dr Benjamin Snow, Dr Helmet Shoengen, Lizanne Dalgleish, Dr Adrian Chin, Dr Gareth Collins, Dr Elizabeth McLellan, Dr Alexandra Markwell, Dr Nathan Brown, Kimberley Ryan, Dr Anthony Bell, Dr John Burke and Dr Daniel Bodnar.

To further enhance opportunities for research, BTCCRC and RBWH ICU staff have formalised research collaborations with RBWH anaesthesiology staff. These collaborations which are facilitated by monthly meetings have already resulted in two pharmacokinetic-based projects that have enrolled patients. Furthermore, Dr Rochelle Ryan, an anaesthesiology registrar, has commenced an MPhil as part of this research endeavour. We look forward to seeing more successes from this collaboration in the future.

Our funding success rate was 59% this year, an increase of 17% from last year. We were awarded grants from NHMRC, RBWH Foundation, ANZCA, UQ, Intensive Care Foundation, the Ian Potter Foundation, National Blood Authority (NBA), Emergency Medicine Foundation, QLD Genomic Health Alliance, RBWH, The Prince Charles Foundation, Queensland Health (QH), Merck, Sharpe & Dohme (MSD), Rebecca Cooper Medical Research Foundation, Australian Society of Anaesthetists (ASA), the Flemish Society for Critical Care Nurses, National Heart Foundation and The Australian Centre for Health Services Innovation (AUSHSI).

Congratulations to Prof Jason Roberts who was awarded an NHMRC Practitioner Fellowship and to Dr Despoina Koulenti and Dr Fekade Sime who were both awarded UQ Research Fellowships, to Dr Kerina Denny and Dr Dylan Flaws who won QH Junior Doctor Fellowships. Congratulations also goes to the following staff and students on being awarded grant funding this year, Jeffrey Lipman, Jason Roberts, Suzanne Parker, Os Cotta, Louise Cullen, Rebecca Christensen, Victoria Eley, Rochelle Ryan, Dwayne Jackson, Andre van Zundert, Julie Lee, Anthony Bell, Kevin Chu, Despoina Koulenti, Claire Roger, Martha Drury, Jenny Paratz, Tavey Dorofaeff, Michael Rudd, Gareth Collins, Lizanne Dalgleish, Michael Muller, Anita Plaza, Kersi Taraporewalla, Heather Reynolds, Stijn Blot, Jaimi Greenslade, Gladness Nethathe. Overall, our researchers won over $11 million in research funding.

We proudly congratulate our Research Higher Degree students who graduated this year – Dr Hafiz Abdul-Aziz PhD, Dr Aziz Alobaid PhD, Dr Bernie Bissett PhD, Ms Michelle Donovan MPhil, Dr Suzanne Parker PhD and Dr Natasha van Zyl PhD.

Our NHMRC Centre of Research Excellence (CRE) REDUCE program enjoyed its first 12 months with an official launch on 29th July by the Honourable Doctor Anthony Lynham MP, Minister for State Development and Minister for Natural Resources and Mines. The first workshop titled “POPULATION PK MODELLING AND DOSE OPTIMISATION: PMETRICS/BESTDOSE WORKSHOP” was held in October at the UQ St Lucia campus with international guest speakers Prof Michael Neely from the USA and Prof William Hope from the UK attending.

We thank all of our industry colleagues who demonstrated that they value high-quality research, understand that it must be independent, free of bias, know that it does cost money and that research results must be ‘pushed’ for uptake! Special thanks to the Turkington Family, the Bayer Family, Red Blanket Miracle for their continued support of our research efforts and to our funding partners the RBWH Foundation and the Australian Defence Force for their continued support. We wish to also thank the Australasian Hellenic Educational Progressive Association (AHEPA) and Dr Benjamin Cohney for their generous support of our centre.

The year culminated in our 3rd Annual Heartfelt Dinner which again was a success, thanks to the organising talents of Karen Gallagher, Jennifer Tucker, Elizabeth Peat, Ben Zabel, Gerry Kucharski, Lucy Barnes and Sia Athanassas. We raised just under $28,000 through the sale of art works, auction items and raffles. We sincerely thank our prize donors, sponsors and volunteers who helped make this an evening to remember.

I wish to thank our talented and hard-working staff and students for making this yet another great year and I wish you all the very best for 2017.

Prof Andre van Zundert
As one of the top performing research centres within the SOM, we again in 2016 have continued our rising trajectory. This year saw our highest publication record to date, with 191 journal articles, 10 book chapters, 1 book and 5 conference proceedings published.

The funding arena was extremely competitive again this year, however our grant success rate increased markedly from 42% in 2015 to 59% in 2016. This is the second highest success rate in the history of BTCCRC. In total, we submitted 78 grant applications this year—the largest submission to date (up by 15 compared to 2015).

This year our staff supervised 16 PhD, 3 Masters and 1 MBBS/Hons students enrolled within our centre. Seven of these PhD students, 2 of these Masters students and our MBBS/Hons student completed their degree this year. In addition, many of our research staff supervised students outside the School of Medicine and/or outside UQ. More enrolments are expected in 2017 as our collaborations increase and as interest in our research grows.

Our international collaborating institutions number 121 with 225 collaborators and our national and local collaborating institutions stand at 53 with 184 collaborators.
Professor Jeffrey Lipman
MBBCh DA (SA) FFA (SA) FFA (CritCare) (SA) FCICM MD
Director of BTCCRC; Director of Department of Intensive Care Medicine (DICM), RBWH; Professor, Anaesthesiology & Critical Care, The University of Queensland

Jeff is the Director of the BTCCRC, Director of Department of Intensive Care (DICM), RBWH and Professor of Anaesthesiology & Critical Care, University of Queensland and Honorary Professor, Department of Anaesthesia and Intensive Care, Chinese University of Hong Kong. He has qualifications in anaesthesia and intensive care and has set up and run a number of Intensive Care and Trauma Units in South Africa before coming to Australia in 1997. He is the author of over 455 peer reviewed publications, 30 book chapters, has been invited to present at many national and international conferences and is a reviewer for a number of high quality international journals and granting committees, including the NHMRC. Jeff has been instrumental in developing the anaesthesiology & critical care component of the graduate medical program for Queensland and continues to lecture to medical and postgraduate students. He is site Principal Investigator for numerous multi-national and international trials. Research interests include all aspects of management in intensive care, resuscitation of burns and pharmacokinetics of antibiotic dosage. His research into antibiotic usage in acute situations has received international recognition whilst he has received multiple national and international awards. Jeff is involved in most research projects, oversees the direction of the research centre, mentors staff and supervises 10 postgraduate students.

Dr Michael Rudd
MBBS FACS OAM PhD
Co-Director BTCCRC, Director of Burns Unit, RBWH

Michael is the Co-Director of the BTCCRC and the current Director of the Adult Burns Unit at RBWH. He has fellowships in Burns and General Surgery. Michael has completed a PhD in transplantation immunobiology. His research interests are in all aspects of burn management, burn pathophysiology and immunobiology. His clinical and research background make him uniquely qualified to work as a burns surgeon and scientist at both the bedside and in the laboratory.

Professor André van Zundert
MD, PhD, FRCA, EDRA, FANZCA
Professor & Chairman, Anaesthesiology & Critical Care; Chair of BTCCRC, The University of Queensland; Snr Staff Specialist Department of Anaesthesia & Perioperative Medicine, RBWH; Professor of Anaesthesiology at the Universities of Ghent (Belgium) and Maastricht (Netherlands).

André has qualifications in anaesthesia, intensive care and trauma care, graduating as a medical doctor cum laude, at the University of Leuven (Belgium) in 1978, and with a PhD in obstetric anaesthesia from the University of Leyden (Netherlands) in 1985. He is the author of over 300 peer-reviewed publications including 6,123 citations [Hirsch Factor: 35; Google Scholar i10-index: 85]. 57 book chapters and three standard textbooks, of which his book, the ‘Atlas Functional Anatomy for Regional Anaesthesia and Pain Medicine’ was published in 2015. He has been invited to present at hundreds of international conferences and is a reviewer for a number of highly regarded international journals. He has held several positions (Secretary-General, President and Honorary Member) in Anaesthesia Societies and was President of several international congresses, including world congresses. André has been instrumental in developing the UQ ‘Centre of Excellence and Innovation in Anaesthesia’ at RBWH, which underpins the importance of teaching, training via simulation, testing anaesthesia equipment, quality care and research. His aim is to boost research in anaesthesia within the department, but also to collaborate with other departments and colleagues from all over Australia and beyond. André is a strong believer in ‘Teach the teacher’ and ‘Problem oriented education’. His research interest is in airway management, regional anaesthesia and obstetrics, for which he received international recognition (13 awards) and two Royal Distinctions (from HRH Queen Beatrix, The Netherlands & HRH King Albert II, Belgium). He was a founding member of The European Society of Anaesthesiology (convenor of the first two conferences in Brussels, Belgium) and founder of the Pain Society (Netherlands). He has been greatly acknowledged for his contributions to: 1) Pain Relief in Childbirth (the suggested technique is still practiced all over the world in the labour ward); 2) providing safe and effective airway management using videolaryngoscopy; and 3) Pain therapy. For the ‘Centre for Excellence & Innovation in Anaesthesia,’ Professor van Zundert received the University of Queensland 2014 Innovation Award.
INTENSIVE CARE MEDICINE

Prof Jeffrey Lipman MBBCh DA FFA FFA (CritCare) FCICM MD
- management in intensive care, resuscitation of burns and pharmacokinetics of antibiotic dosage.

Dr Jennifer Paratz MPhty FACp PhD Grad Cert Ed (Medical & Health Sciences)
- management and outcome of critically ill and burns patients, myocardial dysfunction, exercise and metabolism, diagnosis of sepsis in burns patients.

Dr Joel Dulhunty BSc (Hons) MTH MBBS PhD FRACMA
- epidemiology of critical illness and sepsis, burn injury prevention, health services research.

A/Prof Jeremy Cohen MBBS BSc MRCP FRCA FCICM
- critical care endocrinology; tissue corticosteroid resistance and adrenal insufficiency; gene expression in septic shock; epidemiology of subarachnoid haemorrhage.

A/Prof Robert Boots MBBS (Hons) FRACP FCICM PhD Grad Dip Clin Epi MMedSci MHealth Admin IS
- clinical epidemiology, management of burns; prevention of ventilator associated pneumonia.

Dr John Gowardman BSc BHB MBChB FRACP FCICM
- intra vascular device associated infections and diagnosis, Biofilm formation on vascular devices, epidemiology.

Dr Judith Bellapart MD ESICM FCICM
- neurotrauma and neurocritical care focusing on management and research on acute head injury and subarachnoid haemorrhage.

Dr Anthony Holley BSc MBBS DipPaeds DipDHM FACEM FCICM
- trauma, transfusion, cryopreserved blood products, microcirculation.

Dr Steve O’Donoghue MBChB FANZCA FCICM
- microcirculation in shocked critically ill patients during resuscitation and prevention of ventilator associated pneumonia.

Prof Michael Reade MBBS(Hons) BSc(Med)(Hons) DPhil MPH PGCertAME DMRCRSEd DMCC FHEA FCCP FANZCA FCICM AFRACMA
- Fluid resuscitation and coagulopathy in trauma, clinical trials of cryopreserved blood products and tranexamic acid, and the management of delirium.

Dr Neil Widdicombe MBBS FRCA (UK) FCICM
- trauma, ethics in intensive care and air medical retrieval, documentation of death for transplants.

Dr Jayesh Dhanani MBBS MD FCICM
- antimicrobial therapy, lung infections, inhaled aerosol therapy.

Dr Gladness Nethathe MBBCh
- Neuroendocrine stress response in critical illness.

Dr Kerina Denny PhD MBBS BSc (Hons)
- markers that distinguish between sepsis and non-infectious systemic inflammatory response syndrome in critically ill patients at the time of antibiotic prescribing.

Dr Alexis Tabah MD
- HAI; antimicrobial resistance, stewardship and quality improvement; hyperbaric oxygen treatment (HOT).

Renae Deans BNurs Cert Crit Care
- clinical trials co-ordinator involved in all aspects of co-ordination for the SMARRT and CLIP studies.

Melissa Lassig-Smith Dip App Sc (Nurs) Grad Dip (Adv Nursing) Grad Dip (Crit Care) MNurs (Crit Care)
- involvement in all aspects of studies in intensive care from initial proposal to completion.

Janine Stuart BNurs
- involved with all ICU research, writing proposals, obtaining ethics approvals, writing grants, data collection and publishing research articles.

Therese Starr Grad Cert Crit Care, Grad Dip Health Prom
- certified clinical research co-ordinator involved in major clinical trials.

Dr Despoina Koulenti MD PhD
- hospital-acquired infections (HAI); infections by multi-drug resistant pathogens; severe forms of pneumonia; high fidelity simulation for medical education

Jenie Butler BNurs PGDipACN (Crit Care) MClinicalNurs
- Clinical nurse research co-ordination; advancing critical care through innovation and collaborative research.

Avi Chikatamarla
- validation of microsampling versus traditional blood sampling for antibiotic pharmacokinetics.
Amelia Livermore BN, GradCertNursing (IntCareNursing), MHM
- research coordination; establishing good clinical practice that is evidence based within the critical care environment.

Honorary Member

Prof Stijn Blot BNurs/BMid MNSc PhD
- clinical epidemiology of severe infections in critically ill patients, infection prevention, education in quality improvement interventions.

Bioanalysis Laboratory

Dr Steve Wallis BSc (Hons) PhD
- bioanalysis and measurement of drug levels in biological fluids in support of local, national and international clinical trials

Dr Suzanne Parker BSc (Hons) PhD
- innovating clinical trials with the introduction of lower impact microsampling

Yarmarly Guerra Valero BChem (Hons) MTIM
- measurement and bioanalysis of antibiotic and anaesthetic drugs in pharmacokinetic studies using microsampling techniques.

Jenny Ordóñez Mejia BSc
- measurement and bioanalysis of drugs in pharmacokinetic studies, particularly extracorporeal membrane oxygenation (ECMO) studies.

Saurabh Pandey
- analytical method development and validation of antimicrobials in biological and microbiological matrices, reporting data for pharmacokinetic application.

Clinical Pharmacokinetics and Pharmacodynamics Group

Prof Jason Roberts BAppSc BPharm (Hons I) PhD
- drug dosing in critically ill, burns and transplant patients; in vitro infection models; ex vivo models of renal replacement therapy and ECMO; clinical pharmacokinetic studies; clinical outcome interventional studies.

Dr Darren Roberts BPharm MBBS PhD FRACP
- application of extracorporeal therapies in acute poisoning and appropriate use of medications in critically ill patients with or without kidney disease.

Dr Menino Osbert Cotta BPharm (Hons) PhD
- antimicrobial stewardship, antimicrobial dosing in critically ill patients and dosing of drugs in neurotrauma.

Dr Fekade Sime BPharm MSc PhD
- pharmacokinetics/pharmacodynamics of antibiotics, in vitro infection models, ex vivo and clinical evaluation of antibiotic dosing during extracorporeal therapies.

NHMRC Centre of Research Excellence (CRE REDUCE)

Nermin Karamujic BN, Grad Cert ICU
- provides research, administrative and management support to CRE REDUCE; designs and manages data collection instruments within Research Electronic Data Capture (REDCap) related to research studies coordinated by RBWH Intensive Care Services Research Office.
ANAESTHESIA AND PERI-OPERATIVE MEDICINE

Prof André van Zundert MD, PhD, FRCA, EDRA, FANZCA
- airway management including videolaryngoscopy; laryngeal masks, regional anaesthesia and general anaesthesia.

A/Prof Michael Steyn MBChB DRCOG MRCP FFRCSI FANZCA MSc
- burns anaesthesia, information technology and performance, quality and system design, professional upskilling.

A/Prof Kerstin Wyssusek MBChB MSc PhD PGCertQM FAAnae FANZCA
- acute kidney injury; airway management; quality improvement.

A/Prof Kersi Taraporewalla MBBS FANZCA MClinEd
- high fidelity simulation training for crisis management and medical education.

Dr David Belavy BMedSc MBBS FANZCA PGDipCU
- Ultrasound in anaesthesia, clinical risk prediction in surgery.

Dr Paul Gray MBBS PhD FANZCA FFPMANZCA
- pain of burn injury including mechanism, treatment and prevention.

Dr Heather Reynolds BA BHlthSc MN MAP PhD
- intravascular access.

Dr Susannah Sherlock BSc MBBS FANZCA
- sudden sensorineural hearing loss and HOT; CNS toxicity and HOT.

Dr Victoria Eley MBBS (Hons) BMedSc FANZCA
- obstetric anaesthesia and obesity; antibiotic dosing in obesity; quality assurance in obstetric anaesthesia.

Cienwen Town BN RN GCertEdu
- burns, regional analgesia and acute pain in the perioperative setting.

Dr Julie Lee AAGM BPharm MBBS FANZCA
- ROTEM(R) thromboelastometry in obstetric patients, regional anaesthesia and difficult airway management.

Dr Benjamin Snow BSc MBBS FRACGP FANZCA
- trauma, regional anaesthesia, anaesthetic equipment.

Dr Helmut Shoengen MBBS FANZCA DESA MMed Inform PhD
- communication in critical care.

Lizanne Dalgleish BN RN
- Microcirculation and trauma management.

Dr Adrian Chin MBBS FANZCA
- Ultrasound, regional anaesthesia.

Dr George Pang MBBS FANZCA FCICM
- lipid rescue from anaesthetic overdose.

Dr Antony Hade MBBS FANZCA

Dr Michael Edwards BSc MBBS FANZCA DIP ECHO
- head and neck audit; anaesthetic depth.

Dr Gareth Collins FANZCA MBBCh
- raised Intracranial pressure and its relationship with the optic nerve sheath.

Dr Elizabeth McLellan MBBS
- regional anaesthesia, harm minimisation and safety.

RESEARCH INTERESTS
BURNS UNIT

Dr Michael Rudd MBBS FACS OAM PhD
- aspects of burn management, burn pathophysiology and immunobiology.

Prof Michael Muller MBBS MMedSci FRACS
- physiological response to injury and its modulation - beta blockers, anabolic steroids, scar modulation, burn prevention.

Michelle Donovan BOccThy Acc OT MPhil
- burns donor site scoring and compression garment therapy; wound healing through tissue support.

Sharon Forbes BSc GradDipNut&Diet APD
- changes in energy and nutritional requirements during recovery from burns.

Dr Angus Hann BSc MBBS (Hons) GDipEpi MRCS
- trauma and hepatobiliary surgery.

Dr Jason Brown MBBS FRACS BDS(Hon)
- measurement of donor site wound healing using ultrasound; transepidermal water loss and clinical assessment.

Anita Plaza BPhy (Hons I)
- exercise and metabolism following adult burn injuries.

Madonna Puglisi BPhy (Hons)
- maximising function following burn injury.

Brooke Hoskin BPhy (Hons)
- investigating resources to assist and improve the motivation of patients and adherence to their therapy programs.

EMERGENCY MEDICINE

Prof Anthony Brown MBChB FRCP FRCSEd FACEM FCEM
- anaphylaxis epidemiology; Acute Coronary Syndrome (ACS) risk; Sepsis epidemiology; medical writing and editing.

Prof Louise Cullen MBBS (Hons) FACEM
- diagnosis and management of patients presenting with acute cardiac diseases including ACS, heart failure and biomarkers; Health Services Research and Translational Research

A/Prof Kevin Chu MBBS MS FACEM
- utility of diagnostic tests in clinical decision making, subarachnoid haemorrhage and multi-centre clinical trials in emergency medicine.

Dr Catherine Hurn MBBS FACEM
- massive transfusion in trauma and team training for trauma, thromboelastometry (ROTEM).

A/Prof Jaimi Greenslade BPsych (Hons) PhD
- how workplace stress, culture and fatigue influences nurses performance and patient outcomes, involved in all research projects in ED.

Dr William Lukin MBBS FACEM
- palliative care, aged care.

Dr Julian Williams MBBS FACEM
- sepsis epidemiology and outcomes in ED.

Dr Philip Richardson MBChB FACEM LLB
- medico-legal issues confronting the medical field.

Tegwen Howell BEcon MEc St
- subarachnoid haemorrhage.

Tracey Hawkins BNurs Grad Dip Nurs (Critical Care & Emergency)
- ACS, Syncope, TEG.

Dr Duncan McAuley MBBS FACEM
- spontaneous pneumothorax study.
Dr Dylan Flaws MBBS MSc BSc BA
- risk stratifying chest pain presentations and how to communicate patients about this, applying these concepts to include predicting delirium at presentation.

Dr Alexandra Markwell MBBS (Hons I) FACEM BSc
- doctors’ health and wellbeing, medical education.

Dr Nathan Brown PhD
- provides research management support to the Emergency Medicine department.

Kimberley Ryan BNurs Grad Dip Nurs
- triage, endoscopy.

Kate Parker BNurs BHSci (Psych)
- ACS, syncope, mental health issues, particularly in the elderly population.

Dr Frances Williamson MBBS (Hons) FACEM CCPU
- trauma and ultrasound research; involved in the RIB study.

Dr David Rosengren MBBS FACEM FAWM
- medical administration, environmental medicine.

Dr Sean Rothwell MBBS FACEM
- environmental medicine.

Dr Anthony Bell MBBS FACEM MBA MPH FRACMA
- medical administration.

Dr John Burke MBBS FACEM
- patient flow.

Dr Daniel Bodnar MBBS FACEM
- pre-hospital emergency care.

Dr Trent Lipp MBBS FACEM
- trauma, ultrasound.

RESEARCH MANAGEMENT

Dr Sia Athanasas BSc MSc (Qual) PhD
- provides research co-ordination, research support and management support to the Centre whilst maintaining research and financial databases.

ACADEMIC ADMINISTRATION

Maree Campbell
- provides administrative support and co-ordinates medical student teaching for the Discipline of Anaesthesiology & Critical Care.

RESEARCH INTERESTS
Our multi-disciplinary approach towards addressing clinically relevant questions and our broad national and international collaborations underpin our centre’s research success and assures our research is globally relevant. Globalisation of our research is evident in the extensive number of international collaborations that our researchers have forged over the years, in particular, our NHMRC funded Centre of Research Excellence program titled “REdefining antimicrobial use to reDUce resistanCE and prolong the clinical utility of antimicrobials” (CRE REDUCE). This program of research headed by Prof Jason Roberts, involves chief investigators and associate investigators from Australia, Belgium, Hong Kong, USA, Spain and France.

Our expertise includes intensivists, burns surgeons, anaesthetists, cardiologists, neurosurgeons, emergency physicians, scientists, physiologists, nutritionists, physiotherapists, intensive care nurses, psychologists, social workers and military medical personnel.

Throughout 2016 our centre was successful in receiving funding from NHMRC, RBWH, RBWH Foundation, ANZCA, UQ, Intensive Care Foundation, MSD, Ian Potter Foundation, Rebecca Cooper Medical Research Foundation, Emergency Medicine Foundation, QLD Genomic Health Alliance, QH, NBA, The Prince Charles Hospital Foundation, Flemish Society for Critical Care Nurses, ASA, National Heart Foundation and AusHSI.

Our laboratory research is closely allied with our clinical research. The major themes developing within the centre are:

1) Critical Care
2) Drug Dosing and Pharmacokinetics
3) Burns
4) Anaesthesia
5) Emergency medicine
6) Military medicine (including trauma medicine)
1. Pharmacokinetics, drug distribution and antibiotic resistance in critically ill patients.

Critically ill patients often have varying physiological needs to an average patient and often require different dosages of antibiotics and other drugs, particularly if they are on renal replacement therapies. There is also a controversy over whether bolus dosing or continuous infusion of β-lactams is more effective in antibiotic delivery in critically ill patients. Prof Lipman has pioneered work that demonstrates that patients in intensive care are not receiving adequate doses of antibiotics to achieve optimal levels to kill pathogens. This in turn leads to poorer health outcomes for patients and antibiotic resistance. Antibiotic resistant infections commonly occur in long stay, debilitated patients and contribute to increased risk of death, longer ICU and hospital stay, further weakness and long term dysfunction. This problem also contributes to patients being unable to be discharged from ICU or hospital and so exacerbating the shortage of acute hospital beds and increases in surgery waiting time.

Projects include:

- Non-Haemolytic Friulimicins for the Treatment of Multi-Drug Resistant Bacteria. Cooper M, Roberts J, Butler M. Funder: NHMRC
- Imaging of the microcirculation using the Microscan (orthogonal polarization spectral imaging) and providing improved quality of drug analysis for PK studies in critically ill patients. Lipman J, Paratz J, Boots R, Muller M, Dalley A. Funder: NHMRC/UQ, RBWH Foundation/Whinlall

C re a tin i e c l e a r a n c e o f c r i t i c a l l y i l l A ustr a li an I ndig e n o u s p a t i e n t s - a l o n g t u d i n a l s t u d y (CROC Study). Tsai D, Udy A, Stewart P, Gourley S, Morick N, Lipman J, Roberts J. Funder: NHMRC Postgraduate Scholarship (D Tsai); Australian Academy of Science (D Tsai)

- Epidemiology of Pneumonia in the Central Australian Intensive Care Unit. Tsai D, Goud R, Hewagama S, Stewart P, Hnin K-M, Tin K-S, Sun H, Roberts J. Funder: NHMRC Postgraduate Scholarship (D Tsai); Australian Academy of Science (D Tsai)

- Pharmacokinetics of broad spectrum antibiotics in extracorporeal membrane oxygenation (ECMO) - using plasma concentrations to optimize antibiotic therapy. Welch S, Roberts J, Burrows F, Levkovich B, Ray J, Pellegrino V, Bui T, Wallis S, Marriott D, Rudham S.


The Pharmacokinetics of Vancomycin and Ticarcillin-Clavulanate in Critically Ill Patients undergoing Sustained Low-Effecticiency Dialysis (SLED). Economou C. Funder: RBWH Scholarship

Ketorolac pharmacokinetics in joint replacements. Roberts J, Wallis S, Gurunathan U.


Does inhaled antibiotics deliver optimal concentrations to the lung to improve treatment of pneumonia. An animal in vivo study using the microdialysis technique. Dhanani J, Paterson D, Roberts J, Chew M, Fraser J. Funder: RBWH

Dosing to maximise bacterial killing and prevent resistance in ICU. Roberts J, Lipman J, Wallis S, Kirkpatrick C, Landersdorfer C, Bulitta J, Bergen P. Funder: NHMRC

Piperacillin and cefazolin pharmacokinetics in sepsis and trauma. Roberts J, Lipman J, Udy A, Wallis S, Kirkpatrick C, Kruger P, Roberts M.


Continuous vs bolus cefazolin in abdominal surgery patients (collaboration with University of Virginia). Roberts J, Lipman J, Wallis S, Naik B, Ikeda K, Todorovic M.

Comparison of voriconazole population pharmacokinetic models. Roberts J, Farkas A, Dolton M, Han K.

Comparison of piperacillin population pharmacokinetic models. Roberts J, Lipman J, Wong G, Farkas A.

Antibiotic pharmacokinetics in Slow Low Efficiency Dialysis (piperacillin, meropenem and vancomycin; collaboration with The Ottawa Hospital). Roberts J, Kanji S, Zelenitsky S.

Teicoplanin pharmacokinetics and protein binding in methicillin resistant S. aureus infection (collaboration with Trinity College Ireland). Roberts J, D'Arcy D, Byrne C.

Funder: NHMRC

Funder: RBWH Foundation

Funder: RBWH Foundation; AHEPA

Pharmacokinetics of Antibiotics in the critically unwell children. Dorofaeff T
Funder: AHEPA

Population pharmacokinetics of meropenem in critically ill patients and development of dosing software (Collaboration with University of Liverpool ). Roberts J, Hope W, Belen A.

Meropenem and ciprofloxacin pharmacokinetics in ICU patients with shock (MaC-DIPPS). Roberts J, Lipman J, Sjovall F, Christrup L, Kreilgaard M, Perner A, Frimodt-Møller N.

Plasma and tissue pharmacokinetics of lincomycin in patients with burn wound infection. Muller M, Wang L, Roberts J, Lipman J.
Funder: RBWH Foundation

An Investigation of the Pharmacokinetics of Piperacillin/ Tazobactam, Meropenem and Fluconazole in Critically Ill Obese Patients (PHANCO). Aloibaid A, Roberts J, Lipman J, Roberts M.
Funder: Saudi Arabian Cultural Mission

Funder: ICF; University of Western Australia-UQ Collaboration

Pharmacokinetic Australasian Collaborative. Lipman J, Roberts J, Joynt G, Udy A, Nichols M.
Funder: ICF

Optimising benzylpenicillin dosing for critically ill patients with severe pneumonia. Roberts J, Cotta O, Boots R
Funder: RBWH Foundation

A Phase III Randomized Controlled Trial of Continuous β-Lactam Infusion Compared with Intermittent β-Lactam Dosing in Critically ill patients. Dulhunty J, Starr T, Lipman J.
Funder: RBWH Foundation

Levetiracetam pharmacokinetics in critically ill patients with severe traumatic brain injury and subarachnoid haemorrhage. Cotta O, Roberts J, Presneill J
Funder: ICF, RBWH Foundation

Optimising ceftriaxone dosing for critically ill patients with severe pneumonia. Roberts J, Cotta O, Boots R
Funder: RBWH Foundation

Funder: NHMRC Postgraduate Scholarship (D Tsai); Australian Academy of Science (D Tsai)

Funder: NHMRC Postgraduate Scholarship (D Tsai); Australian Academy of Science (D Tsai)

Funder: NHMRC Postgraduate Scholarship (D Tsai); Australian Academy of Science (D Tsai)

Funder: NHMRC Postgraduate Scholarship (D Tsai); Australian Academy of Science (D Tsai)

A preliminary investigation of the pharmacokinetics and pharmacodynamics of amikacin/fosfomycin combination against Acinetobacter baumannii using a dynamic in vitro hollow-fiber infection model. Roberts J.
Funder: Cardeas Pharma

2. Management and outcome of critically ill, head injury, renally dysfunctional and long stay ICU patients

Patients who survive intensive care often are weak, debilitated and with a poorer quality of life compared to their pre-morbid status. We are actively investigating methods to prevent weakness and loss of function in long stay intensive care patients. There are also many projects investigating the optimum delivery of standard procedures to ensure that the best quality of care is offered to intensive care patients.

Project include:

A point prevalence survey of venous thromboembolism prophylaxis management in the critically ill and an epidemiological observational audit of venous thromboembolism prophylaxis management in critically ill patients with severe sepsis (VTE AUDIT). Gowardman J.


The clinical experience of nitric oxide use in the adult ICU at the RBWH. Boots R


Funder: NHMRC

Assessment of Functional Adrenal Status in Patients with Septic Shock. Cohen J, Venkatesh B.

Funder: RBWH

Developing a research base for intravenous peripheral catheter resites. The DRIP trial. Rickard C, Webster J, Gowardman J, Wallis M, McCann D.

Funder: NHMRC

SAVED - Study of practices and complications associated with central venous and arterial catheterisation in an ICU population. Gowardman J, Rickard C.


Funder: ANZCA, NHMRC


Funder: RBWH


i-PERFORM Trial—Mobilising the Critically Ill: Physiological and Functional Outcomes following Early Rehabilitation in Sepsis. Kayambu G, Paratz J, Boots R.


Funder: NHMRC


Funder: ARC

Exercise testing in the chronic critically ill patient. Paratz J, Stockton K, Boots R.


Funder: RBWH

11-β-hydroxysteroid dehydrogenases activity in critical illness. Cohen J

Funder: ANZCA

Cerebral microcirculation in head injury during normovolemic anemia: an experimental model. Bellapart J, Boots R, Reade M, Fraser J.

Funder: RBWH Foundation


Funder: RBWH Foundation


Funder: NHMRC


Funder: RBWH Foundation


Funder: NHMRC CRE


Identifying Ventilator Associated Torticollis and the significance in long term mechanically ventilated patients. Blatchford S, Paratz J, Coyer F, Thomas P.

IMproving Physical ACTivity with Treadmill training following stroke: the stroke-IMPACT trial. Brauer S, Paratz J.
Funder: AusHSI Stimulus Grant

Funder: RBWH

Funder: ANZCA

Funder: RBWH Foundation/Wormald

Funder: NHMRC

3. Management and outcome of burns patients encompassing prevention, acute injury and long term outcomes

Thermal injury is a devastating injury, not only for the immediate concern of risk of loss of life and extreme pain, but in the long term cosmetic and functional issues. As a means of improving the treatment and outcomes of these patients, the Burns Unit at RBWH, one of the largest in Australia, has instituted a large number of studies investigating initial cardiac function, management of pain, antibiotic efficacy, nutrition issues, exercise post burns, and prevention of scarring. With increased collaboration with other burns units in Australia, improvement in both the survival and health outcomes of burns patients will be achieved.

Projects include:

Improving donor site epithelisation and scar maturation times following split skin grafting in burns patients: a novel research study using compression therapy. Rudd M, Spermon M, Muller M.  
Funder: RBWH & RBWH Foundation/Wormald

Funder: RBWH

Funder: RBWH

Funder: RBWH

Funder: Queensland Children’s Medical Research Institute (QCMRI)

Funder: RBWH Foundation

Are burns patients at increased risk of cardiovascular disease? Paratz J, Paul S, Younger J, Stockton K.  
Funder: RBWH Foundation

Funder: RBWH

Funder: RBWH Foundation

Funder: Becas Chile program, CONICYT, Chilean government.

Inhalation and right heart failure in burns. Paratz J, Boots R, Muller M, Hegde R.

Beta blocker therapy in burns: a randomized controlled trial. Paratz J, Roberts J, Muller M, Boots R, Flores O.

Mortality in burns survivors. Paratz J, Younger J, Paul S, Stockton K.

Quality of life outcomes post-major burn injuries in adults – a longitudinal exploratory study. Druery M  
Funder: RBWH Foundation—Red Blanket funding; Professor Stuart Pegg Adult Burns Centre, RBWH Scholarship

Burn prevention, an advertising campaign utilizing functional MRI. Muller M, Paratz J, Reutens D, Burianova H, Dulhunty J.

Microcirculation as an endpoint to burn resuscitation. Paratz J, Muller M, Boots R.
4. Anaesthesia

Anaesthetising a patient is said to be just as important as the surgery that they will undergo and the types of anaesthesia/analgesia used will vary from patient to patient and condition. Research is continuing on improving methods of anaesthesia and analgesia, intubation, catheterisation and laryngoscopy.

Projects include:


What is the failure rate in extending epidural analgesia to anaesthesia for emergency Caesarean section in women with a body mass index ≥40 kg.m-2 compared with women with a body mass index <30 kg.m-1? A prospective observational case-control study. Eley V, Callaway L, van Zundert A, Chin A, Howes M.

Anaesthetist knowledge of guidelines regarding management obese parturients – their experiences of providing anaesthetic care to these women. Eley V, Gallois C, Callaway L, van Zundert A.

Anaesthesia for Category 1 Caesarean Section: An Audit of Practice at the RBWH 2010-2013. Lee K, Eley V, Owen T, Pelecanos A.

Does the subcutaneous fat measured at 18-22 weeks predict difficulty of epidural insertion or ability to palpate landmarks? A pilot study. Chin A, Eley V, Crooke B, Sekar R.


NIRVANA (Near Infra Red Venous ANAlysis) - A trial of a vessel finder vs standard technique for peripheral placement of intravenous catheters. van Zundert A, Higgins N, Taraporewalla K, Belavy D, Watson M, Ware R. Funder: UQ Academic Title Holder Research Fund

Can a novice in peri operative care locate a peripheral vessel for optimum PIVC placement prior to anaesthesia? Vein Finders. van Zundert A, Higgins N, Taraporewalla K, Belavy D, Watson M, Ware R. Funder: RBWH Foundation

Airway management in patients with oral cancers. van Zundert A, Inaida-Lee E, Wake P

Comparison of the diameter, cross-sectional area and position of the left and right internal jugular vein and carotid artery in adults using ultrasound. Bos M, van Loon F, Heywood L, Morse M, van Zundert A.


Indirect videolaryngoscopy using Macintosh blades in patients with non-anticipated difficult airways, results in significantly lower forces exerted on maxillary teeth relative to classic direct laryngoscopy; a randomized crossover trial. Pieters B, Maassen R, van Eig E, Maathuis B, van den Dobbelsteen J, van Zundert A.

Comparison of different videolaryngoscopes when used in a manikin by experienced and novice personnel: a randomized crossover trial. Pieters B, Pieters M, Wilbers N, Huijzer M, Winkens B, van Zundert A.

Large differences in illumination among videolaryngoscopes. Pieters B, van Zundert A.

Pharmacokinetics of sugammadex in morbid obese patients: gas chromatographic levels of rocuronium and sugammadex. Morse M, Wallis S, van Zundert A


Audit of dressing and securement of IV cannulae. Reynolds H, Chalk T, van Zundert A, Rickard CM.

Does the size of the tongue matter in difficult airways? van Zundert A, Cervin D, Coulthard A, Frip J, Lee J.

PACE (Preventing Arterial Catheter failure) Trial: Arterial Catheters. Rickard C, Reynolds H, AVATAR group (Griffith University).

Compliance with CPR guidelines by anaesthetists in simulated peri-operative cardiac arrests. Taraporewalla K, van Zundert A. An Audit of Compliance with a Pre-Block Safety Checklist by a Dedicated Regional Anaesthesia Service at the Royal Brisbane and Women’s Hospital. McLeilian E.


Novel Technologies can provide effective dressing and securement for peripheral arterial catheters: A pilot RCT. Reynolds H, Taraporewalla K, Tower M, Mihala G, Tuffaha H, Fraser J, Rickard C.

Reconstruction of the human spine & spinal canal for anaesthetists – different positions. van Zundert A, Rose S.

Hyperbaric oxygen therapy for foot ulcers in diabetes. Sherlock S, Smith D, Thistlethwaite K, Coleman K. Funder: ANZCA

Epidural extension for Category 2 Caesarean-Section. Eley V, Kamp R, Blain S, Hoy M.

Positioning during Neuraxial Blocks. Goldsmith D, van Zundert A.

Does subcutaneous fat measured at 18-20 weeks predict difficulty inserting an epidural or adverse pregnancy outcomes? Eley V, Chin A, Sekar R, van Zundert A. Funder: UQ Academic Title Holder Research Fund

Incident Data
Bowtie Analysis—Clarke D
Aspiration — Casey P
Chewing gum and airway obstruction – Shanmugam S
Drug Errors – Peters N
Anaphylaxis – Beck A
Antibiotic timing - Lee K
WebAIRS airway data – Lee J
Obstetric data – Goulding G

Equipment trials for SABEA. Roets M
Laryngoscopes
Ultrasound machines
Continuous IV pumps
Anaesthetic machines

Cell Salvage Transfusion in Theatre. Roets M, Casey P.

ROTEM usage of blood products before and after implementation. Roets M, Lee J.

ROTEM - obstacles to implementation. Roets M, Lee J.


Strength of different fixation tapes of ETTs/LMs/IV/IVJ/art line. Higgins N, van Zundert A.

DEVELOPMENT OF APP:
Anaphylaxis
Arrhythmias such as SVT / AF with a puls
CICO - can't intubate or oxygenate
Cardiac arrest

Cuff Pressure Measurement ETTs and LMAs. van Zundert A, Reynolds H, Lee J.


Anaesthesia for paediatric liver transplantation: a review of 10 years of experience. Lee-Archer P, Lee J, Ganska A.

Pre-operative Evaluation of the Airway. Lee J, van Zundert A.

MERT Criteria. Fung D.

PACU Audit. Fung D.
PACU Time/Delays
Hypothermia
Un-expected ICU Admission
PONV
Pain un-manageable by pain protocol


Audit of Recording of Height, Weight and BMI. van Zundert A , Reynolds H.

Regional anaesthesia for rib fracture management. Snow B Funder: RBWH

PONS Study (Raised Intracranial Pressure and its relationship with the Optic Nerve Sheath). Collins G, Dalgleish L Funder: RBWH Foundation

International audit of outcomes and risks for cerebral oxygen toxicity events whilst treated with hyperbaric oxygen therapy. Sherlock S.

PDPH: Pregabalin for the management of post-dural puncture headache after unintentional dural puncture in obstetric patients: a randomised, double-blind, placebo-controlled trial. Eley V.

Analgesic Requirements for Burns Patients Undergoing Surgical Grafting to Upper Limbs. Town C, Lee J, Johnson J.

Audit of characteristics and intraoperative treatments associated with complications in maxillofacial free flap surgery. Edwards M, Christensen R, Town C.

Does Cefazolin Prophylaxis During Bariatric Surgery Achieve Therapeutic Concentration in Plasma & Interstitial Fluid. Ryan R, Christensen R, Jackson D, Roberts J.
Funder: RBWH Foundation


Intraoperative cuff pressure measurements of supraglottic airway devices and endotracheal tubes in the operating theatres of an Australian quaternary hospital. Lee J, van Zundert A, Reynolds H, Khatun M.

A series of studies on ROTEM® in obstetrics to optimise the management of postpartum haemorrhage. Lee J.
Funder: National Blood Authority (NBA), RBWH Foundation

Rates of Venous Thromboembolism among orthopaedic surgical patients: A single site retrospective audit. Keys M, Dalgleish L, Legg A.


What are the blood and tissue levels of antibiotics and the blood levels of oxytocin, in overweight women having elective caesarean section. Christensen R.
Funder: ANZCA.

5. Emergency Medicine

The Department of Emergency Medicine's (DEM) research focus centres around improving outcomes and evaluating new processes for treating patients in the Emergency Department.

Projects include:

Funder: QEMRF, RBWH Foundation

Funder: Statewide Trauma Clinical Network

Medication and fluid orders in the Emergency Department: Examining the incidence of error and adverse events. Richardson P, Greenslade J, Doran E, Chu K.
Funder: QEMRF


Funder: QEMRF

Diagnostic workup for suspected subarachnoid haemorrhage. Chu K.
Funder: QEMRF

Funder: QEMRF

Funder: QEMRF

Drugs for the treatment of nausea and vomiting in adult patients in the Emergency Department setting. Furyk J, Egerton-Warburton D, Meek R.
Funder: QEMRF

A RCT of conservative versus interventional treatment of primary spontaneous pneumothorax (PSP). McAuley D, Brown S.

End of Life Decision making. Richardson P.

Relationship between patient delay distribution and 12-month health outcomes. Cullen L.

A decision analytic cost-effectiveness model for chest pain pathways. Cullen L.

Funder: QEMRF

Relationship between patient delay distribution and 12-month health outcomes. Cullen L, Parsonage W, Than M, Pemberton C.
Funder: National Heart Foundation of Australia.

A comprehensive evaluation of a hospital in nursing home program in three Queensland hospitals. Lukin W, Hou X-Y et al.
Funder: QEMRF

Management of Back Pain in DEM: a RCT. Samtani M, Paratz J, O'Leary S.

Comparison of two approaches to acute mechanical back pain in the emergency setting: a randomized controlled trial Kramer D, Samtani M, Paratz J, O'Leary S, Suna J.
6. Military Medicine

Head injury and trauma are the leading causes of death and disability amongst the young, active population in Australia. Our trauma teams are engaged in research investigating all aspects of trauma care from pre-hospital care to longitudinal health outcomes.

With the Australian Defence Force joining our centre, research in military trauma medicine has expanded, particularly in the treatment of traumatic coagulopathy, traumatic brain injury, pulmonary contusion and trauma systems design. Much of this work will also benefit civilian patients, particularly those in rural hospitals.

Projects include:


Investigation of the Cerebral Microcirculation after Head Injury. Bellapart J, Boots R, Fraser J, Maybauer M, Helps S.
Funder: Brain Foundation, Defence Health Foundation, RBWH

RESEARCH PROJECTS

Funder: RBWH

Funder: NHMRC, Hospira, Orion Corporation

Funder: RBWH

Funder: QEMRF, TPCH Foundation

Funder: ANZCA, Australian Red Cross Blood Service (ARCBS)

Tranexamic acid blood levels in patients achieved using CRASH-2 dosing: the PATCH-LEVELS study. Reade M, Lipman J, Wallis S,
Gruen R.
Funder: ICF

Diggers to Veterans: risk, resilience and recovery in the First AIF. McCalman J, Kippen R, Reade M, Shanks D, Hopper D.
Funder: Australian Research Council (ARC)

Funder: NHMRC

Epidemiology of pyroglutamic acid concentrations in the blood of critically ill patients. Reade M, Ungerer J.
Funder: RBWH Foundation

CRE REDUCE Specific Projects

Project 1: In vitro effect of antimicrobial exposure on the emergence of resistance for S. aureus, S. pneumoniae, P. aeruginosa, K. pneumoniae, E. coli and A. baumannii. Led by Dr C Landersdorfer and Prof J Roberts

Project 2: Intensive-sampled infection site PK of antibiotics in mechanically ventilated patients with ventilator-associated or community-acquired pneumonia. Led by Dr O Cotta, Prof J Roberts, Dr D Koulenti

Project 3a: Sampling Antibiotics in Renal Replacement Therapy (SMARRT). Led by Prof J Roberts and Prof Jeff Lipman

Project 4: Antimicrobial PK in lung transplant, bone marrow transplant and cystic fibrosis patients. Led by Dr Hafiz Abdul-Aziz and Prof J Roberts

Project 5: Flucloxacillin and lincomycin PK in burns patients. Led by Prof J Roberts

Project 6: SAFE ICU (Sampling AntiFungal Exposure in ICU)-Multinational study of antifungal PK in ICU. Led by Dr F Sime, Dr Claire Roger (France) and Prof J Roberts

Project 7: Antimicrobial PK in critically ill paediatric patients. Led by Dr S Parker

Project 8: Multi-centre study of antimicrobial PK in obese critically ill patients. Led by Prof J Roberts and Dr A Alobaid

Project 9: Combining in vitro resistance data with in vivo clinical PK data into robust pharmacostatistical models for innovative antimicrobial doses. Led by Prof J Roberts

Project 10: Multi-centre study of feasibility of therapeutic drug monitoring (TDM) optimisation of β-lactams for critically ill, burns and transplant patients. Led by Dr O Cotta and Prof J Roberts

Project 11: Multinational study of clinical outcomes of continuous infusion vs intermittent β-lactam antibiotic administration in critically ill patients with severe sepsis and not receiving RRT. Led by Prof J Lipman, Dr J Dulhunty, Prof J Roberts and Dr Os Cotta
Multi-centre trials

ADRENAL: A RCT of the effect of hydrocortisone on mortality in critically ill patients with septic shock. Principal Investigator: J Cohen

ASAP-ECMO: Extracorporeal Membrane Oxygenation: A study evaluating the pharmacokinetics of various antibiotics, antifungals, sedatives and analgesics in critically ill patients receiving ECMO. Principal Site Investigator: J Roberts

DahLIA: A randomised, double-blind, placebo controlled trial of dexmedetomidine for patients with agitation and delirium in the ICU. Principal Investigator: M. Reade. Principal Site Investigators: M Reade, S O’Donoghue

SMARRT: Sampling Antibiotics in Renal Replacement Therapy. Principal Investigator: J Roberts

RSVP: A Multi-centred trial to examine implications of a routine versus clinically indicated need to change giving sets for iv infusions. Principal Site Investigator: J Gowardman

CLIP (Cryopreserved vs Liquid Platelet study): Evaluation of cryopreserved platelets for the treatment of perioperative haemorrhage. Principal Investigator: M Reade

MicroSOAP: Microcirculatory Shock Occurrence in Acutely ill Patients—microcirculatory alterations in ICU patients with tachycardia are associated with a substantially increased risk of in-hospital death. Principal Investigator: A Holley

TRANSFUSE: STandaRd Issue TrANsfusion versus Fresher red blood cell Use in intenSive care. A multi-centre randomised double blinded phase III trial of the effect of standard issue red blood cell blood units on mortality compared to freshest available red blood cell units. Principal Investigator: M Reade; Principal Site Investigator: A Holley

A RCT of interventional versus conservative treatment of primary spontaneous pneumothorax. Principal Site Investigator: D McAuley

T3 Trial: Triage, Treatment and Transfer of patients with stroke in emergency departments. Principal Site Investigator: J Williams

Testing the effectiveness of a targeted implementation intervention compared with passive dissemination on the uptake of key evidence-based recommended practices in the emergency department management of mild head injury in Australia: A cluster randomised trial. Principal Site Investigator: F Williamson

Pregabalin for the management of post-dural puncture headache after unintentional dural puncture in obstetric patients: a randomised, double-blind, placebo-controlled trial. Site Investigator: V Eley

PneumoINSPIRE (endorsed by ESICM): an international multicentre prospective observational cohort study of nosocomial pneumonia in intensive care units. Principal Investigator: D Koulenti

Estim cycle early rehabilitation in ICU: a RCT. Principal Site Investigator: J Paratz

Improving the outcome of sepsis: a RCT. Principal Investigator: J Paratz

SAFE-ICU: Screening Anti-Fungal Exposure in Intensive Care Units. An international, multi-centre prospective pharmacokinetic evaluation of antifungal drug exposure in intensive care unit patients receiving conventional dosing regimens. Principal Investigator: J Roberts

DIANA: Determinants of Antimicrobial use and de-escalation in critical care. A multicentre, international, prospective, observational cohort study of critically ill patients receiving empirical antibiotic therapy for suspected or confirmed infections at ICU (endorsed by the ESICM). Principal Site Investigator: O Cotta

AMINO III— An international survey on aminoglycoside practices in critically ill patients: AMINO Critically III survey. Principal Investigators: J Roberts, C Roger

RESEARCH PROJECTS

OACES—A prospective two-centre observational pharmacokinetic study evaluating and Optimizing Antibiotic CSF Exposure in critically ill patients with in situ external ventricular drains (EVD) for the treatment and prevention of nosocomial central nervous system infections associated with ventriculostomy. Principal Investigator: J Lipman

DecubICUs - A global point-prevalence study on pressure ulcers in ICUs. Trials Group project of the ESICM. Principal Investigator: S Blot

AbSeS - The Abdominal Sepsis Study: Epidemiology and Outcome. Trials Group project of the ESICM. Principal Investigator: S Blot
New to BTCCRC — Clinical Microsampling Group

The newly formed Clinical Microsampling Group aims to replace traditional, highly invasive blood-taking techniques with an innovative, microsampling approach that enables measuring drug concentrations in a drop of blood. The microsampling devices used for this purpose require only 10—20 microlitres instead of millilitres of sample which is easily processed.

Studies which characterise drug concentrations in children with severe infection, or ‘pharmacokinetic’ studies, are lacking and consequently, clinicians do not know which doses should be used in these patients. In part, the lack of pharmacokinetic studies is due to the onerous blood sampling required: frequent sampling (5-8 times) of up to 5 mL per sample. However, there are psychological and physiological burdens and risks associated with taking blood from babies, infants and children. Blood sampling is highly concerning to these vulnerable patients and their parents; it is frequently a factor of discussion for research ethics committees when considering whether a research project is acceptable. Recent advances in the sensitivity of the instruments that measure drugs now provide the opportunity to reduce blood sampling volumes.

The research undertaken by the Clinical Microsampling Group for a new approach to sampling can be applied to strategic pharmacokinetic studies to establish evidence-based, effective drug dosing regimens. For babies, infants and children treated with our novel dosing regimens, they will have an easier fight and a better chance at getting home sooner, where they belong.

This research is an interdisciplinary collaboration between the staff at Lady Cilento Children’s Hospital (LCCH), South Brisbane and the BTCCRC and is headed by Dr Suzanne Parker. The chief investigators are Dr Suzanne Parker, Post-Doctoral Research Fellow, BTCCRC and Dr Tavey Dorofaeff, Paediatric Intensivist, LCCH. Other investigators include Prof Jason Roberts, Professor of Medicine and Pharmacy, BTCCRC UQ, Prof Jeffrey Lipman, Professor of Medicine, BTCCRC, Ms Yarmarly Guerra Valero, PhD student and research assistant, BTCCRC and Dr Steve Wallis, Lab Manager, BTCCRC. Funding has been received from the RBWH Foundation and the Australian Hellenic Education Progressive Association (AHEPA).
<table>
<thead>
<tr>
<th>Grant Title</th>
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<td>Redefining antibiotic dosing to reduce bacterial resistance</td>
<td>NHMRC Practitioner Fellowship</td>
<td>Roberts J</td>
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<td>Improving rapid decision-making in the face of uncertainty: a randomised trial of a 1-hour troponin protocol in suspected acute coronary syndromes.</td>
<td>NHMRC Project Grant APP1124471</td>
<td>Chew D, Briffa T, Cullen L, Quinn S, Karmon J.</td>
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<td>Does Cefazolin Prophylaxis During Elective Bariatric Caesarean Section Achieve Therapeutic Concentration in Plasma &amp; Interstitial Fluid</td>
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<td>Christensen R, Eley V, Ryan R, Jackson D, van Zundert A, Roberts J.</td>
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<td>Does Cefazolin Prophylaxis During Bariatric Surgery Achieve Therapeutic Concentration in Plasma &amp; Interstitial Fluid</td>
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<td>Ryan R, Christensen R, Jackson D, Roberts J</td>
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<tr>
<td>Using a drop of blood to optimise antibiotic dosing in infants and children</td>
<td>Ian Potter Medical Research grant</td>
<td>Parker S, Roberts J</td>
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<td>A series of studies on a new clotting test in pregnant women to optimise the management of bleeding</td>
<td>National Blood Authority Early career Funding</td>
<td>Lee J</td>
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<td>Describing the experiences of social workers in a tertiary ED</td>
<td>Emergency Medicine Foundation</td>
<td>Markwell L, Howell T, Windsor C, Bell A, Chu K, O'Mah A.</td>
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<td>Whole genome sequencing to track, treat and prevent nosocomial infections</td>
<td>QLD Genomic Health Alliance</td>
<td>Paterson D, Harris P, Nimmo G, Allworth A, Hadjikowicz K, Jennison, Lipman J.,…Roberts J, Schebmri M, Beatson S.,…Schlebusch S</td>
<td>$600,000</td>
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<td>Building PK and clinical trial capacity at the Herston Campus</td>
<td>UQ Strategic Funding</td>
<td>Lipman J</td>
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<td>Screening Anti-Fungal Exposure in Intensive Care Units: the SAFE_ICU study</td>
<td>RBWH &amp; RBWH Foundation</td>
<td>Roberts J, Roger C</td>
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<td>‘Implementing microsampling into clinical pharmacokinetic research studies - it only takes a drop of blood!’</td>
<td>RBWH &amp; RBWH Foundation</td>
<td>Lipman J, Parker S, Dorofaeff T</td>
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<td>PKPD substudy of patients randomised to receive β-lactam antibiotics by either intermittent or continuous infusion</td>
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<td>A pilot randomized cross-over placebo control trial of metformin for reducing weight gain and metabolic syndrome among people initiated on clozapine</td>
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<td>Quality of Life outcomes post-major burn injuries in adults - a longitudinal exploratory study</td>
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<td>Raised Intracranial Pressure and its relationship with Optic Nerve Sheath Diameter PONS Study</td>
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<td>Antibiotic Resistance and the Development of a Bedside Antibiotic Commencement Tool</td>
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<td>Predicting delirium at the time of hospital admission</td>
<td>QLD Health Junior Research Fellowship</td>
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<td>Personalisation of antimicrobial therapy in critically ill patients: meeting a global challenge!</td>
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<td>Small equipment grant.</td>
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<td>Psychosocial outcomes post-major burn injuries in adults - a longitudinal exploratory study</td>
<td>Professor Stuart Peg Adult Burns Centre, RBWH Scholarship</td>
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<td>Psychosocial outcomes post-major burn injuries in adults - a longitudinal exploratory study</td>
<td>RBWH Foundation – Red Blanket Funding</td>
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<td>Auditory display of respiratory status of anaesthetised patients: Longitudinal study of varied cases</td>
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<td>Taraporewalla K. Sanderson P. Watson M. Reynolds H, van Zundert A.</td>
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<td>Single dose population PKs of intravenous Posaconazole in critically ill patients.</td>
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<td>An observational PK study of Ceftolozane-Tazobactam in intensive care unit patients with and without continuous renal replacement therapy.</td>
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<td>A prospective observational PK evaluation of the plasma and CSF concentrations of a single dose ceftolozane/tazobactam in infected critically ill patients with an indwelling external ventricular drain</td>
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<td>Association for Vascular Access ASM 2016, Orlando</td>
<td>Ian Potter Foundation Travel Grant</td>
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<td>A series of studies on ROTEM® in obstetrics to optimise the management of postpartum haemorrhage</td>
<td>ASA scholarship</td>
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<td>Too much of a good thing; Does fluid resuscitation worsen septic shock?</td>
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<td>Cullen L, Fraser J, Shekar K, Byrne L, Nchifato O, Passmore M, Maitland K</td>
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<td>Redesigning systems of care for heart failure patients to improve outcomes</td>
<td>National Heart Foundation Partnership Engagement Grant</td>
<td>Driscoll A, Tonkin A, Hare D, Prior D, Cullen L, Mohebbi M, Patsamanis H</td>
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<td>Impact of fluid volume resuscitation on nitric oxide-induced oxidative stress and cardiac dysfunction in an ovine septic shock model</td>
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<td>Bell A, Savage R, Kline T, Lock C, Pattullo C</td>
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<td>PneumoINSPIRE</td>
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<td>Advancing infectious diseases research in critical care</td>
<td>UQ Research Fellowship</td>
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<td>A translational approach to optimisation of antimicrobial therapy for critically ill patients that prevents the emergence of ‘Superbugs’</td>
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**Sponsorship and Donations**

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Infection costs the Australian healthcare system millions of dollars every year and imposes a significant burden of illness on the Australian community. Serious infections can cause tragedy at a much more personal level, with lethal outcomes possible even in young previously healthy individuals. Despite the significant consequences of these illnesses, clinicians have very limited information about the best way to identify and treat infection in Australian ED. Julian is completing a PhD thesis focusing on patients who present to the ED with community acquired infection. This research aims to identify the factors that are apparent early during the course of infection that may predict a poor outcome. In addition, he also aims to improve the immediate treatment of sepsis syndromes by determining and optimising various aspects of care, including antibiotic administration and fluid resuscitation. This ground breaking body of research is likely to have a significant impact on the way that sepsis is identified and managed in the emergency setting in Australia.

Pneumonia occurs commonly in the community but despite antibiotic therapy, patient outcomes remain poor. One of the reasons for this could be insufficient antibiotic concentrations at the site of infection, the interstitial space of the lungs. Administering higher doses of antibiotics systemically could cause severe adverse effects whilst sub-therapeutic antibiotic exposure could lead to emergence of drug resistant organisms and poor health outcomes.

Due to the drying up of the antibiotic pipeline, there is renewed interest in alternative modalities of drug administration. Aerosolized antibiotic therapy for lung infections whilst not novel, is being used increasingly worldwide to improve patient outcomes particularly in the context of drug resistant pathogens. Understanding and applying key PK principles is important for effective antibiotic therapy.

P. aeruginosa is a common cause of hospital and ventilator acquired pneumonia. Tobramycin is an effective antibiotic for this pathogen. High-dose systemic tobramycin therapy is not suitable to treat P. aeruginosa due to the likelihood of severe side effects. Aerosolized tobramycin might be a valid application for critically ill patients with pneumonia given the supportive data from cystic fibrosis patients, although the dose and frequency for optimal therapy in this population is unclear.

Jayesh’s PhD aims to investigate the disposition of aerosolized tobramycin for use in mechanically ventilated patients with pneumonia.

The PK of antibiotics in critically ill patients undergoing extended daily dialfiltration is Caleb’s area of research interest. During 2014, Caleb completed recruiting patients at the Gold Coast Hospital ICU who were prescribed the antibiotic ticarcillin/clavulanate whilst undergoing extended daily dialfiltration (EDDr). Concurrently, he completed ex vivo simulations of vancomycin, meropenem, ticarcillin/clavulanate and piperacillin/tazobactam in a renal replacement therapy circuit to determine the amount of antibiotic that adsorbs to the filter membrane of dialysis machines.

Currently, Caleb is working on an ex vivo haemodiafiltration circuit in which the study antibiotics are added to diluted blood and recycled around the circuit. He is able to calculate the amount of antibiotic removed from the circuit during this process and thus determine the sieving coefficient or likelihood an antibiotic will leave the blood and move into the dialysis fluid. The purpose of this research is to provide information to prescribers on improving antibiotic dosing in critically ill patients undergoing haemodiafiltration.
Gloria’s main interest is in the use of TDM to optimize β-lactam dosing in ICUs. Despite increasing utility of β-lactam TDM in ICUs, data on this subject remains limited albeit urgently needed to optimize patient outcomes. The existing reports for β-lactam TDM have all used total antibiotic concentrations and published protein binding values for determining the need for dose adjustment, which is problematic given that the unbound concentration of antibiotic is responsible for bacterial killing and protein binding changes in the critically ill is uncertain. Accuracy of such an approach was evaluated in a recent publication as part of my project, utilizing a new unbound drug assay developed by our colleagues in Chemical Pathology. Another aim of Gloria’s project is to document the pharmacokinetic/pharmacodynamic parameters of measured unbound β-lactams in ICU patients. Data collection is completed and we hope this information will provide a more comprehensive view of the effectiveness of present dosing regimen and the value of TDM in this setting. Furthermore, in her latest publication, she addressed various practical approaches to implement β-lactam TDM in selected experienced centres in Australia, Belgium, France, Germany, Italy, Switzerland and USA. Among numerous variations in β-lactam TDM clinical practice, the use of heterogeneous clinical targets has been one of the major issues. In collaboration with the same group of researchers, a retrospective study is underway with the aim to address this gap in daily ICU practice and robustly define targets for β-lactam TDM.

Dylan’s research investigates which statistical method is best used to produce risk scores in the setting of the 2 hour chest pain pathway by deriving various decision tools from a single population, and then validate on diverse populations. Since 2013, Dylan has validated the cardiac risk scores in Vancouver, Canada as well as Manchester, UK and Stockport, UK. In Vancouver the score derived from Multiple Regression outperformed other scores, and the performance of each score was comparable to our local findings. The performance of the Multiple regression score (EDACS) has been submitted for publication in Academic Emergency Medicine. The findings from Manchester and Stockport have not been published due to missing an important blood test result in the data. However, the rules appear to have comparable performance in Stockport, but not in Manchester. In total, the performance of each rule has now been tested within-subjects on over 4,000 patients from 3 separate health systems.

The aim of this research project is to measure antibiotic concentrations using microsamples to perform pharmacokinetic studies in critically ill paediatric patients. This will provide suitable antibiotic dosing strategies that may lead to improved clinical outcomes in this paediatric population.
Rotational thromboelastometry (ROTEM®) measures the viscoelastic properties on multiple aspects of coagulation. The use of ROTEM® is well established in hepatic and cardiac surgery, but not as yet in the obstetric setting. Recruitment for two ROTEM® studies has been completed on labour ward and on elective Caesarean patients. These studies aim to provide data on reference ranges in normal pregnancies in order to develop an obstetric algorithm as well as to further the understanding of the effects of antenatal complications on ROTEM® interpretation.

A third study will analyse the severity of platelet dysfunction in pre-eclampsia using ROTEM® Platelet. These prospective studies aim to enable improved haemostasis management in the parturient by examining the correlation between ROTEM® parameters, transfusion requirements and the probability of postpartum haemorrhage.

The relationship between FIBTEM and fibrinogen will also be examined in patients with abnormal coagulation or a history of exposure to anticoagulant therapy.

Victims of traumatic brain injury (TBI) often lose much blood resulting in dangerously low levels of oxygen reaching the brain. Optimal transfusion and subsequent oxygenation of the brain are therefore essential to both survival and successful recovery in these patients. Studies have shown that blood transfusion benefits brain oxygenation and that the more anemic the patient, the greater the benefit of a blood transfusion. Therefore, TBI patients who are at high risk of brain death due to loss of blood would benefit the most from a blood transfusion. Although this is known, an understanding of how the small blood vessels circulate blood during injury and the best procedure for transfusion in TBI has not yet been determined. After the successful completion of our pilot study in a sheep model, in which the use of colour coded microspheres injected via the heart proved to be a feasible method to analyse cerebral blood flow, a series of studies based on the effect of normovolemic anemia in the injured brain in ovine models, have been designed to establish a transfusion threshold based on quantification of cerebral microcirculation (CM). These studies comparing CM between injured and non-injured hemispheres during different degrees of anemia are underway. Before, and at various times after induced head injury and varying degrees of anemia, microspheres of different colours are injected to assess CM over time. The various colours help to distinguish changes in CM at different times post injury.

Danny’s thesis has described the pharmacokinetics of meropenem, ceftriaxone, vancomycin and piperacillin in critically ill Australian Indigenous patients with severe sepsis and has provided dose recommendations for different parameters such as creatinine clearance and MIC of the target pathogen. Overall, the study showed a high interindividual variability in the pharmacokinetics of these antibiotics, but it is adequately described by the patient’s measured creatinine clearance and body weight except for ceftriaxone. There was no difference in the pharmacokinetics of vancomycin and meropenem when compared with critically ill patients of other populations. A slightly lower drug clearance was observed in the Indigenous patients for ceftriaxone and piperacillin, however the clinical relevance is likely to be insignificant. Furthermore, 32% of critically ill Indigenous patients manifested augmented renal clearance and all calculated creatinine clearance equations have limited utility in comparison with measured creatinine clearance. Dose individualisation is important to optimise pharmacokinetic/pharmacodynamics target attainment.
Orlando Flores
Physiotherapist
PhD Student

Orlando’s project “Reversing Metabolic Changes post Burn Injury” is investigating whether an interventional program of exercise and/or adrenergic blockade will improve outcomes related with Physical health, Psychological health and Health Related Quality of Life (HRQoL) in patients suffering severe burn injuries.

During this PhD project, two systematic reviews and meta-analysis had been conducted. The first one assessed the efficacy and safety of beta-blockers in burn population. The second one analysed the effectiveness of exercise on improving physical, physiological and psychological outcomes after burn injuries.

We have commenced the design of a survey of practice aiming to investigate the extent and characteristics of the use of exercise in burn specialized and non-specialized centers across the world in the treatment of subjects affected by burns.

Additionally, a further study on measurement of body composition by dual energy x-ray absorptiometry in burns patients had commenced this year.

The two interventional trials (effects of beta-blockers and effects of exercise on reversing metabolic changes post burn injury) had begun and there is steady recruitment occurring.

Victoria Eley
Anaesthetist
PhD Student

Victoria’s thesis is titled “Clinical Guidelines relating to the Anaesthetic Management of Obese Parturients: An Evaluation of their Utility in Clinical Practice and the Evidence Supporting the Recommendations”. Three papers included in the thesis have been successfully published in 2016. Obesity in pregnancy is increasing in prevalence and managing the technical difficulties presented by these patients is an increasingly common clinical scenario for anaesthetists. One element of interest to practicing anaesthetists, (and closely examined in the thesis), is the concept of “early epidural analgesia” for obese parturients, which is practiced locally and overseas, despite a limited evidence-base.

This thesis examines the role of practice guidelines in the management of obese parturients, using qualitative and quantitative methodology.

Martha Druery
Social Worker
PhD Student

The aim of Martha’s proposed prospective longitudinal exploratory research is to investigate how adult survivors of burn injuries recover in relation to their Quality of Life and psychological well-being, as well as examining the societal burden of their injuries. It seeks to research the influence of pre-existing social factors on these outcomes over time, in the first year after the initial injury. Although treatment of burns has seen vast improvements in recent decades and medical advancements have led to declining mortality rates, it remains a devastating injury for many survivors due to the pain, disfigurement, disability and trauma incurred.

The epidemiological and predisposing factors reported for adult burns consistently highlight the significant role of socio-economic indices for increased risk. However, there has been a paucity of research investigating the relationship between these social factors and post-injury outcomes for adult burns survivors. It is envisaged that the financial and social costs of surviving a burn injury are inequitably distributed and are not only borne by the survivors themselves but by society as a whole. It is argued that these costs, individually and societally, need to be quantified and better understood in order to plan cost-effective and efficient health care services that can be measured against the baseline data generated by the proposed research.
Critical illness alters the effectiveness of antibiotics in fighting sepsis. Augmented clearance and altered pharmacokinetics have been proven in adults with critical illness. Very little is known about the effect of critical illness in the paediatric patient. There is early evidence to suggest that antibiotics need to be dosed differently. The age range of a patient in the paediatric intensive care varies from newborn to 16yrs of age. In some cases up to 21yrs. Weights vary from 3kg to 140kg. In addition to this there are developmental changes in the body's enzyme systems and organ functioning that make the study of the pharmacology in these patients very challenging. The prescribing of antibiotics is one of the most common therapies used in the Paediatric Intensive Care. In this PhD study Tavey hopes to understand how we can effectively dose antibiotics in critically unwell children and in doing so dose more efficiently to guard against the threat of antibiotic resistance.

Elissa's thesis is investigating the role of the endothelial glycocalyx (EG) in severe trauma

The EG is a microscopically thin layer of glycoproteins, proteoglycans, glycosaminoglycans and plasma proteins that lines all the blood vessels in the body. Damage to the EG (termed shedding) occurs early following severe traumatic injury, and the degree of EG shedding has been associated with poor outcomes in trauma. However, it is unclear if EG shedding is simply a marker of disease severity or if it directly contributes to poor outcomes. If a causal link is established, then there is great potential for the EG to be a therapeutic target in the treatment not only of trauma patients, but also in other illnesses such as severe sepsis.

Alternatively, EG shedding may still prove to be a useful marker of microcirculation hypoperfusion. This project aims to determine the significance of EG shedding in severe trauma, and to investigate potential therapies.

Rochelle's research describes Cefazolin PK in bariatric surgery. Cefazolin, a β-lactam antibiotic, is the recommended antibiotic for surgical prophylaxis in many surgeries. The efficacy of cefazolin relies upon the time above the minimal inhibitory concentration of potential pathogens in susceptible tissues, in particular the subcutaneous interstitial fluid (ISF). Pharmacokinetic data of cefazolin in the perioperative period is sparse and conflicting and inadequate ISF concentrations may predispose to surgical site infections. Microdialysis is an in vivo sampling technique to measure subcutaneous ISF drug concentrations. This project will use microdialysis ISF and serum concentrations to evaluate the pharmacokinetic-pharmacodynamics of cefazolin in the perioperative period and examine optimal dosing regimens.
Infection in burns patients can lead to serious consequences if not treated appropriately. One of the main sources of infection in these patients is from the burn wound. Previous studies have shown that the antibiotic concentrations in blood and tissue do not necessarily run parallel. To ensure optimal antibiotic treatment to the burn wound infection, our project aims to assess the relationship of antibiotic concentrations in blood and tissue. This will allow us to determine the dosing required for antibiotics in this group of patients to ensure effective antibiotic therapy. The aim of the project is to describe the plasma and tissue concentrations of the antibiotic lincomycin in burns patients with burn wound infection. We aim to use this data to develop robust dosing recommendations for effective lincomycin therapy.

A retrospective cohort analysis was performed comparing length of stay (LOS) outcomes of patients admitted to an intensive care unit after inter-hospital transfer (IHT) with similar patients who did not undergo transfer, and to assess the impact of geographical and service availability factors on LOS in these patients. Critically ill patients who underwent IHT have longer LOS than patients that did not, even after adjustment for their greater severity of illness and other significant characteristics. Clinical service availabilities of discharge destinations were significant predictors of LOS, but distance travelled, patient remoteness, and severity of illness were not. Our findings potentially identify targets to which tailored interventions could reduce the increased LOS associated with IHT, improving efficiency in critical care delivery.

Nilesh’s project is a two-centre observational pharmacokinetic study (conducted jointly with the Prince of Wales Hospital, Hong Kong SAR) aiming to determine optimised dosing regimens for four antibiotics routinely used in the treatment and prevention of central nervous system infections in critically ill patients. Three groups of patients will have antibiotic concentrations measured over a dosing interval in serial blood, cerebrospinal fluid and urine samples. These data will be subjected to sophisticated pharmacokinetic modelling for each of the four antibiotics, which include ceftriaxone, meropenem, piperacillin-tazobactam and vancomycin. The model can then be used to perform dosing simulations in order to design more effective antibiotic dosing strategies, so as to optimise patient outcomes by ensuring effective concentrations in the CSF of relevant critically ill patients. This study has received HREC and site specific approval, and sample collection is expected to commence in November 2016.
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<td>Ms</td>
<td>Yarmarly Guerra Valero</td>
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**RESEARCH SUPERVISION**

**Supervision of Research for UQ Medical Student Observerships, Junior Doctors and Volunteers**
Prof Louise Cullen—Robert Nayer, Alessandro Iliceto, Mallory Emig, Ariel Ho
Dr Susannah Sherlock—Ohmar Aung for Diploma in Hyperbaric Medicine
Dr Julie Lee—Alana Pinheiro, Ellen Coonan, Shaiyla Sivakumar, Tory Lingard, Joel Thomas, Margo Blanco, Ly Zhang and Surya Bhamidipaty-Pelosi
Prof Michael Reade—Dr George Evetts, Ms Meng Mei Phua
Dr Despoina Koulenti—David Thompson, Kimberly Tu, Vipin Varghese, Graham Unis, Ashley Antovich, Mathew Robin Judd, Noori Dhaliwal, Amy-Lou Richter, Ethel Soh, AnXuan Ang, Amarjargal Byambatsogt, Harman Khaira, Waseem Gazale, Dan Pasternak, Estefania Torrivilla

**Completion of Higher Degree**
Congratulations to the following on completion of their degree this year.

Dr Hafiz Abdul-Aziz PhD  Dr Victoria Eley PhD  Dr Aziz Alobaid PhD  Dr Bernie Bissett PhD  Dr Natasha van Zyl MPhil
Mr Andrew Flint MBBS/Hons  Dr Marco Haanschoten PhD  Dr Evelien Verstraete PhD  Ms Michelle Donovan MPhil
Students Enrolled in Other Schools/Institutes who are supervised/co-supervised by our staff

Mahipal Sinnollareddy (University of South Australia) PhD. Supervisor — Prof J Roberts
Kiran Shekar (UQ) PhD. Co-supervisor — Prof J Roberts
Sonali Coulter (QUT) PhD. Assoc supervisor — Prof J Roberts
Kelly Mulvogue (UQ) MPhil. Co-supervisor — Prof J Roberts
Annie Sultana (UQ) MPhil. Investigating underlying mechanisms of transfusion-related acute lung injury. Supervisor — Prof M Reade
Natasha van Zyl (UQ) MPhil. Development of an ovine model of trauma-induced coagulopathy. Supervisor — Prof M Reade
Paul Jarrett (QUT) MPhil. Nursing interventions for acute confusion in critical illness. Supervisor — Prof M Reade
Andrew Flint (Monash University) MBBS/Hons. Retrospective analysis of the effect of duration of platelet storage on outcome of trauma and critical illness. Supervisor — Prof M Reade
Courtney Clark (Griffith University) PhD. Supervisor — A/Prof J Paratz.
Julie Adsett (Griffith University) PhD. Hydrotherapy in heart failure. Supervisor — A/Prof J Paratz
Lauren O’Connor (Griffith University) PhD. The effect of the Passy Muir valve on postural retraining. Supervisor — A/Prof J Paratz
Maureen Peasey (Griffith University) MPhil. Physical activity in COPD. Supervisor — A/Prof J Paratz
Jemima Boyd (Griffith University) MPhil. Haemodynamic measurement in mobility post cardiac surgery. Supervisor — A/Prof J Paratz
Rofhiwa Mathiba (University of the Witwatersrand, South Africa) MMed. Malaria at Chris Hani Baragwanath Intensive Care Unit: Comparing outcomes between Quinine and Artesunate therapy. Supervisor — Dr G Nethathe
David De Wandel (Ghent University, Belgium) PhD. The impact of hand hygiene education in long term care facilities. Supervisor — Prof S Blot
Evelien Verstraete (Ghent University, Belgium) PhD. Epidemiology of hospital-acquired bloodstream infection in neonatal ICU. Supervisor — Prof S Blot
Andy Lo (UQ) MPhil. Use of an electronic app to collect and analyse pharmacist interventions in a hospital ward environment. Supervisor — Prof S Blot
Chandra Sumi (UQ) PhD. Optimization of alternative antibiotic dosing regimens for maximal antibacterial activity and suppression of emergence of resistance. Supervisor — Prof J Roberts
Marco Haanschoten (University of Maastricht, Netherlands) PhD. Towards efficient cardiac surgery – the integrating role of anaesthesiology and intensive care. Supervisor — Prof A van Zundert
Gladness Nethathe (University of Witswatersrand, South Africa) PhD. Aspects of the Neuroendocrine Stress Response in Patients with Severe Sepsis or Multi-Trauma. Supervisor — A/Prof J Cohen
Aaron Heffernan (Griffith University) MD/PhD. Intravenous and nebulised dose optimisation of fosfomycin and amikacin in the treatment of multi-drug resistant gram-negative pneumonia. Supervisor — Prof J Roberts
Kirsten Strudwick (UQ) PhD. Supervisor — Dr A Bell
Daniel Lancini (UQ) PhD. Supervisor — Prof L Cullen and A/Prof R Boots
Thushani Adikari (UQ) MD/Hons. Supervisor — Prof L Cullen
William Crawford (UQ) MD. New Investigator. Mentor — Prof L Cullen
Gabriella Simonov (UQ) PhD. Development of sheep laboratory models to investigate the effects of transfusion with stored and cryopreserved blood products. Assoc. Supervisor—Prof M Reade
Timothy Sladden (UQ) PhD. Assoc. Supervisor—Prof J Lipman
Bernie Bissett
In 2016 the randomised trial of inspiratory muscle training for ICU patients was published in the journal Thorax, accompanied by an editorial by Professor Rik Gosselink which highlighted the importance of our research findings for ICU clinicians. I also presented these results at the American Thoracic Society conference in San Francisco in May, as well as the Canberra Health Annual Research Meeting in August, where the presentation won "Best Allied Health Oral Presentation". With the PhD submitted and accepted in 2016, I would like to thank the BTCCRC for their ongoing support of my research across the life of my candidature from 2010 - 2016. I look forward to continuing to collaborate with my supervisors Jenny Paratz, Rob Boots and Anne Leditschke and maintaining the Brisbane-Canberra ICU connection in the coming years.

Mohd Hafiz Aziz
Critically ill patients are markedly different from those in general ward settings as they are associated with higher morbidity and mortality rates. These patients commonly demonstrate a high level of illness severity which causes profound physiological changes that can alter the pharmacokinetics of antibiotics. Antibiotic dosing that does not account for these changes may lead to therapeutic failure and the emergence of antibiotic resistance. My thesis aimed to better characterize the PK/PD of β-lactam antibiotics to determine whether there is any therapeutic advantage associated with prolonged dosing (continuous infusion and/or extended infusion) as compared to intermittent bolus dosing. The findings of my thesis suggest that conventional β-lactam dosing does not address the physiological changes and as such, increases the likelihood of therapeutic failure and the emergence of resistance in critically ill patients. Altered dosing approaches may be needed to ensure optimal β-lactam exposure and may produce better therapeutic outcomes than intermittent bolus administration, particularly in critically ill patients with severe sepsis. Eleven research articles have been published from my PhD projects.

Abdulaziz Alobaid
The increasing numbers of critically ill obese patients in the intensive care unit and the high frequency of antimicrobial prescription in these patients present a challenge for prescribing effective antimicrobial doses. My thesis addresses the limitations of current knowledge by describing the plasma pharmacokinetics of piperacillin, meropenem and fluconazole in critically ill non-obese, obese and morbidly obese patients. The overall results of my thesis suggest that the BMI does not have a profound effect on antimicrobial dosing requirements for critically ill obese patients. Renal function, which was best described by creatinine clearance, was the major determinant of dosing requirements in individual patients. It can be concluded that although a higher than standard dose may be appropriate for the first 24-h of treatment, on subsequent days, dosing need only be based on robust estimates of renal function. My thesis contains five publications: one overview article, one retrospective study, and three original research articles.

Michelle Donovan
My research focused on a unique area of burns donor site scar management. The overarching aim of the research undertaken was to test a low pressure tubular support garment (IPGT) as a potential intervention to firstly, support the healing of donor wounds of burn patients, and secondly, to improve the overall appearance of the donor site scar. The preliminary results indicated a trend towards a decrease in donor site scar thickness over time for the IPGT group, compared to the control group. This supports the hypothesis that the application of IPGT as a treatment for burns donor sites may support healing and consequently reduce scar thickness. Continuation of this research will be required to consolidate this evidence.

Suzanne Parker
Critically ill patients experience illness-related physiological changes; a pharmacokinetic study describing these changes is required to optimise dosing for effective antibiotic treatment. My thesis described a method for the quantitative analysis of the antibiotic fosfomycin, suitable for a pharmacokinetic study. This included the validation of two innovative blood-sampling strategies using very small volumes of dried blood. The pharmacokinetics of fosfomycin in critically ill patients was characterised in my thesis and I identified highly variable clearance and volumes of distribution. Contemporary dosing of fosfomycin was found to be inadequate for many pathogens in patients with augmented renal clearance.
Critical Care

Research within the RBWH ICU continued to thrive yet again in 2016 and we continued to produce meaningful and practical research. Our publications are impressive improving on last year’s numbers. We published in prestigious medical journals such as New England Journal of Medicine, Lancet Infectious Diseases, Clinical Diseases, Intensive Care Medicine and Critical Care Medicine to name a few.

This year, in a Critical Care research first, our researchers published with a relative of one of our patients. Julie Vermeir wrote a brilliant, thought-provoking article on how the bedside communication that occurs amongst health professionals can be quite daunting from a wife’s (or family’s) perspective. This followed on an article last year by the patient himself describing his experiences from the other side of the bed. Consumer engagement was the emphasis of both articles.

As the result of our national and international clinical trials and multi-centre studies, our collaborations grew with an increasing number of overseas collaborators, particularly European, but also colleagues from UK, Asia, South Africa, Middle East and USA. With the commencement of Dr Koulenti’s international PneumoINSPIRE study which is investigating pneumonia in the ICU setting, our collaborating ICUs have grown from 200 to over 350, including increasing collaboration across Asia, obviously an important part of our region.

Our research projects investigating the management and outcome of critically ill patients with or without sepsis and those with head injury, will continue to provide evidence based treatments that improve health outcomes and quality of life.

Prof Jeff Lipman

Drug Dosing and Pharmacokinetics

2016 has been another stellar year for the PK/PD group within BTCCRC. The research metrics remain strong with quality being very strong. We are also delighted with the progression of our numerous research higher degree (RHD) students through the milestones of their study. We also welcome Ms Yarmarly Guerra Valero and Dr Tavey Dorofaeff who commenced their PhD study in 2016 and Mr Nilesh Kumta who commenced the MPhil component of his MBBS/MPhil degree.

However, we are particularly excited with the RHD graduations! Specifically, we congratulate Dr Suzanne Parker, Dr Mohd Hafiz Abdul-Aziz, Dr Kiran Shekar, Dr Abdulaziz Alobaid who all had their PhDs conferred in 2016. Suzie and Hafiz will continue to work at BTCCRC as Post-doctoral Fellows which is exciting to have that expertise and continuity. We also congratulate Dr Os Cotta for his 3-year UQ Fellowship which will allow him to play a major role on the 7000 patient BLING-3 Study which has been funded in the 2016 NHMRC Project Grant round. Os’ role will be based in School of Pharmacy, UQ which remains a very strong collaborator of BTCCRC.

Sadly, we farewell Dr Claire Roger from CHU Nimes in France who spent a year at BTCCRC performing pharmacometric analyses and coordinating clinical trials like the SAFE-ICU Study. Her visit continued the very strong collaboration the PK/PD Group enjoys with CHU Nimes.

From a funding and publication perspective, the PK/PD Group had another excellent year with very good outputs. We are particularly proud of our increasing linkages with Pharmaceutical Industry where we are able to make earlier impacts on optimising dosing for difficult to treat patient groups. BTCCRC have enjoyed a successful first year of the NHMRC CRE REDUCE, which is very well managed by Mr Nermin Karamujic. This centre provides funding support to increase capacity in the research areas of antimicrobial dosing in difficult to treat patient groups. One of the laboratories that we are fostering relationships with is the Centre for Translational Anti-infective Pharmacodynamics at School of Pharmacy, UQ which has a state-of-the-art in vitro PK/PD system to better inform antibiotic dosing that not only maximises bacterial killing, but also suppresses the emergence of antibiotic resistance.

Importantly, we would like to thank each of the funding bodies that have supported our work this year, as without them, our meaningful contributions to patient care may not have been possible. We also acknowledge all our collaborators for the research opportunities provided again this year and look forward to future excellent achievements together.

Finally, we thank the tireless efforts of the research staff at BTCCRC and the RBWH ICU who allow our research to be of the highest integrity and clinical relevance.

Prof Jason Roberts
Anaesthesia

2016, has been another big year in research and education for the Department of Anaesthesia. The research team continues to grow and expand through collaborations at state, national and international level. This is set to continue through 2017 as the department carries on its participation in local investigator driven and global multi-centre trials. Research in the department has matured as we see our researcher's progress through their higher degrees. Victoria Eley submitted her PhD thesis, and carries on her research in analgesia use in obese parturients; while Julie Lee continues to advance through her PhD studies on ROTEM® thromboelastometry in obstetric anaesthesia. Rochelle Ryan has recently commenced her MPhil researching the impact obesity has on antibiotic dosing.

The department has been awarded 5 scholarships and over $200,000 worth of grant funding this year. The ANZCA CTG BALANCED study is currently progressing successfully under the guidance of Michael Edwards, as site coordinator, and the department's research nurse Cienwen Town. This study looks at the depth of anaesthesia in elderly surgical patients and associated outcomes. We are continuing to collaborate with the ANZCA CTG, commencing the international, multi-centre trial PADDI in January 2017 to assess the perioperative administration of dexamethasone and infection rates. Julie Lee is the site coordinator with support from research nurse Lizanne Dalgleish. Professor Van Zundert continues to investigating best airway management practices, looking at both patients and manikins to improve intubation practice. Professor's research is supported by research nurse Heather Reynolds. Other ongoing collaborative research with ICU and burns includes studies investigating: antibiotic prophylaxis in bariatric Caesarean and surgical patients (Rebecca Christensen, Victoria Eley, Mathew Smith, Dwane Jackson, Rochelle Ryan, Andre Van Zundert, Jason Roberts and Jeffrey Lipman); Optic nerve sheath measurement of intracranial pressure (Gareth Collins, Lizanne Dalgleish and Cienwen Town); and dermal matrix for deep burns.

From an educational perspective, the renovations for the state-of-the-art teaching and research centre, the ‘Centre for Excellence and Innovation in Anaesthesia’ (CEIA), reached completion in late 2016. The centre has allowed the department to facilitate the expansion of the Big 5: teaching, training, equipment, quality and research. With thanks to Dr Nathan Peters the department is already reaping its rewards as it becomes the first QLD based, accredited, simulation based, focused transthoracic echocardiography workshop facility. This workshop reduces the need for physicians to travel interstate to acquire the necessary skills for college qualifications. Lizanne Dalgleish has been appointed Nurse Manager for the CEIA, Katherine Hames continues as the lead for departmental educational activities, and Kersi Taraporewalla directs simulation for the university and medical training. Linda Beckmann, carries on as Airway Management Workshops lead, which is set to grow with the CEIAs expansion. Michelle Roets has been instrumental in facilitating the equipment evaluation for the Systematic analysis of basic equipment in Anaesthesia (SABEA project). Geoffrey Messer and Anthony Hade continue their great work in Quality and Safely management.

By the end of 2016, our Department has published 6 book chapters, 32 journal articles and made 24 conference presentations by Professor Van Zundert, Associate Professor Kerstin Wyssusek, Associate Professor Kersi Taraporewalla, Dr Victoria Eley, Dr Julie Lee, Dr Ben Snow, Dr Heather Reynolds and Ms Lizanne Dalgleish.

Prof Andre van Zundert

Emergency Medicine

Throughout 2016 the Department of Emergency Medicine at RBWH engaged in a broad spectrum of research activities. Collectively, our researchers realised their most productive year to date; having authored or co-authored more than 50 peer-reviewed publications. This achievement is the culmination of ever-increasing research efforts over many years that have been driven by our talented senior researchers and leaders and well-supported by enthusiastic research staff and students. It also reflects our focus on high quality research questions and our engagement in successful collaborative partnerships. These collaborative partnerships extended locally across RBWH departments, and nationally and internationally across hospitals and universities.

Our research work was presented throughout the year at conferences and symposia in Brisbane, Melbourne, Adelaide, New Zealand, Fiji, Spain, Italy and USA. Our researchers were recognised with several awards: Dan Bodnar was awarded “Best Paper” at the 12th Annual Queensland Emergency Medicine Autumn Symposium in Brisbane; Tracey Hawkins and the CREDIT study team were awarded “Best Poster” presentation at the 33rd Annual Scientific Meeting of the Australasian College of Emergency Medicine in Queenen, New Zealand; Louise Cullen and co-researchers won the prestigious Ko Awatea International Excellence in Health Improvement Award at the APAC Forum in Sydney for their work on the Accelerated Chest Pain Risk Evaluation (ACRE) project; Louise Cullen also received the Metro North Hospital and Health Service Research Excellence Award, the Clinical Researcher Award from the Australian Society for Medical Research, and was part of the research team that received an “Honourable Mention” at the UQ -Ochsner Clinical School Annual Research Day.

As always, we greatly appreciate the financial support of our research funding partners. In 2016 we were very fortunate to be working on projects that were supported by the Emergency Medicine Foundation, RBWH Foundation and Queensland Health. New funding was awarded by the Emergency Medicine Foundation, RBWH Foundation, The Prince Charles Hospital Foundation and the National Heart Foundation.

A/Prof Kevin Chu
Military Medicine

2016 saw both Professor Reade and Dr Anthony Holley deployed to Iraq for several months. Operational experience continues to shape the research priorities of the BTCCRC Military Theme.

In March 2016 in Brussels, Professor Reade presented the Dexmedetomidine to Lessen ICU Agitation (DahLIA) trial, simultaneously published in JAMA, demonstrating the effectiveness of dexmedetomidine treating agitated delirium associated with critical illness. Preliminary work building on these results includes trials in traumatic brain injury and delirium prophylaxis. In 2017-2018 this will be led by Dr David Liu, undertaking his postdoctoral research fellowship supported by a prestigious Queensland Health fellowship, under the supervision of Professor Reade and Professor Charles Gilks of the UQ School of Public Health. Professor Reade also commenced supervision, with Dr Deb Long, of Dr Paul Lee-Archer's PhD trial of dexmedetomidine as a component of paediatric anaesthesia.

The BTCCRC collaboration with the Australian Red Cross Blood Service continues to flourish, with Professor Reade co-supervising two PhD students with Drs John-Paul Tung and Melinda Dean. These involve whole-animal and cell monolayer models in which cryopreserved blood products can be assessed, and is an extension of research undertaken by Dr Natasha van Zyl, who in 2016 graduated as the first MPhil student in the BTCCRC Military Theme. Dr van Zyl's work, performed under the co-supervision of Prof John Fraser, developed the first ovine model of acute traumatic coagulopathy. CAPT Elissa Milford has built on her early PhD laboratory work on this model by commencing a clinical observational study, to be followed by human volunteer studies of glycocalyx degradation at the UK’s Defence Science and Technology Laboratory at Porton Down.

Clinical trials related to military trauma progressed, with the 5000-patient TRANSFUSE trial of age of blood storage, led by the ANZIC-RC, completing recruitment in late 2016. The CLIP (Cryopreserved vs. Liquid Platelets) at last solved considerable logistical problems, and is now 1/3 the way to its 90-patient target. In the process Renae Deans, the CLIP project manager, has developed a uniquely detailed knowledge of ultra-low temperature monitoring and remote alarm systems! The PATCH-Trauma trial of prehospital tranexamic acid is now recruiting well in Queensland, with the addition of partner sites in New Zealand and the United States planned in 2017.

The proposal to fund a Queensland Comprehensive Trauma Institute at RBWH, led by A/Prof Cliff Pollard and Dr Amanda Dines with input from Prof Reade and A/Prof Kirsten Vallmuur, gained momentum at the end of 2016. Promising a single data repository integrating all trauma data from prehospital to rehabilitation, the Institute will offer a globally unique opportunity to study trauma systems design in a region with highly dispersed population and trauma management assets – analogous to that found on military operations.

At the end of 2016 the military trauma and critical care section of the BTCCRC includes 4 ADF officers amongst 4 PhD, 2 Masters, and 2 MBBS students, with one MPhil student and 3 MBBS / MBBS(Hons) students completing their projects this year. In 2016, 15 manuscripts were published or accepted for publication, including contributions to JAMA, the Journal of Trauma and Acute Care Surgery, and Transfusion, and 32 conference presentations were made.

Prof Michael Reade

Burns

2016 has been a successful year for the Burns research team. Michelle Donovan was awarded a Masters of Philosophy on the topic “Interim compression garments in donor sites” through the University of Queensland.

The International Society Burn Injuries meeting was held in Miami and Anita Plaza presented an invited paper.

Publications in 2016 in the burns area included one in the Journal of Trauma (Flores, Paratz, Stockton, Muller), and Trials (Donovan, Simpson, Muller, Rudd, Paratz). Anita Plaza and Jennifer Paratz published a chapter on Burn Management in a leading textbook.

Two PhD students (Martha Druey and Orlando Flores) are continuing their studies in the burns area. Orlando Flores, from Chile, is researching Metabolism in burns, whilst Martha Druey is investigating factors associated with psychosocial outcomes in burns. Lisa Wang, a resident medical officer is completing the Masters of Philosophy on her topic “Pharmacodynamics of Lyncmycin in Burn Patients”.

A/Prof Jenny Paratz


Bell A, McDonald F, Hobson T. The Ethical Imperative to Move to a Seven-Day Care Model. J Bioeth Inq 2016;13:251-60


Journal Articles (cont’d)


Blot S, Torres A, Francois B. Evidence in the eye of the beholder: about probiotics and VAP prevention. Intens Care Med 2016;42:1182-4


Chu K, Mahmoud I, Brown A. What is the chance all your trainees will pass the next Fellowship exam: A statistician’s view. Emerg Med Australas 2016;29:113-15


Cotta M, Roberts J, Lipman J. We need to optimize piperacillin-tazobactam dosing in critically ill patients-but how? Crit Care 2016;20:163


Journal Articles (cont’d)

Cullen L, Greenslade J, Carlton E, Than M et al. Sex-specific versus overall cut points for a high sensitivity troponin I assay in predicting 1-year outcomes in emergency patients presenting with chest pain. Heart 2016;102:120-6


Denning D, Cadranel J, Beigelman-Aubry C, Ader F, Chakrabarti A, Blot S et al on behalf of the European Society for Clinical Microbiology and Infectious Diseases and the European Respiratory Society. Chronic pulmonary aspergillosis: rationale and clinical guidelines for diagnosis and management. Eur Respir J 2016;47:45-68


Donovan M, Muller M, Simpson C, Rudd M, Paratz J. Interim pressure garment therapy (4–6 mmHg) and its effect on donor site healing in burn patients: study protocol for a randomised controlled trial. Trial 2016;17:214


Journal Articles (cont’d)


Gibbs, N, Shanmugam S, Goulding G, Taraporewalla K, Culwick M. Chewing gum in the preoperative fasting period: an analysis of de-identified incidents reported to webAIRS. Anaesth Intens Care 2016;44:282-84


Hockey C, van Zundert A, Paratz J. Does objective measurement of tracheal tube cuff pressures minimise adverse effects and maintain accurate cuff pressures? A systematic review and meta-analysis. Anaesth Intens Care 2016;44:560-70


Journal Articles (cont’d)


Neumann J, Sorensen N, Schwemer T, Ojeda F et al. Diagnosis of Myocardial Infarction Using a High-Sensitivity Troponin I Hour Algorithm. JAMA Cardiol 2016;1:397-404


Paratz J, Boots R. Dealing with the critical care aftermath: where to from here? J Thorac Dis 2016;8:2400-02


Journal Articles (cont’d)


PUBLICATIONS

Reynolds H, Chalk T, Van Zundert A, Rickard C. A way to go to meet guidelines for prevention of intravenous catheter infection and complications: Audit of perioperative peripheral venous catheter care. Vasc Acc 2016;2:2-9


Shanmugam S, Goulding G, Gibbs N, Taraporewalla K, Culwick M. Chewing gum in the preoperative fasting period: an analysis of de-identified incidents reported to webAIRS. Anaesth Intens Care 2016;44:281-4


Journal Articles (cont’d)


van Zundert A. Double gloves: a randomized trial to evaluate a simple strategy to reduce contamination in the operating room. ESRA Academy 2016;

van Zundert A. Hand hygiene knowledge and perceptions among anesthesia providers. ESRA Academy 2016;


van Zundert A, Wyssusek K, Vivian V. Verification of Nasopharyngeal Temperature Probes – They are not always were you think they are! Anesth Analg 2016;123:1338-9


van Zyl N, Milford E, Diab S…..Reade M, Fraser J, Staub A. Activation of the protein C pathway and endothelial glycoalyx shedding is associated with coagulopathy in an ovine model of trauma and hemorrhage. J Trauma Acute Care Surg 2016;81:674-84


Journal Articles (cont’d)


Book Chapters


Books


Published Conference Proceedings


Reade M. A bibliometric analysis of military trauma registry publications. J Milit Veter Health 2016 in press, accepted 12/10/16


Van Zyl N, Milford E, Diab S, Dunster K, McGiffen P, Rayner S, Reade M, Fraser J, Staub A. Activation of the protein C pathway and endothelial glycocalyx shedding is associated with coagulopathy in an ovine model of trauma and haemorrhage. ANZ J Surg 2016 in press, accepted 7/3/16
Invited Presentations

Michael Reade

- The new Australian Defence Force Blood Transfusion policy. Australasian Association of Clinical Biochemists/ Australian Institute of Medical Scientists Combined Scientific Meeting, Brisbane, 2016
- Dexmedetomidine in agitated delirium: the DahLIA trial results. ANZICS Annual Scientific Meeting (ASM), Perth, 2016
- Blast injury in civilian practice. 5th Annual Best of Brussels Meeting, Indian Society of Intensive Care Medicine (ISICM), Pune, 2016
- Why I would, and why I would not, use whole blood transfusions in civilian practice. 5th Annual Best of Brussels Meeting, ISICM, Pune, 2016
- How I manage agitated delirium in the ICU after the DahLIA trial. 5th Annual Best of Brussels Meeting, ISICM, Pune, 2016
- Can we measure blood gases and lactate from venous or capillary blood? 36th ISICEM, Brussels, 2016
- Fibrinogen concentrate: is there really equipoise for a clinical trial? 36th ISICEM, Brussels, 2016
- Treatment of agitated delirium: new aspects. 36th ISICEM, Brussels, 2016
- When to shift from pro- to anti-coagulant therapy after trauma? 36th ISICEM, Brussels, 2016
- Blast injury: myths and facts. 36th ISICEM, Brussels, 2016

Andre van Zundert

- Why go blind if you can see the airway? Indo-Anaesthesia International Meeting, Jakarta, Indonesia, Feb 2016
- Postdural puncture headache – what’s old – what’s new?

CONFERENCES PRESENTATIONS

- Alternatives to neuraxial labour analgesia, Annual Congress European Society of Regional Anaesthesia and Pain Therapy (ACESRAPT), Maastricht, The Netherlands, Sept 2016
- Videolaryngoscopy – the standard of airway management, ACPAN National Conference, Melbourne, Nov 2016 (Keynote)
- Airway Management, 48th Annual Convention of the Philippine Society of Anesthesiologists (PSA), Manila, Philippines, Nov 2016
- Benigno Sulit Jr Memorial Lecture: How to bring anaesthesia to the next level – the Big Five in Anaesthesia: Teaching, Simulation, Testing Equipment, Quality Care and Research, 48th Annual Convention of the PSA, Manila, Philippines, Nov 2016
- How IV catheters revolutionized medicine, 48th Annual Convention of the PSA, Manila, Philippines, Nov 2016
- Videolaryngoscopy – a masterpiece in airway management, 48th Annual Convention of the PSA, Manila, Philippines, Nov 2016
Invited Presentations (cont’d)

Martin Culwick
- National registries, big data resources - how to do it, what’s their value? The World Congress of Anaesthetists Meeting, Hong Kong, Aug 2016
- Culwick M, Reynolds H, Kamp R. WebAIRS: strategies to analyse and manage anaesthetic crises. ANZCA ASM Auckland, May 2016

Susannah Sherlock
- Hyperbaric therapy for idiopathic sudden sensorineural hearing loss, ANZCA ASM Hyperbaric Special Interest, Auckland, May 2016
- Idiopathic Sudden Sensorineural Hearing Loss, SPUMS conference, Fiji, May 2016
- Gratton Institute Report, Australian Orthopaedic Society Meeting, Gold Coast, Jun 2016

Stijn Blot
- Antibiotics in the ICU – Basic issues and pitfalls for optimal dosing. Critical Care Society of South Africa Egoli Branch Minisymposium, Egoli, Sandton, 12 Mar 2016 (e-lecture)
- Antibiotic therapy: do not forget the practical organization. 36th International Symposium on Intensive Care and Emergency Medicine (ISICEM), Brussels, Mar 2016
- Multiresistant organisms – Do we need surveillance cultures? 36th ISICEM, Brussels, Mar 2016
- Quality improvement initiatives to reduce CLABSI rates in ICUs. 3M Masterclass: Reducing infection risk at all access points. Brussels, Jun 2016
- Health economic benefits of CHG dressing. 3M Masterclass: Reducing infection risk at all access points. Brussels, Jun 2016
- Quality improvement initiatives to reduce CLABSI rates in ICUs. 3M Masterclass: Reducing infection risk at all access points. Delft, Jun 2016
- Health economic benefits of CHG dressing. 3M Masterclass: Reducing infection risk at all access points. Delft, Jun 2016
- Value-based caring: What’s in a name. 29th Annual congress of the European Society of Intensive Care Medicine (ESICM), Milan, Oct 2016
- Hemodynamics explained: a framework on dartmeters of arterial blood pressure. 29th Annual congress of the ESICM, Milan, Oct 2016
- Review of N&AHPS activities at the ESICM. 29th Annual congress of the ESICM, Milan, Oct 2016
- Routine surveillance cultures to guide empiric antibiotic therapy. 41st ANZICS/ACCCN Intensive Care ASM, Perth, Oct 2016
- Antibiotics in the ICU: what nurses should know. 41st ANZICS/ACCCN ASM, Perth, Oct 2016

Adrian Chin
- A randomised controlled trial comparing ultrasound and palpation assisted combined spinal-epidural anaesthesia for elective Caesarean section (Gilbert Brown session). ANZCA ASM Auckland, May 2016
- Block rooms - is it worth it? Newcastle Anaesthesia Conference, Newcastle, Jul 2016

Anthony Brown
- Research tips and getting published. Mater RMO Society Research Conference; Mater Hospital, Brisbane, Jul 2016

Kerstin Wyssusek

Jennifer Paratz
- Facilitating clinicians to implement evidence into practice. RBWH Healthcare Symposium, Brisbane, Sept 2016
- Paratz J, Kayambu G, Boots R. Early exercise and the effect on the microcirculation in sepsis. ESICM, Milan, Oct 2016
Invited Presentations (cont’d)

Bill Lukin
- Advance care planning. Advance Care Planning National Forum; Auckland, Nov 2016
- Aged care to ED: what are we missing? End Of Life Care Improvement Group Workshop The Health Roundtable; Sydney, Apr 2016
- Communication and palliation in the ED. Integrated Emergency Care for Older Persons Summit; Melbourne, Oct 2016
- Palliative Care in the ED. 12th Annual Queensland Emergency Medicine Autumn Symposium; Brisbane, May 2016

Despoina Koulenti
- Ventilator-Associated Tracheobronchitis, ESICM 29th Annual Congress, Milan, Oct 2016
- Current Evidence in VAP Prevention, ESICM 29th Annual Congress, Milan, Oct 2016

Louise Cullen
- National Heart Foundation of Australia (NHFA) and Cardiac Society of Australia and New Zealand (CSANZ): Australian clinical guidelines for the management of acute coronary syndromes. 33rd Australasian College for Emergency Medicine (ACEM) ASM, Queenstown, New Zealand, Nov 2016
- Troponins and rule out in 2016 (Masterclass). Emergency Medicine Core Knowledge (EMCORE) conference; Fiji, Sept 2016
- Troponins and rapid rule out. EMCORE conference; Melbourne, Jun 2016
- One arrhythmia you must know. EMCORE conference; Melbourne, Jun 2016

Heather Reynolds
- Clinical studies, an evidence-based educational approach and web-based strategies provide a clear path for practice improvement, AVA ASM 2016. Orlando, USA.
- Under Dosing of Antibiotics in the ICU - A PK/PD Approach. IDWeek, Infectious Diseases Society of America (IDSA) ASM, New Orleans USA, Oct 2016
- Dosing antifungals in the critically ill. ESICM Annual Congress, Milan, Italy, Oct 2016
- Optimized PK/PD: Can It Reduce Resistance? ASM Microbe, Boston, USA, Jun 2016
- The importance of antibiotic dosing as part of AMS. 2nd Annual Targeting and Evaluating Antimicrobial Stewardship Forum, Melbourne, Jun 2016,
- Renal Replacement Therapy, Critical Care Seminar, Society of Hospital Pharmacists of Australia (SHPA) Brisbane, May 2016
- Is there a role for TDM in infective endocarditis? Australian Society for Antimicrobials ASM, Melbourne, Feb 2016
- Using MIC in Predicting Clinical Outcomes of Antibiotic Treatment. Australian Society for Antimicrobials ASM, Melbourne, Feb 2016
- Approaches to funding the response to antimicrobial resistance. 3rd Queensland Forum on Antimicrobial Resistance, Brisbane, Nov 2016
- Getting Systemic Therapy Right! Orthopaedic Infections – State of the Art, Wesley Hospital, Brisbane, Nov 2016
- Individualised antibiotic dosing and TDM. Royal North Shore Hospital, Sydney, Sept 2016
- Drug dosing in obesity. SHPA, Queensland Branch Continuing Education Series, Jun 2016

CONFERENCE PRESENTATIONS
Presentations

Louise Cullen

- Are we overdiagnosing myocardial infarction? Preventing Overdiagnosis; Barcelona, Spain, Sept 2016
- Neumann J, Sorensen N, Schwermer T et al. Rapid measurement of a single troponin I combined with negative ECG allow accurate ruleout of NSTEMI in patients with suspected AMI. European Society of Cardiology Congress; Rome, Italy, Aug 2016 (Poster)

Anthony Brown

- How to get published. Building your medical career through research: doctors in training, AMA Queensland; Brisbane, Mar 2016 (Poster)
- Unexpected alternate emergency department diagnoses in two patients with HAE with normal C1INH (HAE type III). 2016 Global Forum for Hereditary Angiodema; Warsaw, Poland, Nov 2016 (Poster)
- Holley A, Brown A. Trauma Scenarios - Small group, all-day workshop. Current Concepts in Critical Care Course; RBWH Brisbane, Dec 2016 (Poster)

Michael Reade

- Phua M-M, Pretorius C, McWhinney B et al. Confirming Hypothesised Associations Of Increased Pyroglutamic Acid In A Mixed Sample Of Critically Ill Patients: An Observational Cohort Study. ANZICS ASM, Perth, 2016 (Poster)

Martha Drury

- From Fate to Good Fortune; One Social Worker’s journey through redundancy, research and private practice. AASW North and South Queensland Branches Social Work Conference, Brisbane, 2016
- Heyes L, Drury M. Lost and Found: Reconnecting with who you really are. JBBT Burn Survivor & Family Education & Support Forum, Adelaide, Jun 2016
- Working through the pain of loss – applying theory and evidence to grief and loss work across the lifespan. Standby (Suicide Postvention) National Coordinators’ Forum Noosa, May 2016
- Becoming Grief Competent: Understanding the trauma of suicide bereavement. Mental Health Professionals’ Brisbane Suicide Bereavement Network Meeting, Oct 2016
Presentations (cont’d)

Jaimi Greenslade

Kevin Chu
- Chu K, Howell T, Keijzers G et al. Characteristics and diagnosis of patients receiving to the emergency department with a headache. 33rd ACEM ASM, Queenstown, New Zealand, Nov 2016

Dan Bodnar
- Bodnar D, Bosley E, Rashford S. The introduction of a pre-hospital intranasal fentanyl drug therapy protocol increases the proportion of children receiving opioid analgesia for traumatic injuries. 12th AQEM Autumn Symposium; Brisbane, May 2016 (Poster)
- Bodnar D, Rashford S, Handy M, Bosley E. Trauma ultrasound in the pre-hospital environment (TUPHEn Study). 12th AQEM Autumn Symposium; Brisbane, May 2016 (Poster)

Trent Lipp
- Coulthard L, Hewson A, Symons P et al. Identifying Trauma Patients at Risk of Missed Injury in the Emergency Department. 33rd ACEM ASM Queenstown, New Zealand, Nov 2016 (Poster)

Danny Tsai

Adrian Chin
- Technology Bias may shape patient perceptions, ANZCA ASM Auckland, May 2016 (Poster)

Angus Hann

Heather Reynolds
- Bundled interventions for safe care of peripheral arterial catheters in adult patients: the ALICE (Arterial Line Insertion and Care) protocol. World Congress on Vascular Access (WoCoVA), Lisbon, 2016
- Intraoperative cuff pressure measurements of endotracheal tubes, Australian College of Perianaesthesia Nurses (ACPAN) ASM, Melbourne, 2016
- Reynolds H, Gowdman JR, Van Zundert A, Rickard CM. Bundled Interventions for safe care of peripheral arterial catheters in adult patients: The ALICE (Arterial Line Insertion and Care) Protocol. Royal Brisbane and Women’s Hospital Symposium, Brisbane, 2016 (Poster)
- Reynolds H, Gowdman JR, Van Zundert A, Rickard CM. Bundled Interventions for safe care of peripheral arterial catheters in adult patients: The ALICE (Arterial Line Insertion and Care) Protocol. ACPAN ASM, Melbourne, 2016 (Poster)

Victoria Eley

Jason Roberts
- Roberts J, Roger C, Wallis S, Muller L, Lipman J, Lefrant JY. Comparative effect of equal dose of continuous veno-venous haemofiltration and continuous veno-venous haemodiafiltration on ciprofloxacin population pharmacokinetics in critically ill patients. ECCMID, Amsterdam, Denmark, Apr 2016
- Allobaid A, Roberts M, Wallis S, Lipman J, Roberts J. What is the effect of obesity on the population pharmacokinetics of meropenem in critically ill patients? ECCMID, Amsterdam, Denmark, Apr 2016
Workshops/Courses Presented

Michael Reade
- EMST, BASIC

Dylan Flaws
- Metro North Research Interactive Workshop
- Brisbane Diamantina Health Partners – Brain and Mental Health Workshop

Susannah Sherlock
- EMAC instructor for crisis management at Herston Skills Centre May, Jun, Oct 2016

Martha Druery
- Working through the pain of loss – applying theory and evidence to grief and loss work across the lifespan. AASW Brisbane, Feb 2016

Andre van Zundert
- Airway management, Udayna University, Bangladesh, Indonesia, Feb 2016
- Videolaryngoscopy – a masterpiece in airway management, 48th Annual Convention of the PSA, Manila, Philippines, Nov 2016

Benjamin Snow
- Anaesthesia and analgesia for blunt thoracic trauma, Queensland ANZCA/ASA Conference 2016

Adrian Chin
- Regional anaesthesia workshop, Queensland ANZCA/ASA combined meeting,
- Regional anaesthesia workshop, Newcastle Anaesthesia Conference,
- Regional anaesthesia workshop, Melbourne ASA Conference

Julie Lee
- Small group discussion (SGD) on Rotational Thromboelastometry (ROTEM®) in Obstetric Patients. ASA National Scientific Congress, Melbourne, Sept 2016

Helmet Shoengen
- Presentation to the Anaesthetic Department, University Hospital of the RWTH University Aachen, Germany: “Working with MSF in Jahun, Nigeria”, Jan 2016
- Multiple presentations of “Working with MSF in Aden, Yemen” for RBWH recovery nursing staff, the RWBH anaesthetic department, medical students and others, Jun 2016

Danny Tsai
- Antibiotic use in the remote setting—given to remote area nurses in a pharmacotherapeutic course (Centre for Remote Health, a joint centre of Flinders University and Charles Darwin University), Apr 2016

Jason Roberts
- Fitting data to models. NHMRC Centre of Research Excellence REDUCE Workshop on Population Modelling and Dose Optimization, Brisbane, Oct 2016

WORKSHOPS/COURSES
Achievements and Awards

Michael Reade
- Fellowship of the American College of Critical Care Medicine (FCCM)
- Associate Fellowship of the Royal Australasian College of Medical Administrators

Dylan Flaws
- Awarded Queensland Health Junior Doctor Research Fellowship
- Metro North “Rising Star” Early Career Researcher of the Year

Adrian Chin
- ANZCA Meeting Auckland – Gilbert Troup Award 2016, “A randomized controlled trial comparing ultrasound and palpation assisted combined spinal-epidural anaesthesia for elective Caesarean section”

Andre van Zundert
- Professorship—University of Udayana, Indonesia
- Professorship—Queensland University of Technology
- Professorship—Victoria University, Melbourne (Faculty of Engineering & Science)

Angus Hann
- 2016 John Ham Medal. Awarded for the best paper presented by a trainee involved in research at the General Surgeons Australia annual meeting

Dan Bodnar
- Best Paper—“The introduction of a pre-hospital intranasal fentanyl drug therapy protocol increases the proportion of children receiving opioid analgesia for traumatic injuries.” 12th Annual Queensland Emergency Medicine Autumn Symposium, Brisbane.

Louise Cullen
- Ko Awatea Award (APAC Forum 2016)
- Research Excellence Award (Metro North)
- Clinical Researcher Award (Australian Society for Medical Research)
- Honorable Mention, Student Category (University of Queensland-Ochsner Clinical School Annual Research Day)

Victoria Eley
- Submitted PhD thesis for examination

Jason Roberts
- Six PhD students completed

Fekade Sime
- UQ Development Fellowship

Gladness Nethathe
- The South African Society of Anaesthesiologists Perioperative Medicine Grant.

Despoina Koulenti
- UQ Development Fellowship

Julie Lee
- NBA Early Career Researcher Award
- ASA PhD Award
- RBWH Foundation Scholarship award
- ANZCA Meeting Auckland – Finalist: Trainee Academic Poster Prize

Jennifer Paratz
- Outstanding leadership in Allied Health research, Learning & Innovation, Metro North Symposium 2016
Teaching

Jeffrey Lipman
- Specialties II, Critical Care Course, MBBS Year 4
- Sepsis Symposium, MBBS Year 2

Michael Reade
- UQ Year 2 and Year 4 examiner
- UQ Higher degree examiner

Dylan Flaws
- Teaching medical students as part of registrar role
- Co-supervising other registrars’ scholarly projects

Susannah Sherlock
- ANZCA primary short course and regular weekly tutorial programme

Adrian Chin
- Provisional Fellow Professional Development lecture

Gareth Collins
- Formal teaching to Anaesthesia Part 1 candidates,
- Viva practise and marking of practise written exam answers to Part 2 candidates

Kirsten Wyssusek
- Final Examination ANZCA
- UQ MBBS Year 2 & Year 4
- UQ MD year 2
- Supervisor - UQ Summer School Scholarship

Despoina Koulenti
- UQ MBBS Year 4 [MEDI 4019]
- UQ MBBS Year 3 [MEDI 3013/7305]
- Supervision of Research Observerships of UQ-Ochsner Year1 medical students

Julie Lee
- Supervision of medical students for the UQ Summer School Student Research Program
- Examiner for practice anaesthetic vivas for final exam candidates at RBWH
- Educator for the RBWH primary exam tutorial program

Jennifer Paratz
- Lectures in Cardiology & Intensive Care to University of Queensland and Australian Catholic University undergraduates

Helmet Shoengen
- Bedside teaching of UQ Medical Students, Interns, Junior Health Officers, Senior Health Officers, registrars

Tavey Dorofaeff
- Clinical Bedside teaching of Paediatric Intensive Care registrars

Cienwen Town
- Summer Research Programme supervisor

Lizanne Dalgleish
- Summer Research Programme supervisor

Elizabeth McLellan
- Facilitator Primary Exam teaching session: Physiology and Pharmacology of Neuromuscular blockers
- Mock examiner QARTS Primary Exam Viva Practice
- Mock examiner RBWH Final Exam Viva Practice
- Facilitator Registrar teaching session: A Practical Approach to Regional Anaesthesia
- In-theatre teaching medical students and anaesthetic residents

Heather Reynolds
- Mentor for Griffith University Mentoring Program

Victoria Eley
- Special Study Unit Supervisor, ANZCA Obstetric Anaesthesia
- Scholar role tutor (ANZCA training program), RBWH
- Stream Lead: Research. Department of Anaesthesia and Perioperative Medicine, RBWH

Alexandra Markwell
- Registrar/Intern and medical student teaching/training, RBWH and Greenslopes Private Hospital

TEACHING
Professional Organisation Activities

Michael Reade
- Editorial Board: Anaesthesia and Intensive Care; Disaster and Military Medicine
- Organising committee ANZICS 2017 conference

Dylan Flaws
- Metro North Women in Health Science Committee
- MNHHS Research Committee
- Queensland Trainee Psychiatrists Association
- Psychiatry Trainee Academic Committee
- Reviewer: Circulation; Academic Emergency Medicine

Susannah Sherlock
- Organiser of Workshop for 2017 ANZCA ASM
- Co-Organiser of ANZCA ASM SIG for Hyperbaric Medicine and Diving

Orlando Flores
- Lead—financial committee of 4th Chilean Graduate Conference, UQ, Oct 2016

Andre van Zundert
- Representative for Australia and New Zealand of the Obstetric Anaesthesia Society of Asia & Oceania

Martha Druery
- Trauma-Informed Psychosocial Care e-learning Package for Allied Health Professionals Expert Reference Panel Member
- Committee Chair – Burnslife Community Program in partnership with RBWH Foundation
- Member: Psychosocial Expert Reference Group for the Quality Indicator Working Party (ANZBA); Member of the Corresponding Reference Group for the Burns Node of Johanna Briggs Institute CoNNECT

Stijn Blot
- Chair, Nurses & Allied Healthcare Professionals, ESICM
- Research officer, ESICM
- Research officer, ESCMID (working group on infections in critically ill patients)
- Executive board, Flemish Society Critical Care Nurses
- Editorial board: Am J Crit Care, Austral Crit Care, Intensive Crit Care Nurs

Despoina Kourenti
- Chair: Working Group on Pneumonia of ESICM
- Member: International Advisory board of Journal of Medical and Surgical Intensive Care Medicine; Journal Review Club of ESICM; Delphi Panel & Consensus meeting of the COVent study
- NHMRC and ESCMID research grant reviewer
- ESCMID and ESICM Annual Congress abstract reviewer
- NHMRC Research Grants External assessor
- Reviewer: Intensive Care Medicine, Clinical Microbiology and Infection, International Journal of Antimicrobial Agents and Chemotherapy, Respiratory Care, Minerva Anestesiologiica, European Journal of Clinical Microbiology and Infectious Diseases, Intensive and Critical Care Nursing
- Invited Session Chair: Thematic Session—Hospital-Acquired & Ventilator-Associated Pneumonia, ESICM 29th Annual Congress, Milan, Oct 2016

Julie Lee
- Queensland Representative for the Public Practice Advisory Committee (PPAC) ASA
- Facilitator of a small group discussion on ROTEM® in Obstetrics at the ASA National Scientific Congress, Sept 2016

Jennifer Paratz
- Acting Chair, UQ Research Ethics Committee 2016
- Faculty member, Queensland Skills centre
- Reviewer: American J Resp & Critical Care Medicine, Intensive Care Medicine, BMJ, Critical Care Medicine, NHMRC grants

Helmet Shoengen
- Video assisted Specialist Examination preparation for ANZCA trainees
- RBWH Clinical supervisor of anaesthetic Interns, Junior Health Officers, Senior Health Officers, registrars
- ANZCA Specialised Study Unit Ophthalmic Procedures Supervisor

Heather Reynolds
- Reviewer: Critical Care Medicine, BMJ Innovations, Journal of Anesthesia & Clinical Care, Medical Research Archives
- Member: Australian Vascular Access Society, Alliance for Vascular Access Teaching and Research Group, Association for Vascular Access, Australian College of Nursing, Honor Society of Nursing, Sigma Theta Tau International, ACPAN, Australian College of Operating Room Nurses, Australian College of Critical Care Nurses
- Appointed Chair, Professional Standards Council/Chief Standards Editor 2016-2019, ACPAN

Cienwen Town
- Research Interest Group of Anaesthesia (RIGA)

Lizanne Dalgleish
- RIGA

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Professional Organisation Activities (cont’d)

Victoria Eley
- Facilitator, small group discussion: Obesity in obstetric anaesthesia, ASA National Scientific Congress Melbourne, 2016
- Facilitator, small group discussion: Preeclampsia in Obstetric Anaesthesia. Regional Organising Committee Member, ANZCA ASM, Brisbane 2016
- Current Chair, ANZCA Obstetric Anaesthesia Special Interest Group
- Executive Member of ANZCA Obstetric Anaesthesia Special Interest Group

David Rosengren
- Chair Queensland Faculty, ACEM

Jason Roberts
- Panel member: Health Practitioner Scheme Queensland Health
- Project Grant External Reviewer: Austrian Science Fund, Research Council KU Leuven, Belgium
- Reviewer: SHPA, Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT), American Society for Microbiology (ASM), Australian Society for Antimicrobials (ASA), ESICM, Australian Society of Infectious Diseases (ASID), ESCMID, International Society of Anti-Infective Pharmacology (ISAP), International Association of Therapeutic Drug Monitoring and Clinical Toxicology (IATDMCT), Population Approach Group of Australia and New Zealand (PAGANZ)

Alexandra Markwell
- Deputy Chair ACEM Continuing Professional Development Sub-Committee
- Reviewer: ACEM Best of Web, MJA and Medical Education
- Member: AMA Board Remuneration Committee; AMA Ethics and Medicolegal Committee

CRE REDUCE UPDATE

2016 has been an enterprising first year for CRE REDUCE. In July, the Centre was officially launched and presented as a strategic collaboration between the Federal and State governments, various domestic and international universities and consumers of healthcare. The launch attracted a significant amount of local and state media attention and was publicised as a major international collaboration to re-evaluate the dosing and preserve the long term effectiveness of our existing antimicrobials. You are able to view many of the excellent presentations from the launch at our website or on YouTube - https://cre-reduce.centre.uq.edu.au

The Centre also kicked off its ambitious education program with the first Pharmacokinetic workshop held over three days in October at Union College, St Lucia. The workshop was aimed at clinicians and researchers interested in improving PK analysis using Pmetrics and BestDose software. The favourably reviewed workshop was fully accredited by SHPA under the auspices of the Australian Pharmacy Council (APC) and attracted significant sponsorship from MSD Australia. CRE REDUCE was pleased to host 32 participants from 10 countries. Speakers included Prof Michael Neely from the University of Southern California, Prof William Hope from the University of Liverpool and Prof Jason Roberts.

In November, the Centre organised the Antibiotic Awareness Week Symposium in order to mark the WHO and the ACSQH endorsed Antibiotic Awareness Week. The presentations delivered by Prof Jeffrey Lipman and Prof Mark Schembri, offered academic and clinical perspectives on bacterial biofilms and their implications for treatment and emergence of antimicrobial resistance. The successful talks were telecast to 15 ICUs across Queensland and promoted on ABC Local Radio, Brisbane.

In late 2016, over 3 days, the Centre hosted two distinguished visitors from Singapore – Dr Andrea Kwa and Dr Lawrence Lee, both international leaders in Antimicrobial Stewardship, infectious diseases and antimicrobial resistance. Their visit culminated in a delivery of a seminar on prospective antibiotic combination testing for guiding treatment of drug-resistant gram-negative bacteria infections and on improving antimicrobial use and dosing in difficult to treat patients in Singapore.

Early in 2017, CRE REDUCE is looking forward to finalising its multi-institutional agreements with the national and international collaborators and proceeding with the research that will describe antimicrobial behaviour across key patient populations and tackle ineffective dosing and unrestrained prescribing of antimicrobials.
BTCCRC heARTfelt Dinner Fundraiser

Now in its 3rd year, the heARTfelt Dinner has proven to be a very popular event with 150 guests attending the art-themed fundraiser, making it our biggest yet! The Royal on the Park Ball Room was transformed into a work of art itself with splashes of bright colours strewn across the room resembling a Pro Hart masterpiece.

Guests filled the Royal on the Park Ball Room for an incredible and colourful night of fine wine, entertainment and an amazing three-course meal. In keeping with previous years, the highlight of the Dinner was the exciting art exhibition featuring generously donated artwork by Cheryl Slater, Wayne Singleton, Amanda Brooks, Jan James, Alki Rathgeber, Barbara Fletcher, Janice Pungutji Murray, Di Cox, Margot Warre, Julie Crane, Pauline Napangardi Gallagher, Robert Brownhall, Tony Walker, Eliza Rose, Millie Dent Design, Andrew Costi, Alan Fletcher and David Hinchliffe. There was an abundance of auctions and prizes, all with a backdrop of raising money to fund life-saving medical research and patient care initiatives in the Intensive Care and Burns Units at RBWH.

We thank our MC for the evening, Matthew Hickey, who kept everyone entertained and a big thank you to Phill Broom who did a fantastic job as our auctioneer for the evening. We must also thank our guest speakers Jennifer Tucker, one of our patients who was treated for trauma in our ICU after a car hit her whilst cycling and Prof Jason Roberts, one of our leading researchers.


We thank them and the wonderful volunteers who supported our fundraiser. We also thank the Lions Herston Club for their generous donation on the evening.
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Reason for Visit</th>
</tr>
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<tbody>
<tr>
<td>Dr Claire Roger</td>
<td>Centre Hospitalier-Universitaire Nimes, France</td>
<td>Collaborative activities for PK/PD studies including NHMRC funded SMARRT Study</td>
</tr>
<tr>
<td>Prof Jean-Yves Lefrant Intensivist/Director ICU</td>
<td>Centre Hospitalier-Universitaire Nimes, France</td>
<td>Discussion of PK of caspofungin and micafungin in a piglet model of septic shock</td>
</tr>
<tr>
<td>Ms Jiao Xie</td>
<td>The First Affiliated Hospital of Xi’an Jiaotong University, China</td>
<td>Develop population PK of tigecycline in critically ill patients with multidrug-resistant Acinetobacter baumannii pneumonia. Develop the in vitro model to simulate PK of tigecycline in humans</td>
</tr>
<tr>
<td>Dr Haiyan Dong</td>
<td>The First Affiliated Hospital of Xi’an Jiaotong University, China</td>
<td>Anti-infective therapy and individualized dosing regimen development</td>
</tr>
<tr>
<td>Dr Thomas Taengden</td>
<td>Uppsala University, Sweden</td>
<td>Collaborative activities for PK/PD of common anti-infectives against multi-drug resistant bacteria</td>
</tr>
<tr>
<td>Ms Iris Minichmayr</td>
<td>Freie Universität, Germany</td>
<td>TDM of anti-infectives</td>
</tr>
<tr>
<td>Dr Andrea Kwa</td>
<td>Singapore General Hospital</td>
<td>Deliver seminar to pharmacy and medical clinicians and academics from RBWH, PAH and UQ CCR</td>
</tr>
<tr>
<td>Dr Lawrence Lee</td>
<td>National University of Singapore.</td>
<td>Deliver a seminar to pharmacy and medical clinicians and academics from RBWH, PAH and UQ CCR</td>
</tr>
<tr>
<td>Prof Michael Neely</td>
<td>University of Southern California, USA</td>
<td>Presentation-CRE REDUCE “Population PK Modelling &amp; Dose Optimisation of Antimicrobials” Workshop</td>
</tr>
<tr>
<td>Prof William Hope</td>
<td>University of Liverpool, UK</td>
<td>Presentation-CRE REDUCE “Population PK Modelling &amp; Dose Optimisation of Antimicrobials” Workshop</td>
</tr>
<tr>
<td>A/Prof Bernd Froessler</td>
<td>Lyell McEwin Hospital, Adelaide</td>
<td>Presentation-“Peri-operative blood management” to the RBWH Department of Anaesthesia</td>
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**NEWS & EVENTS**

**CRE REDUCE**
- official launch Fri 29 July by Honourable Dr Anthony Lynham MP, Minister for State Development and Minister for Natural Resources and Mines.
- hosted two distinguished visitors (7-9 Nov) – Dr Andrea Kwa from Singapore General Hospital and Dr Lawrence Lee from the National University of Singapore.
- held a symposium at the RBWH Education Centre (16 Nov) to mark the WHO endorsed Antibiotic Awareness Week.

The ESICM endorsed PneumoINSPIRE study coordinated by BTCCRC has had a very successful site recruitment with more than 200 participating sites worldwide.

Michael Reade—Deployed to Iraq for three months, the second time in two years.

Dylan Flaws—preparing his PhD thesis for a May 2017 submission.

Tavey Dorofaeff and Yarmarly Guerra Valero—commenced their PhD projects in January.

Helmet Shoengen—2 months humanitarian mission with MSF (Doctors without Borders), working as Medical Anaesthetist in the MSF Emergency Trauma Centre in Aden, Yemen; RBWH Anaesthetic Intern Training re-accredited by Queensland Prevocational Medical Accreditation.
In this section, we list the names of collaborating institutions and their respective departments. Here is a structured representation:

### QUEENSLAND

Prof David Paterson, Casey Pfluger, Hosam Zowawi, University of Queensland Centre for Clinical Research  
A/Prof S Brauer, School of Health & Rehabilitation Sciences  
A/Prof Paul Mills, Vet Pathology & Anatomy  
Prof Paul Colditz, Dr Barbara Lingwood, Perinatal Research Centre  
Prof Alastair McEwan, Prof Michael Jennings, A/Prof Mark Schembri, A/Prof Scott Beatson, Molecular & Microbial Sciences  
Dr Ian Shiels, Prof Stephen Taylor, Dr Trent Woodruff, Department of Physiology & Pharmacology  
Dr David Liu, A/Prof Xiu Li, A/Prof Michael QZ Sheng, School of Information Technology and Electrical Engineering  
Prof April Wright, School of Business  
Dr Zephanie Tyack, Dr Kellie Stockton, UQ-Child Health Research Centre  
Prof David Reutens, Dr Hana Burianová, Centre for Advanced Imaging  
Dr Nana Sunn, Dr Antje Blumenthal, Prof David Evans, Diamantina Institute  
Dr Andreas Obermair, Queensland Centre for Gynaecological Cancer  
Prof Michael Roberts, Dr Greg Medley, Dr Sheree Cross, Dr Thomas Robertson, Therapeutics Research Unit  
**The University of Queensland**  
A/Prof Graham Nimmo  
**Queensland Health Pathology Service**  
Prof Claire Rickard, Dr Li Zhang, School of Nursing & Midwifery  
Prof Paul Scuffham, Centre for Applied Health Economics  
Alliance for Vascular Access Teaching and Research (AVATAR)  
**Griffith University**  
Dr Peter Kruger, Prof Bala Venkatesh, Dr Geoff Playford, Dr Rob Eley, ICU  
**Princess Alexandra Hospital**  
Prof John Fraser, A/Prof Kiran Shekar, Dr Fran Kinnear  
**The Prince Charles Hospital**  
Dr James Lind, Dr Jonathan Field, A/Prof Gerben Keijzers  
**Gold Coast Hospital**  
Dr Phillip Cowlishaw  
**Mater Hospital**  
Dr Christopher Hammet, Cardiology  
Dr William Parsonage, Cardiology  
Dr Jonny Younger, Cardiology  
Dr Jacobus Ungerer, Chemical Pathology  
Dr John Cardinal, Chemical Pathology  
Dr Carel Pretorius, Chemical Pathology  
Dr Brett McWhinney, Chemical Pathology  
Ms Jill Tate, Pathology Queensland  
A/Prof Mark Coulthard, Paediatrics and Child Health  
Dr Helen Healy, Renal Medicine  
Dr Adrian Kark, Renal Medicine  
Dr Dwarka Ranganathan, Renal Medicine  
Prof Rob Fassett, Renal Medicine  
Dr Vincent D'Intini, Renal Medicine  
Dr Queenie Lau, Pathology  
Dr Thomas Robertson, Pathology  
Dr Merrilyn Banks, Nutrition and Dietetics  
Dr Lynda Gillen, Nutrition and Dietetics  
Dr Lynda Ross, Nutrition and Dietetics  
A/Prof Cliff Pollard, Queensland Trauma Registry  
Dr R Webb, Hyperbaric Medicine  
Dr A Bourke, Hyperbaric Medicine  
Dr P Atkinson, Hyperbaric Medicine  
Dr D King, Hyperbaric Medicine  
Dr Alison Mudge, Internal Medicine and Aged Care  
Dr Peter Donovan, Ms Prue McCrae, Aged Care  
Dr Caroline Acton, Oral and Maxillofacial Surgery  
Prof Graeme Dickie, Radiation Oncology  
Dr Craig Readdy, Medical Imaging  
Dr Tracey Comans, Physiotherapy  
Dr Renuka Sekar  
Dr Tim Donovan  
**Royal Brisbane and Women's Hospital**  
Prof Gerry FitzGerald, Dr Jannah Baker, Dr Monika Janda, School of Public Health  
Prof Zee Upton, School of Life Sciences  
Prof Kerrie Mengersen, Mathematical Sciences  
Prof Fiona Coyer, School of Nursing  
A/Prof Carol Windsor, Dr Karen Sullivan  
**Queensland University of Technology**  
Dr Jurgen Fripp  
CSIRO Image Analysis Team  
**The Australian eHealth Research Centre**  
Dr Jee Poh, Dr Isabelle Tham  
**Logan Hospital**  
Dr Matthew Howes  
**Mater Mother's Hospital**  
Dr Steve Rashford  
**Queensland Ambulance Service**
Dr David McMillian, Bacterial Pathogenesis Laboratory
A/Prof David Whiteman, Cancer Control Group
Prof Grant Montgomery, Molecular Epidemiology Laboratory
Dr D Reid, Respiratory Physician
Lutz Krause, Bioinformatics
QIMR Berghofer Medical Research Institute

Dr Mark Elcock
Retrieval Services Queensland

Dr David Cooksley
Royal Brisbane and Women’s Hospital
Squadron Leader
Australian Defence Force

Dr Tim Warhurst
Redcliffe Hospital

Dr Nai An Lai
Queensland Jubilee Hospital

Dr Indranil Chatterjee
Toowoomba Hospital

Dr Kylie Baker
Ipswich Hospital

Prof Dennis Shanks
Australian Army Malaria Research Institute, Gallipoli
Barracks, Enogerra

NATIONAL

A/Prof Jon Iredell, Prof Tania Sorrell, Dr Heather Giddings
Dr Catriona Halliday, Dr John Gallagher, Dr Vineet Nayyar
Westmead Hospital, Sydney

A/Prof David Tuxen, A/Prof Carlos Scheinkestel, Dr Andrew Davies, A/Prof Denis Spelman, Dr Alex Padiglione, A/Prof Anne Holland, Dr Carol Hodgson
Prof Russell Gruen, National Trauma Research Institute
The Alfred Hospital, Melbourne

Prof Rinaldo Bellomo, Dr Sue Berney, Prof Lindsay Grayson
Dr Barrie Mayall, Dr Glenn Eastwood
Austin & Repatriation Hospital, Melbourne

Prof John Myburgh, Prof Simon Finfer, Dr Manoj Saxena
The George Institute for International Health, Sydney

Dr Joshua Davis
Menzies School of Health Research, Darwin

Prof Steve Webb, Dr Geoff Dobb, Dr Paul Ingram, Dr KM Ho, Dr Andrew Heard, Dr Richard Riley, Dr Matt Rawlins
Royal Perth Hospital

A/Prof Debbie Marriott, Dr Sam Rudham
St Vincent’s Hospital, Sydney

Dr Shane Patman
Notre Dame University, Perth

Dr Dianne Stephens
Royal Darwin Hospital, NT

Dr David Cooper
Royal Hobart Hospital, TAS

Dr Frank van Haren, Ms Margot Green, Dr Marta Kot
Canberra Hospital, ACT

Elizabeth Skinner
Monash Medical Centre, Melbourne

Dr Reny Segal
Royal Melbourne Hospital

Prof Carl Kirkpatrick, Pharmacy & Pharmaceutical Sciences
Dr Carol Hodgson, Public Health & Preventive Medicine
Dr Cornelia Landersdorfer, Centre for Medicine Use & Safety
Dr Philip Bergen, Centre for Medicine Use & Safety
Prof Jamie Cooper, Prof Rinaldo Bellomo, Ms Lynne Murray
Prof Steve Webb, Dr Carol Hodgson, Ms Lorraine Little, Prof Alistair Nichol, Mr Tony Trapani, ANZIC Research Centre
Prof Kim Bennell, Prof Janet McCalman, Prof Linda Denehy,
A/Prof Sue Berney, Prof S Paul
Monash University

Dr Chris Acott
Royal Adelaide Hospital

Prof Nick Taylor
La Trobe University, Melbourne

Dr George Kotsiou
Royal North Shore Hospital, Sydney

Dr David Noble
Biodevices International Pty Ltd., Victoria

Dr David Irving, Dr Denese Marks, Research and Development
Australian Red Cross Blood Service, NSW

Dr Barry Dixon
St Vincent’s Hospital, Melbourne

Dr Charudatt Shirwadkar
Blacktown Hospital, NSW

Dr Milind Sanap, Dr Peter Thomas
Lyell McEwin Hospital, Adelaide

Dr David Durham
Flinders Medical Centre, Adelaide

Dr Stuart Baker, A/Prof David Mountain
Sir Charles Gairdner Hospital, Perth
Dr Jason Fletcher  
*Bendigo Hospital* Bendigo, Victoria

Dr Neil Orford, Dr Claire Cattigan  
*Geelong Hospital*, Victoria

Dr Rob Cameron  
*Gosford Hospital*

Dr David Gattas  
*Royal Prince Alfred Hospital*

Dr Andrew Cheung  
*St George Hospital, Sydney*

Dr Martin Sterba  
*Wollongong Hospital*

A/Prof Sandra Peake  
ANZICS Clinical Trials Group

Prof Antonio Celenza, A/Prof Tim Inglis, Prof Simon Brown, Prof Michael Paech  
*The University of Western Australia*

Dr Anne Leditschke  
*Australian National University & Canberra Hospital*

Prof Michael Paech  
*King Edward Memorial Hospital*

**COLLABORATORS**

### INTERNATIONAL

Prof Charles Gomersall, Prof Gavin Joynt, Dr Gordon Choi  
Anaesthesia & Intensive Care  
*Chinese University of Hong Kong*

Prof Michael Irwin  
Department of Anaesthesiology  
*The University of Hong Kong*

Prof Mervyn Singer, Dr Alberto Corona  
Bloomsbury Institute of Intensive Care Medicine  
*University College London, UK*

Prof Wolfgang Krueger  
Department of Anesthesiology and Intensive Care Medicine,  
*Tübingen University Hospital, Germany*

Dr Noelle Lim  
Dept of Anaesthesia & Surgical Intensive Care,  
*Changi General Hospital, Singapore*

Prof Jordi Rello, Dr Elsa Afonso, Dr Laura Ruano  
Critical Care Department  
*Hospital Vall d’Hebron, Spain*

Prof Satish Bhagwanjee, Ms Juan Scribante  
Dept of Anaesthesia  
*University of Witwatersrand, South Africa*

Dr Guido Bertolini  
Laboratory of Clinical Epidemiology,  
*Institute of Pharmacological Research, Italy*

Dr A Peter Wilson  
Department of Microbiology,  
*University College London, UK*

Dr Martin Than  
Department of Emergency Medicine  
*University of Otago, New Zealand*

Prof Tony Whitehouse  
*Queen Elizabeth Hospital, Birmingham, United Kingdom*

Prof Jesus Rodriguez-Bano  
*Hospital Macarena*, Seville, Spain

Prof Dale Needham  
*John Hopkins University, USA*

Dr Jürgen Bulitta  
College of Pharmacy  
*University of Florida*

Prof Jack Iwashyna  
*University of Michigan, USA*

Prof Ignacio Martin-Loaches  
*University of Dublin, Ireland*

Prof Alistair Nichol  
*National University of Ireland*

Prof M Kollef  
*Washington University, Missouri, USA*

Prof George Drusano  
*Ordway Research Institute, New York, USA*

Dr Shahed Omar  
*Baragwanath Hospital, South Africa*

Dr Dick Dinsdale, Dr Paul Young  
*Wellington Regional Hospital Wellington, New Zealand*
Dr Colin McArthur, Dr Shay McGuinness  
Auckland City Hospital, New Zealand

Dr Seton Henderson  
Canterbury District Health Board, New Zealand

Dr Alex Kazemi  
Middlemore Hospital, New Zealand

Dr Ross Freebairn  
Hawkes Bay Hospital, New Zealand

Prof Alan Merry  
University of Auckland, New Zealand

Prof Jamie Sleigh, Dr Rob Frengley  
Waikato Clinical School of Medicine, New Zealand

Prof Andries Gous  
School of Pharmacy  
University of Limpopo, South Africa

Dr Paul Young  
Wellington Regional Hospital  
Medical Research Institute of New Zealand, Wellington

A/Prof Andrew Shorr  
Washington Hospital Center, USA

Dr Joao Pedro Baptista  
Coimbra University Hospitals, Portugal

Prof Paul Marik  
Pulmonary and Critical Care Medicine,  
Thomas Jefferson University, Philadelphia, USA

Dr Suresh Kumar, Dr Shanthi Ratnam, Dr Zubaidah Abd Wahab  
Hospital Sungai Buloh, Malaysia

Prof George Dimopoulos, Aglaia Xristodoulou  
Attikon University Hospital, Athens, Greece

Dr Murat Akova, Dr Arife Özveren  
Hacettepe University Hospital, Turkey

Prof Matteo Bassetti  
Ospedale, San Martino, Genova, Italy

Dr Colin McArthur, Dr Shay McGuinness  
Auckland City Hospital, New Zealand

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Thomas Jefferson University, Philadelphia, USA

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School of Pharmacy  
University of Limpopo, South Africa

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Wellington Regional Hospital  
Medical Research Institute of New Zealand, Wellington

A/Prof Andrew Shorr  
Washington Hospital Center, USA

Dr Joao Pedro Baptista  
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