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Royal Brisbane & Women’s Hospital
Herston QLD 4029

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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 on-going 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.
The year 2015 was again very successful on the aspect of scientific progress. It has seen an enormous amount of hard work, deep thinking, successes, losses, fame, rejection and all the myriad ways that make up our life in trying to improve our patient care.

The BTCCRC group published 158 journal articles this year - making this our best publication record to date. Each publication represents THOUSANDS of hours of work – discussing ideas, reading, writing numerous grants, arduous ethics applications, long negotiations with clinicians, statisticians and managers, explaining the study to potential participants, extensive data collection, data cleaning, data analysing, followed by drafting and redrafting of manuscripts. This is all done to save patients’ lives, improve patient outcomes and improve their quality of life.

We welcomed Dr Fekade Sime from University of South Australia, Dr Os Cotta from the University of Melbourne and Mr Nermin Karaminic, our Centre for Research Excellence (CRE) manager, who is responsible for co-ordinating all the projects and people under our newly awarded NHMRC CRE grant. This leads me to extend a huge congratulations to Profs Jason Roberts and Jeffrey Lipman and Jeffrey Lipman and Robert Boots, Michael Reade, Kerina Denny, Jeremy Cohen, Joel Dulhunty, Andre van Zundert, Victoria Eley, Julie Lee, Louise Cullen, Anthony Holley, Jaimi Greenslade, Julian Williams, Dan Bodnar. Overall, our researchers won just over $10.6 million in research funding, with just under $3 million coming to our centre.

The second annual Heartfelt Dinner was again a success, thanks to the organising talents of Karen Gallagher, Charlotte Alderley, Susan Driver, Sasha Maggiolo, Emily Penfold, Jenny Paratz and Sia Athanasas. We raised just under $28,000 through the sale of art works, auction items and raffles.

We proudly congratulate our Research Higher Degree students who graduated this year – Jannatul Ain Jamal, Geetha Kayambu, Tim Hanrahan, Angus Hann, Michelle Spermon and Syam Adnan. Congratulations are also extended to Dr Louise Cullen and Dr Fekade Sime who were awarded their PhDs.

I thank all our hard-working staff and students for making this yet another great year and I wish you all the very best for 2016.

Prof Andre van Zundert
As one of the top performing research centres within the SOM, we again in 2015 have continued our rising trajectory. This year saw our highest publication record to date, with 158 journal articles, 33 book chapters, 3 books and 7 conference proceedings published. This certainly highlights the dynamic and prolific nature of our research centre.

The funding arena was extremely competitive this year but we still managed to be awarded 42% of the grants we applied for. In total, we submitted 63 grant applications - the largest number of submissions to date.

We also had the largest number of research higher degree completions this year—5 PhDs and 2 Masters. We are expecting more completions next year with the imminent submission of another 3 theses. More enrolments are expected in 2016 as there has been much interest expressed from both local and international researchers.

Many of our researchers have been invited to speak at conferences, particularly overseas, which has allowed for the establishment of more collaborations in 2015. Our international collaborating institutions number 120 with 222 collaborators and our national and local collaborating institutions stand at 55 with 80 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 400 peer reviewed publications, 26 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 9 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 Anesthesiology at the Universities of Ghent (Belgium) and Maastricht (Netherlands).

André has qualifications in anaesthesia, intensive care and trauma care. He is the author of over 300 peer-reviewed publications including 5,239 citations, 50 book chapters and three standard textbooks, of which his book, the ‘Atlas Functional Anatomy for Regional Anaesthesia and Pain Medicine’ was published recently. 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 (10 awards). 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.
Mr Peter Treseder AM
OAM KSJ CCEO JP DipFM GradCertBus EMFIA FAICD FAIM FIIDM CFRE MBA

Peter, currently CEO of RBWH Foundation, had over 20 year’s management experience with Commonwealth Bank and has led a variety of not-for-profit organisations for over a decade. He has a wealth of board and committee experience with recent appointments including the Brisbane City Council’s Asset Optimisation Committee, The Patricia Dukes Foundation, The Sovereign Wealth Fund Committee and the Prime Minister’s Community Business Partnership. In recognition of Peter’s outstanding contribution, he has twice been the recipient of the Order of Australia, recipient of the Knight of Grace in the Sovereign Order of St John of Jerusalem and the Bicentennial Medal. Peter is a fellow of a number of business leadership bodies including Australian Institute of Management, Australian Institute of Company Directors, International Institute of Directors and Managers and is an Executive Member of Fundraising Institute Australia. He is a Certified Fundraising Executive and holds an MBA with distinction from QUT.

Dr Paul Alexander AO
MBBS MLM FRACMA FACLM FACTM DTM&H Dip Sport Med

Paul has had an extensive career in the Australian Defence Force (ADF). He is an experienced senior medical officer with over 30 years experience across clinical executive posts, and has held board positions in military, private practice, commercial and not for profit organisations. Paul completed his tenure as Commander Joint Health and Surgeon General, ADF December 2011, where he was responsible for the provision of health care to the ADF. Paul is the Chairman of the Metro North Hospital and Health Service, the largest health service in Queensland and is an advisor to the Immigration Health Advisory. In addition, Paul continues his part-time General Practice on Brisbane Northside and medico legal consulting. His areas of special interest include health policy, legal medicine, practice management and primary health care.

Dr Ian Wilkey
BSc MBBS LLB FRCPA FAFPHM

Ian obtained his medical degree in 1963 from UQ. Prior to his retirement, he had previously held senior positions in Queensland Health and the Papua New Guinea health system, including Director of the Laboratory of Microbiology and Pathology and Director-General of Health and Medical Services. Ian was Medical Superintendent at RBWH and currently serves on the RBWH Research Advisory Committee, the Scientific Committee of the RBWH Foundation and the QIMR Berghofer Human Research Ethics Committee.

Mr Gilberto Maggiolo

Gilberto is Chairman of Directors and CEO of several companies operating throughout Australia, in engineering and mining construction, transport industry and commercial property development. From its birth in Mt Isa in the early 1970’s, the group has expanded where it now has a presence Australia-wide and internationally. Gilberto has a long history as a benefactor of charitable causes and is a very strong supporter of the RBWH Research Foundation.

Professor Gerry Fitzgerald
MD FACEM FRACMA

Gerry is Professor of Public Health at QUT, holding medical specialist qualifications in Emergency Medicine and Medical Administration and a Doctor of Medicine Degree in Emergency Department Triage. Prior to taking up his current position, he was the Commissioner of the Queensland Ambulance Service and the Chief Health Officer for Queensland. Gerry leads educational and research programs in Health Management and is the Director of the centre for Emergency and Disaster Management. His particular research interests are in the organisation and operations of the emergency medical system both during routine operations and during disasters.

Associate Professor Marianne Vonau
OAM MBBS MBA FRACS

Marianne is the Executive Director of Clinical Governance, Education and Research as well as Senior Neurosurgeon for the Gold Coast University Hospital (GCUH). She holds an Associate Professorship from UQ and is currently the Treasurer of the Royal Australasian College of Surgeons and Member of the Queensland State Trauma Committee. Marianne, who has completed an MBA (QUT) and is currently studying a Masters of Public Health, has research interests in trauma systems, paediatrics, epilepsy and tumours. She is actively involved in medical education whilst participating in service improvement projects within the health care system. She was the first female neurosurgeon trained in Australia and the first female to be elected President of the Neurosurgical Society of Australasia. For her services to the field of neurosurgery, Marianne was awarded the Medal of the Order of Australia in 2011.
**INTENSIVE CARE MEDICINE**

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

**Dr Jennifer Paratz** MPHy 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 sub arachnoid 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 MBBCh DipPaeds DipDHM FACEM FCICM
- trauma, transfusion, cryopreserved blood products, microcirculation.

**Dr Steve O’Donoghue** MBCh B 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 DIMCRCSEd DMCC FHEA FCCP FANZCA FCICM
- fluid resuscitation and coagulopathy in trauma; effects of blood transfusion in critical illness (including large clinical trials of cryopreserved blood products and tranexamic acid); management of acute cognitive dysfunction; design of trauma systems.

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

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

**A/Prof Jeffrey Presneill** MBBS (Hons) FRACP FCICM PhD MBiostat PGDipEcho
- trauma and traumatic brain injury, clinical trials, biostatistics.

**Dr Gladness Nethathe**
- 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.

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

**Avi Chikatamarla**
- validation of microsampling versus traditional blood sampling for antibiotic pharmacokinetics.
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.

Paul Jarrett  Dip (He) Nurs
- involved with all ICU research, from proposal to completion, as well as communication and liaison with study sponsors and other co-ordinators.

Rachael Dunlop  BNurs Grad Cert (Crit Care)
- involved in research studies taking place within ICU and QUT.

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

Dr Despoina Koulienti  MD PhD
- hospital-acquired infections; infections by multi-drug resistant pathogens; severe forms of pneumonia (sCAP, HCAP, HAP,VAP).

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 antibiotic and anaesthetic drug levels in biological tissues, novel bioanalysis technique (dried blood spot samples, microsampling).

Suzie Parker  BSc (Hons)
- bioanalysis of drugs particularly measurement of antibiotic and anaesthetic drug levels in pharmacokinetic studies.

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.

RESEARCH INTERESTS

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.

Menino Osbert Cotta  BPharm (Hons)
- 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.
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 MRCGP FFARCSI FANZCA MSc
- burns anaesthesia, information technology and performance, quality and system design, professional upskilling.

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 FFFPMANZCA
- pain of burn injury including mechanism, treatment and prevention.

Dr Heather Reynolds PhD BA BHlthSc(Nurs) MN(Admin/Anaes/Reco) MAP(HlthCareRes) CertTeach CertCritCareNurs CertAnaesNurs MRCNA
- intravascular access, dressing/securing catheters effectively to prevent mechanical and infective complications.

Dr Susannah Sherlock BSc MBBS FANZCA
- sudden sensorineural hearing loss and hyperbaric oxygen treatment (HOT); CNS toxicity and HOT; audit of Australian and New Zealand Practice.

Dr Victoria Eley MBBS (Hons) BMedSc FANZCA
- anaesthetic consultation in the obese parturient; early epidural analgesia in obese parturients.

Cienwen Town BN GDipEd
- regional analgesia and acute pain in the perioperative setting.

Dr Julie Lee BPharm MBBS
- ROTEM(R) thromboelastometry in obstetric patients, regional anaesthesia and the airway and anaesthetic complications in relation to the airway.

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

Dr Antony Hade MBBS FANZCA

Dr Michael Edwards MBBS FANZCA

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 Spermon BOccThy Acc OT
- burns donor site scarring 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 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 FRCS Ed FACEM FCEM
- anaphylaxis epidemiology; Acute Coronary Syndrome (ACS) risk; Sepsis epidemiology; medical writing and editing.

Dr Louise Cullen MBBS (Hons) FACEM
- Diagnosis and management of patients presenting with acute cardiac diseases including ACS, heart failure and biomarkers.

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, thromboelastography (TEG).

A/Prof Jaimi Greenslade BPsysch (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
- triage of older patients in trauma, aged care.

Dr Julian Williams MBBS FACEM
- sepsis epidemiology and outcomes in ED, ARISE clinical trial (QLD co-ordinator).

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

Dr Ibrahim Mahmoud MBBS MSc MPH PhD
- Epidemiology, infectious diseases, health care barriers.

Tegwen Howell BSc MSc (Qual) PhD
- Subarachnoid haemorrhage.

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

Emily Dalton BNurs
- ACS, anxiety.

Dr Duncan McAuley MBBS FACEM
- Spontaneous Pneumothorax Study.

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

Dr Frances Williamson MBBS (Hons) FACEM CCEM
- trauma and ultrasound research; involved in the LUS study, NET trial and RIB study.

RESEARCH INTERESTS

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.
Our clinical research addresses serious medical issues in the fields of trauma (including military trauma), critical care, burns, emergency medicine and anaesthesia. 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. Our expertise includes intensivists, burns surgeons, anaesthetists, cardiologists, neurosurgeons, emergency physicians, scientists, physiologists, nutritionists, physiotherapists, intensive care nurses, psychologists and military medical personnel. Research in the field of anaesthesia has expanded considerably with the commencement of the Professor & Chair in Anaesthesiology, Prof André van Zundert.

Throughout 2015 our centre was successful in receiving funding from NHMRC, RBWH Foundation, ANZCA, UQ, Intensive Care Foundation, QEMRF, Pathology Queensland, The Prince Charles Hospital Foundation, Ipswich Hospital, Wound Management Innovation CRC and Cardeas Pharma.

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 enough 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/Wormald

Study of the PK of inhaled antibiotics in lung tissue using the microdialysis technique. Dhanani J, Fraser J, Chew M, Roberts J, Paterson D. Funder: TPCH Foundation.

Creatinine clearance of critically ill Australian Indigenous patients - a longitudinal study (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, Levkovitch B, Ray J, Pellegrino V, Bui T, Wallis S, Marriott D, Rudham S. Funder: Society of Hospital Pharmacists of Australia (SHPA), RBWH Foundation

Disposition of sedative, analgesic and antibiotic drugs during ECMO. Mullany D, Shekar K, Roberts J, Smith M, Fraser J, McDonald C, Wallis S, Kramer H. Funder: ANZCA, ICF


Addressing an unmet need by establishing a state-of-the-art translational model at UQ: The hollow fibre in vitro infection model. Roberts J, Paterson D, Cooper M, Lipman J, Roberts M, Schembri M, Bulitta J, Landersdorfer C. Funder: UQ MEI/NHMRC Equipment grant

The Pharmacokinetics of Vancomycin and Ticarcillin-Clavulanate in Critically Ill Patients undergoing Sustained Low-Efficiency 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

Evaluation of inappropriate prescribing in elderly patients at the RBWH. Mulvogue K, Kanagarajah S, Coombes I, Roberts 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.

POEMS LUN – pharmacokinetic sub-study analysis evaluating total and free mycophenolic acid concentrations. Roberts J, Lipman J, Ranganathan D. Funder: RBWH Foundation


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.

Vancomycin penetration into ELF of critically ill patients (Collaboration with Queen Elizabeth Hospital, Birmingham). Roberts J, Whitehouse T, Pemberton P.

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 meticillin resistant S. aureus infection (collaboration with Trinity College Ireland). Roberts J, D’Arcy D, Byrne C.


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

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

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

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

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

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

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

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

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

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

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

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

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

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

ASAP ECMO: Antibiotic sedative and analgesic pharmacokinetics during extracorporeal membrane oxygenation: A multicenter study to optimize drug therapy during ECMO. Shekar K, Roberts J, Smith M, Fraser J.
Funder: TPCH 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

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.
Projects 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: NHMRC


Funder: ANZCA, NHMRC


Funder: RBWH


Funder: NHMRC

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


Funder: NHMRC


Funder: ARC

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

Funder: NHMRC


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
Funder: AusHSI Stimulus Grant

INflammation and Augmented Renal Clearance in Traumatic brain injury (INFARCT) Study. Udy A, Lipman J, Jarrett P. 
Funder: RBWH


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 scarriing. 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: 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, Cohen J, Muller M. 
  Funder: RBWH Foundation

  Funder: RBWH

  Funder: RBWH Foundation

  Funder: Becas Chile program, CONICYT, Chilean government.
4. Anaesthesia

This area of research has experienced significant growth in the last 2 years with the commencement of Prof van Zundert and the commencement of new projects by higher degree students.

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.

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

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.

Airway management in patients with oral cancers. van Zundert A, Inaido-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, Frij 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.

Novel Technologies can provide effective dressing and securement for peripheral arterial catheters: A pilot randomised controlled trial. 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
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.

Funder: ARC Linkage

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

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

Funder: Study, Education and Research Committee, Pathology Queensland


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

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


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

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

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


Diagnostic workup for suspected subarachnoid haemorrhage. Chu K. 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

Multicentre randomised controlled trial incorporating bedside lung ultrasound into the diagnosis of congestive cardiac failure in breathless older patients (LUS). Williamson F, Baker K.

A randomised controlled trial 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 12month health outcomes. Cullen L.

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


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 determining the microenvironment dynamics in the wound 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:


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 MC, Shanks D, Hopper D. Funder: Australian Research Council (ARC)


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

**Multi-centre trials**

**ADRENAL:** A randomised controlled trial 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 Site Investigator: M Reade

**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 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

**Multicentre randomised controlled trial incorporating bedside lung ultrasound into the diagnosis of congestive cardiac failure in breathless older patients.** Principal Site Investigator: K Chu

A randomised controlled trial 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
Women in Medical Research

BTCCRC takes gender equity seriously, with 31 of its 67 researchers being female. Our female researchers’ professional backgrounds span many disciplines, including science, nursing, intensive care, emergency medicine, physiotherapy, anaesthesia, pharmacy, occupational therapy, nutrition and social work—highlighting the true multidisciplinary nature of our research.

Our female researchers have again this year risen up to the challenge of conducting high calibre research whilst juggling work, study and running affairs of their households including raising children. One of these talented, multi-tasking women in our centre is Suzanne Parker.

Suzie, as we affectionately know her, has managed to accomplish all the above whilst completing her PhD. Suzie describes her research as finding innovative ways in blood sampling, in which she and her team take a drop of blood and use it to measure antibiotic concentrations. She then uses this information to ensure critically ill patients have the optimal treatment against severe infection. Suzie is a bioanalyst, where she uses liquid chromatography - tandem mass spectrometry to measure the concentration of drugs in a wide variety of biological solutions. She designs and validates methods to ensure they are reliable and accurate. During her PhD, Suzie found balancing time with her family of four children, ranging from primary school to university, could be challenging at times. However, she was able to manage this with the help of the flexible work hours provided by a PhD. She goes on further to explain that after taking time off work to raise her family she found her PhD was a way to reinvigorate her career. Suzie believes that an important part of her PhD was being passionate about her research. She says that she continues to love the work that she does and being an independent researcher is very fulfilling. Suzie says that she would definitely recommend embarking on a PhD to others. She believes that completing a PhD was an opportunity to role model the importance of education and life-long learning to her children.

Research and Teaching Awarded

Two staff members of BTCCRC, A/Prof Jenny Paratz and Prof Tony Brown were duly recognised for their excellence in research and teaching, respectively. Jenny was awarded the Medal for Contribution to Research from the RBWH and Tony was awarded the overall Outstanding Teaching Award, Royal Brisbane Clinical School from the SOM, UQ.

Jenny has been a key researcher within the BTCCRC since its inception in 2004 and her research interests lie in the management and outcome of critically ill and burns patients with particular focus on myocardial dysfunction, exercise and metabolism and the diagnosis of sepsis in burns patients using novel markers.

Tony has been a member of BTCCRC since 2007 when the Department of Emergency Medicine, RBWH, joined our centre. Tony’s areas of interest are in anaphylaxis epidemiology, acute coronary syndrome risk, sepsis epidemiology and medical writing. His passion for sharing his knowledge is exemplified in this teaching award, where the medical students themselves voted Tony as the most outstanding teacher.

Congratulations to both of you.
NHMRC CRE WIN

The 2015 round of NHMRC funding has provided an excellent result for researchers at the BTCCRC as well as the collaborating Chief and Associate Investigators from Brisbane, Adelaide, Melbourne, Sydney, Hong Kong, Belgium, France, United Kingdom and USA. Over $2.1 million for five years has been awarded to the CRE for REdefining antimicrobial use to reDUce resistance (REDUCE).

The REDUCE Team seeks to define new antibiotic dosing strategies that prevent the emergence of superbugs, an issue that is pervading the healthcare system. If the rise of superbugs continues at the current rate, many have forecast that we will soon be confronted by a pre-antibiotic era. The REDUCE CRE aims to address a significant part of the superbug problem by optimising the way we use antimicrobials in difficult-to-treat patients like those in intensive care units, transplant recipients, those suffering severe burns and critically ill children.

The REDUCE Team is led by Professor Jason Roberts, who works at the BTCCRC and with the School of Pharmacy at UQ and is also a clinical pharmacist at RBWH. The CRE has employed a centre manager, Mr Nermin Karamujic to co-ordinate and organise the multitude of projects, contracts, collaborators, students and key stakeholders associated with this project. The REDUCE Team includes intensive care, infectious diseases and transplant physicians as well as pharmacists, nurses, translational scientists, pharmacometricians, health services researchers, biostatisticians and clinical trialists. They also aim to develop capacity in research skills and clinical practice by training 15 PhDs, numerous post-doctoral fellows, undergraduates and healthcare practitioners.
<table>
<thead>
<tr>
<th>Grant Title</th>
<th>Granting Body</th>
<th>Investigators</th>
<th>Amount</th>
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<tr>
<td>Centre for REdefining antibiotic use to reDUce resistance and prolong the lives of antibiotics (REDUCE)</td>
<td>NHMRC CRE</td>
<td>Roberts J, Lipman J, Peake S, Turnidge J, Slavin M, Hopkins P, Buitita J, Paul S, de Waele J, Joynt G.</td>
<td>$2,158,296.00</td>
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<td>Optimisation by Platform Trial Involving Multiple Interventions with Simultaneous Evaluation in Community Acquired Pneumonia (OPTIMISE-CAP)</td>
<td>NHMRC Project Grant</td>
<td>Prof Steve Webb Monash Uni CIG = A/Prof Jeff Presnell J</td>
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<td>Centre for Research Excellence in Cardiovascular Outcomes Improvement</td>
<td>NHMRC CRE</td>
<td>Reid C, Krum H, Cullen L, Liew D, Tonkin A, Chew D, Smith J, Duffy S, Patel A, Briffa T</td>
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<td>Levetiracetam pharmacokinetics in critically ill patients with severe traumatic brain injury and subarachnoid haemorrhage</td>
<td>Intensive Care Foundation</td>
<td>Cotta O, Roberts J, Presnell J</td>
<td>$31,818</td>
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<td>Optimisingceftriaxone dosing for critically ill patients with severe pneumonia</td>
<td>RBWH Foundation</td>
<td>Roberts J, Cotta O, Boots R</td>
<td>$40,000</td>
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<tr>
<td>Levetiracetam PK in critically ill patients with severe traumatic brain injury and subarachnoid haemorrhage.</td>
<td>RBWH Foundation</td>
<td>Cotta O, Jeffree L, Roberts J</td>
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<td>Assessment of cerebral microcirculation after severe head injury when exposed to acute anemia</td>
<td>RBWH Foundation</td>
<td>Bellapart J, Boots R, Reade M, Fraser J</td>
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<td>Acute Severe and Life Threatening Asthma: A clinical Audit of Current Intensive Care Practices in QLD Hospitals</td>
<td>RBWH Foundation</td>
<td>Boots R</td>
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<td>A Biomarker for Sepsis to Thwart Antibiotic Overuse in the Intensive Care Unit</td>
<td>RBWH Foundation</td>
<td>Denny K, Cohen J, Paterson D, Lipman J, Evans D, Dulhunty J, Ungerer J, McWhinney B</td>
<td>$20,000</td>
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<td>Auditory display of respiratory status of anaesthetised patients: Longitudinal study of varied cases</td>
<td>RBWH Foundation</td>
<td>Taraporewalla K, Sanderson P, Watson M, Reynolds H, Van Zundert A</td>
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<td>ROSTEM® thromboelastometry in obstetrics: baseline parameters in normal and complicated pregnancies. A prospective observational study on labour ward inpatients.</td>
<td>SERC (Study, Education and Research Committee), Pathology Queensland</td>
<td>Lee J, Eley V, van Zundert A, Kimble R, Rowell J</td>
<td>$33,310</td>
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<td>Difficult intubation: defining predictive radiological parameters DeCIPhER Trial (Difficult Intubation Predictive Radiology)</td>
<td>ANZCA</td>
<td>van Zundert A, Lee J, Fripp J, Groundwater A</td>
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<td>Queensland pre-hospital study identifying which trauma patients are at risk of bleeding to death.</td>
<td>QEMRF</td>
<td>Bodnar D</td>
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<td>The Cannulation Rates in ED Intervention Trial.</td>
<td>QEMRF</td>
<td>Cullen L</td>
<td>$80,000</td>
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<td>Royal Brisbane &amp; Women's Hospital Capacity Building</td>
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<td>Cullen L</td>
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<td>A preliminary investigation of the pharmacokinetics and pharmacodynamics of amikacin/fosfomycin combination against Acinetobacter baumanii using a dynamic in vitro hollow-fiber infection model</td>
<td>Cardeas Pharma</td>
<td>Roberts J</td>
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<td>Aspects of the neuroendocrine stress response in patients with severe sepsis and multi-trauma</td>
<td>Discovery Foundation Award National Research Foundation of South Africa</td>
<td>Nethathe G</td>
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<td>Traumatic Brain Injury and Subarachnoid Haemorrhage: Their Relationship with Optic Nerve Sheath Diameter.</td>
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<td>Hope M, Dalgleish L, Town C</td>
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<td>Doctor in Training Research Scholarship (Grant-in-aid)</td>
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<td>Clinical Validation of an Antibiotic Dosing Calculator in Critically Ill Patients</td>
<td>Society of Infectious Diseases Pharmacists</td>
<td>Heil E, Farkas A, Johnson J, Nicolau D, Roberts J, Thom K</td>
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<td>Development and implementation of best flushing practice to optimise peripheral intravascular catheter patency</td>
<td>Becton Dickinson Unrestricted Grant</td>
<td>Keogh S, Cooke M, Wallis M, Van Zundert A, Rickard CM, Scuffham P, Zhang P, Bulmer A</td>
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<td>Observational Cannulation Rates in ED Intervention Trial (CREDIT)</td>
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<td>Jensen M, Cullum L, Greenslade J, Williams J, Rickard C, Scuffham P</td>
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<td>The Breathe Easy Early Study (BEES)</td>
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<td>Baker K, Cullum L, Fraser J, Shibler A, Foster K, Diab S</td>
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<td>The Breathe Easy Early Study (BEES)</td>
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<td>Cardiovascular Haemodynamics in an ovine model of brain stem death.</td>
<td>TPCH Foundation</td>
<td>Keenan M, Cullum L, Nchafatso O, Fraser J</td>
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**Sponsorship and Donations**

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<th>RBWH Foundation</th>
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<td>$102,064</td>
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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.

Suzie recently completed her PhD investigating the use of fosfomycin, an older, unusual antibiotic, in intensive care patients in a study being performed in Greek hospitals. Fosfomycin is a small, phosphonic acid and has been demonstrated to have excellent penetrative properties. There is evidence that fosfomycin is useful against multi-drug resistant pathogens and is of great interest in Europe as they face an increased number of bacteria that are resistant to an increasing number of antibiotics. In a world-first Suzie developed a method of measuring fosfomycin using volumetric absorptive microsampling and dried plasma spot techniques which will allow easier transport of samples and a reduced volume of sample required for analysis.

Suzie is currently translating this work to other antibiotics and will improve international collaborations through simplicity in sample collection and transport. The microsampling analysis will be performed in the Burns, Trauma and Critical Care Analytical Research Facility and will be using the newly acquired ultra-performance liquid chromatograph equipped with the world’s fastest tandem mass spectrometer.

Data collection for the randomised trial of inspiratory muscle training following prolonged mechanical ventilation was completed in August 2015, and the manuscript is currently under review. Bernie is looking forward to presenting these results at the American Thoracic Society conference in San Francisco in May 2016. Meanwhile the reliability study of the Acute Care Index of Function will be published in the journal ‘Heart and Lung’ in January 2016, and also won ‘Best Allied Health Oral Presentation’ at the Canberra Health Annual Research Meeting in August 2015.

Overall, the thesis review was completed in December 2015, and the thesis will be submitted February 2016.
Despite advances in antimicrobial therapy, pneumonia is still a very common cause of morbidity and mortality in the mechanically ventilated patient. Inadequate lung tissue concentrations of the antibiotic may be one of the important reasons for therapeutic failure. Concerns of systemic toxicity have led to limitations on increasing the dose of systemically administered antibiotics.

Inhalation therapy can increase local antibiotic concentration without causing systemic toxicity. A number of factors affect the inhalation therapy and hence its efficacy. There is a lack of pharmacokinetic studies in inhalation therapy, thus precluding appropriate dosing in this group of patients.

This project will investigate various aspects of inhalation therapy. Validating the various study techniques will enable future studies involving inhaled drug therapy. The results of this study will encourage clinical studies to investigate if inhaled antibiotic therapy could improve clinical outcomes in 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 (EDDF). 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.

The increasing prevalence of obese patients in the ICU, and the associated prescription of appropriate antimicrobial dosing have become increasing challenges for clinicians. Critical illness has been reported to alter the pharmacokinetics (PK) of some antimicrobials agents, such as piperacillin, meropenem, and fluconazole. Obesity can also develop an additional alteration to antimicrobial PK. My study aims to: i) Address research limitations by reviewing and comparing PK of piperacillin, meropenem, and fluconazole used in ICU patients, including obese patients; ii) Evaluate the effect of body mass index (BMI) on the PK/pharmacodynamic (PK/PD) characteristics of the study antimicrobials in critically ill patients across different categories of BMIs (normal weight: BMI = 18.5-29.9); obese: BMI = 30-39.9; and morbidly obese: BMI = 40 kg/m2); iii) Determine optimal dosing regimens and provide recommendations for dosing guidelines to assist clinical practice.

Patient recruitment has been completed and plasma samples assayed at BTCCRC laboratory. Meropenem data was statistically analysed using Pmetrics statistical software and the manuscript is in preparation. Pmetrics will also be used to analyse the piperacillin and fluconazole data. One retrospective study of the effect of obesity on piperacillin and meropenem trough concentrations in critically ill patients has been published in the Journal of Antimicrobial Chemotherapy. A review study of the effect of obesity on antimicrobials has been published in the International Journal of Antimicrobial Agents.
Gloria's main interest is in the use of therapeutic drug monitoring (TDM) to optimize β-lactam dosing in ICUs. Despite increasing utility of β-lactam TDM in ICUs, data on this subject remains limited and it is currently unclear how this may be completely optimized. 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 my 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.

Plans are being made at present to validate the scores in one or more datasets from the American health care system in 2015.

The mortality rate due to severe sepsis and septic shock in critically ill patients remains high despite therapeutic advances. Beta-lactam antibiotics are commonly used and are regarded as the cornerstone therapy in the management of critically ill patients with severe sepsis in ICUs around the world. In terms of drug administration, continuous intravenous infusion in comparison to traditional bolus dosing is more likely to consistently achieve the suggested PK/PD end-point. The same questions are being posed in Malaysia and in view of gaining interest in continuous administration of beta-lactam antibiotics in ICU departments there, Hafiz is conducting a large, randomised controlled trial of continuous versus intermittent administration in Malaysian ICU patients. To date, patient recruitment has been completed and all plasma samples for antibiotic measurement have been stored in a 80°C freezer and have now been shipped to the BTCCRC bioanalytical laboratory ready for analysis.
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.

Sepsis is a major health issue in the Indigenous population, especially in the Central Australian and Top-End region. It remains one of the highest health concerns. The drastically higher rates of infection related deaths and bacteraemia comparative to their non-Indigenous counterparts warrant optimal antibiotic treatment in the acute phase of active infection.

For the 4 pharmacokinetic projects conducted, so far 3 participants for Meropenem, 3 for Ceftriaxone, 6 for Piperacillin/Tazobactam and 9 for Vancomycin have been recruited. A review article was recently been accepted by the journal ‘Clinical Pharmacokinetics’ and a poster was presented by Danny at the Society of Hospital Pharmacists of Australia national conference in September this year based on the major findings from this research article. Finally, Danny is currently conducting a retrospective study in his ICU looking at the epidemiology of severe pneumonia cases in ICU and will expect to finish data collection in about 3 months.

Orlando is a Chilean physiotherapist who joined BTCCRC in July. His thesis project titled “Reversing Metabolic Changes Post Burn Injury” will investigate whether an interventional program of exercise and/or adrenergic blockade will improve outcomes related to physical health, psychological health and Health Related Quality of Life (HRQoL) in patients suffering severe burn injuries.

Advances in clinical care have provided burns patients with an increased chance of survival. However, burn injuries can now be regarded as a chronic disease and their consequences affect patients over a long time period. Impairment of metabolism following severe burn injuries is a major problem, and a high prevalence of Post-Traumatic Stress Disorder (PTSD) is another negative consequence of burns.

The use of adrenergic blockade has been widely used as an anti-catabolic agent without strong evidence to support it. The use of exercise as a therapeutic approach to improve functional status has been also tested, mostly in children. This study will: a) improve the data in the adult population (most of the evidence is in children) b) include HRQoL measures and long term functional outcomes c) provide non-existent evidence on effects of combined adrenergic blockade and exercise intervention.
Dr Eley is a Staff Anaesthetist at the RBWH with a special interest in Obstetric Anaesthesia. Her PhD examines the advice given to obese pregnant women in the antenatal period, especially regarding the use of “early epidurals”. Her paper published in 2014 examined the patient experience of the antenatal anaesthetic interview. Future studies will explore the experience of anaesthetists in caring for obese pregnant women and the scientific evidence behind the recommendation of the “early epidural”.

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.
Lisa Wang  
Medical Resident  
MPhil Student

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.

Michelle Spermon  
Occupational Therapist  
MPhil Student

Improving donor site epithelisation and scar maturation times following split skin grafting in burns patients; a novel research study using compression therapy.

This study is in the final year of investigating the effect of compression garment therapy on maturation times and scarring specifically for burns donor sites. Preliminary data analysis demonstrates an improvement for donor sites treated with gentle compression therapy when compared to donor sites with no compression therapy. Further research will be required to determine if this improvement is significant. The author has two draft papers for publication under review at present. A third and final study is due to commence early 2015, with the research being completed by December 2015.

Julie Lee  
Anaesthetist  
MPhil Student

The use of ROTEM® is well established in hepatic and cardiac surgery, but not as yet in the obstetric setting. The two ongoing prospective observational ROTEM studies on the labour ward and on elective Caesarean patients are halfway through recruitment and they aim to provide data on reference ranges in normal pregnancies as well as further the understanding of the effects of complicated pregnancies on ROTEM® interpretation. A third study has been planned and will analyse ROTEM Platelet values in pre-eclamptic women.

An audit of blood product usage in a tertiary hospital pre- and post implementation of ROTEM® has been conducted in conjunction with a survey performed six months post-ROTEM® to understand anaesthetists’ perceptions, experiences and potential barriers to the use of ROTEM® in clinical practice.

The study is being conducted in the Professor Pegg Adult Burns Unit and the Specialist Outpatient Service at the RBWH. The research is being conducted as part of Michelle’s Masters of Philosophy through the University of Queensland, School of Medicine - North, under the supervision of Prof Michael Muller.
### BTCCRC Research Supervision

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<th>Title</th>
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<td>Bernie Bissett</td>
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<td>Victoria Eley</td>
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### Supervision of UQ Medical Students and Junior Doctor Research Projects

Dr Louise Cullen—Robert Nayer, Alessandro Iliceto, Mallory Emig
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.
Prof Michael Reade—Umakant Bhutada, Angus Hann
Students Enrolled in Other Schools/Institutes who are supervised/co-supervised by our staff

Dr Louise Cullen (QUT) PhD. Accelerated pathways in the assessment of suspected Acute Coronary Syndrome in the Emergency Department—COMPLETED. Supervisor—Prof A Brown

Mr Mahipal Sinnollareddy  (University of South Australia) PhD. Supervisor—Prof J Roberts

Dr Kiran Shekar (UQ) PhD. Co-supervisor—Prof J Roberts

Dr Sonali Coulter (QUT) PhD. Assoc supervisor—Prof J Roberts

Ms Kelly Mulvogue (UQ) MPhil. Co-supervisor—Prof J Roberts

Ms Elissa Milford (UQ) PhD. Effects of resuscitation with immunomodulatory drugs and cryopreserved blood products in ovine trauma. Supervisor—Prof M Reade

Ms Annie Sultana (UQ) MPhil. Investigating underlying mechanisms of transfusion-related acute lung injury. Supervisor—Prof M Reade

Ms Natasha van Zyl (UQ) MPhil. Development of an ovine model of trauma-induced coagulopathy. Supervisor—Prof M Reade

Mr Paul Jarrett (QUT) MPhil. Nursing interventions for acute confusion in critical illness. Supervisor—Prof M Reade

Mr Andrew Flint (Monash University) MBBS/Hons. Retrospective analysis of the effect of duration of platelet storage on outcome of trauma and critical illness—COMPLETED. Supervisor—Prof M Reade

Mr Courtney Clark (Griffith University) PhD. Supervisor—A/Prof J Paratz.

Ms Julie Adsett (Griffith University) Hydrotherapy in heart failure. Supervisor—A/Prof J Paratz

Ms Lauren O’Connell (Griffith University) Effect of MK valve in long term ICU patients. Supervisor—A/Prof J Paratz

Ms Maureen Peasey (Griffith University) Supervisor—A/Prof J Paratz

Rofhiwa Matshiba (University of the Witwatersrand) 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) PhD. The impact of hand hygiene education in long term care facilities. Supervisor—Prof S Blot

Evelien Verstraete (Ghent University) PhD. Epidemiology of hospital-acquired bloodstream infection in neonatal ICU. Supervisor—Prof S Blot

Completion of Higher Degree

Congratulations to the following staff and students on completion of their degree this year.

Fekade Bruck Sime PhD (graduated)
Janattul Ain Jamal PhD (graduated)
Timothy Hanrahan MPhil (graduated)
Geetha Kayambu PhD (graduated)
Bernie Bissett PhD (submitted)
Suzie Parker PhD (submitted)
Michelle Spermon Masters (submitted)
Jannatul Ain Jamal

PhD Title: ‘β-lactam antibiotic pharmacokinetics during continuous venovenous haemofiltration in critically ill patients: Continuous infusion versus intermittent bolus administration’

Ain’s PhD was conferred in April 2015 and she graduated in July 2015. Her PhD was under the supervision of Prof Jason Roberts and she was co-supervised by A/Prof Andrew Udy, Prof Jeffrey Lipman and Dr Steven Wallis. Her thesis mainly described the pharmacokinetics of two commonly used β-lactam antibiotics in the intensive care setting, namely meropenem and piperacillin/tazobactam, during continuous renal replacement therapy, using ex vivo and clinical pharmacokinetic data. Additionally, the thesis also characterised the pharmacokinetics and probability of PK/PD attainment of the two antibiotics, by two methods of antibiotic administration, continuous infusion and intermittent bolus, in this special population of critically ill patients. Five original research and 3 review articles have been published from her PhD projects.

Syamhanin Adnan

The principal aims of Syam’s thesis were to evaluate the appropriateness of standard doses in achieving PK/PD targets in critically ill patients. This thesis involved different clinical scenarios with implications in achieving this target. The first project was to describe Augmented Renal Clearance (ARC) in a Malaysian ICU; almost half of the subjects demonstrated ARC. Significant bias was demonstrated when comparing different methods, supporting previous data that equation-based estimates of creatinine clearance are unreliable for use in critically ill patients.

Insertion of surgical drains is a possible cause of antimicrobial clearance, PK of meropenem and piperacillin in critically ill patients with surgical drains was also studied. A linear correlation was found between antimicrobial clearance and the volume of surgical drain fluid; suggesting additional doses when there is presence of high output of surgical drains.

Resistant pathogens are a huge challenge and for multi-drug resistant A. Baumannii, treatment options are very limited, to either colistin or sulbactam. Since dosing of sulbactam was derived from PK studies conducted in non-critically ill patients, this led to a study in this thesis, conducted in a Malaysian ICU to describe PK of ampicillin/sulbactam in critically ill patients. Syam’s study found that the PK differs significantly and manifested as inadequate trough concentrations in some subjects.

Fekade Bruck Sime

PhD Title: ‘Therapeutic drug monitoring of beta-lactam antibiotics in patients at high risk of therapeutic failure: a pharmacokinetic and pharmacodynamic investigation’

Severely ill patients may be at high risk of antibiotic treatment failure even when standard doses are used. For successful treatment, the dose of some antibiotics may need to be adjusted for each patient. This Thesis aimed to demonstrate a dose adjustment approach for beta-lactam antibiotics. It also aimed to assess the adequacy of conventional doses of these antibiotics in febrile neutropenic patients with haematological malignancies. Results indicate that standard dose of piperacillin-tazobactam is largely inadequate in febrile neutropenic patients with malignancies. However, for cefepime, the currently used high dose regimen is adequate for treatment of most susceptible infections but fails to achieve dosing targets when relatively less susceptible pathogens are encountered.

Fekade’s thesis demonstrated that adequate antibiotic treatment can be ensured by monitoring blood antibiotic concentrations and making individualised dose adjustments for each patient.
Critical Care

Research within the RBWH ICU continued to thrive in 2015. We continue 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, Critical Care Medicine to name a few. 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. On a rough count we collaborate with almost 200 ICUs worldwide.

We welcome our new higher degree research student, Dr Jayesh Dhanani, who commenced his PhD on his dissertation titled “Study of disposition of inhaled tobramycin”.

Notable research achievements for the year are 1) the awarding of Young Investigator Award for Research in Clinical Microbiology and Infectious Diseases, by the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) to Prof Jason Roberts and 2) induction of Prof Stijn Blot into the International Nurse Researcher Hall of Fame for the achievement of significant and sustained international recognition and for research that impacted the profession and the people it serves. Congratulations to both of you.

Prof Jeff Lipman

Drug Dosing and Pharmacokinetics

2015 has been an excellent year for the PK/PD group within BTCCRC. The metrics for grants obtained and manuscripts published are increasing in both quantity and quality. We are also delighted with the progression of our numerous research higher degree (RHD) students through the milestones of their study, but we are particularly excited with the RHD graduations! Specifically, we congratulate Dr Janattul-Ain Jamal and Dr Tim Hanrahan on conferral of the higher degrees, PhD and MPhil respectively. Both showed highly impressive dedication to their research goals and the final Thesis for each was highly complimented by the Readers. We look forward to more research success for Drs Jamal and Hanrahan. We also congratulate Ms Suzanne Parker, Mr Mohd Hafiz Abdul-Aziz and Dr Kiran Shekar who has submitted their PhDs at the time of writing this report.

We welcome new post-doctoral Fellows that are now working with the PK/PD Group. Os Cotta and Dr Fekade Sime are both funded through the UQ School of Pharmacy and the new Centre for Translational Pharmacodynamics that the PK/PD Group works closely with. We welcome visitor Dr Claire Roger from CHU Nimes in France. Claire will spend a year in total designing collaborative clinical and animal PK/PD studies and performing pharmacometric analyses. Her visit represents a very strong confirmation of the excellent collaboration the PK/PD Group enjoys with CHU Nimes.

From a funding perspective, the PK/PD Group had another excellent year with >$4 million in grant funding obtained. In particular, we have led a successful NHMRC Centre for Research Excellence bid to now establish the REDUCE CRE. This centre provides funding support to increase capacity in the research areas of antimicrobial dosing in difficult to treat patient groups. The national and international collaborations that enabled obtaining this grant as well as the global consequences of the research, make the PK/PD Group very proud of future impacts that are possible. 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 acknowledge all our collaborators for the research opportunities provided again this year and look forward to future excellent achievements together.

The research achievements of the PK/PD group have been impressive as well. We have had over 60 papers in 2015 including papers in the American Journal of Respiratory and Critical Care Medicine, Clinical Infectious Diseases, Intensive Care Medicine and Journal of Antimicrobial Chemotherapy.

Finally, we thank the tireless efforts of the research staff at BTCCRC and the Royal Brisbane and Women’s Hospital Intensive Care Unit who allow our research to be of the highest integrity and clinical relevance.

Prof Jason Roberts
Anaesthesia

This year has seen further development of our research team with an increased number of projects. There are approximately 40 studies in progress. The renovations for the innovative teaching and research centre within the department, the "Centre of Excellence in Anaesthesia", are near completion. This centre will facilitate our expanding teaching and research focus. Victoria Eley has successfully confirmed her PhD candidature, and continues her research in analgesia and obese parturients, while Julie Lee has successfully achieved confirmation of her candidature for her Master of Philosophy. She continues her study of ROTEM® thromboelastometry in obstetric anaesthesia. Kate Hames is the lead for educational activities, and Kersi Taraporewalla directs simulation training. Linda Beckman provides Airway Management Workshops.

The large international, multi-centre trial, BALANCED Study which is investigating the influence of anaesthetic depth on patient outcome after major surgery. Dr Michael Edwards is taking the lead in our department for this collaborative project conducted by the NHMRC, ANZCA CTN and the Health Research Council of New Zealand. This study is a 5 year multi-centre trial involving multiple international and local centres, aiming to recruit in excess of 6000 patients. Dr Edwards has currently recruited more than 60 patients to the study. Dr Edwards is supported by the research nurse team of Lianne Dalgleish and Ciewen Town.

Collaboration with the Griffith University Alliance for Vascular Access Research and Teaching (AVATAR) and ICU will lead to implementation of a multicentre trial about dressing and securement of peripheral arterial catheters, with Heather Reynolds as site investigator. Other ongoing collaborative research with ICU includes studies about antibiotic prophylaxis in bariatric Caesarean and surgical patients, microdialysis catheters and optic nerve sheath measurement of intracranial pressure.

We have had the following successful grant applications - RBWH Foundation Grants to Matthew Hope (Optic Nerve Sheath Study to measure ICP) and Kersi Taraporewalla (Respiratory Sonification Study) and their respective teams; ANZCA Grant to Julie Lee and Professor Van Zundert, for the ROTEM® platelet study. Professor Van Zundert is also part of a collaborative research team at Griffith University who have received an unrestricted company grant to investigate best flushing practice to optimise peripheral intravascular catheter patency.

By the end of 2015, our Department has published 1 book, 7 book chapters, 18 journal articles and 4 posters. There have been 9 conference presentations by Professor Van Zundert, Victoria Eley, Julie Lee, Heather Reynolds and Luke Heywood. To conclude a successful year for the Department, Professor Van Zundert was awarded the position of Honorary Member of the Belgian Society of Anaesthesia & Reanimation in November, 2015.

Prof Andre van Zundert

Emergency Medicine

The Emergency Department’s commitment to research was strengthened by our success in obtaining a research Capacity Building Grant from the QEMRF for the next two years. This will enhance our diverse research interests, and help us focus on achieving excellence in research in acute cardiac care, sepsis and acute headache presentations.

Our work on the rapid ruling out of ACS over previous years has led to the development of the Brisbane Protocol, due for publication in 2016. Meanwhile an earlier risk stratification process for ACS (the ADAPT protocol) utilising the TIMI score and two hour sensitive troponin assays has been adopted in clinical practice in many hospitals across the state. The protocol is proving to be a cost-effective and safe initiative.

Our database of emergency patients admitted with infection built over a number of years allows us to validate the utility of various severity scoring systems in critical care. Emergency Department-specific scores are the most accurate in predicting an individual’s requirements for resources, outcome and disposition.

Finally our state-wide snapshot on acute headache presentations and diagnostic accuracy of cerebrospinal fluid analysis in subarachnoid haemorrhage was presented at the Australasian College for Emergency Medicine, Annual Scientific Meeting in Brisbane, November 2015, and is currently undergoing publication. The results will facilitate rapid diagnosis of the life threatening causes in the most cost-effective manner.

A/Prof Kevin Chu
**Military Medicine**

Professor Reade was deployed with the Australian Army for nearly five months to establish a light-scaled surgical hospital overseas. Nonetheless, the various research programmes grouped under Military Medicine and Surgery at the BTCCRC continued to thrive. The pilot CLIP (cryopreserved vs. liquid platelets for surgical bleeding) trial, in collaboration with Drs Denese Marks and Lacey Johnson of the ARCBS commenced enrolment, with so far 14 of 90 patients randomised thanks to the tireless work of project manager Renae Deans. The PATCH-Trauma trial of tranexamic acid has now recruited >100 patients, with the first in Queensland enrolled in November thanks to Prof Steve Rashford at Queensland Ambulance, along with colleagues at the ANZIC-RC. Blood from PATCH-Trauma will be assayed in the BTCCRC laboratory to better understand tranexamic acid pharmacokinetics—a world first. The TRANSFUSE trial of age of packed red blood cells is well over half way to its 5000-patient target. Linked to this is a collaboration with Dr John-Paul Tung of the ARCBS, investigating the effect of storage duration in in vitro models. Lastly, the 14-hospital DahLIA trial of dexmedetomidine for critical-illness delirium has been submitted for publication, with presentation expected in March 2016.

In 2015, Professor Reade was appointed Australian representative to the NATO-sponsored military Technical Co-operation Program Technical Panel 22 (Military Medicine). The hope is to use this collaborative network to develop an international clinical trials group focused on trauma, with two projects (studying fibrinogen concentrate and erythropoietin) tabled for progress in 2016.

Direct contribution to ADF Health capability was made in several ways. Final planning for the overseas deployment of a cryopreserved red cell blood bank was completed, with substantial input from both Lieutenant Colonel Reade and Commander Anthony Holley. Clinical trainees continued to rotate through RBWH, with a noteworthy achievement being Captain Elissa Milford’s appointment to the fulltime ADF Military Specialist program to train in intensive care.

At the end of 2015 the military trauma and critical care section of the BTCCRC includes 3 PhD students, 3 Masters students, 4 MBBS students, one MPH student and 1 FRACS trainee. In 2015, 11 papers were accepted, including contributions to the Lancet Respiratory Medicine, Intensive Care Medicine, JAMA Surgery and the Medical Journal of Australia. Four book chapters were accepted, including to the Oxford Textbook of Medicine and 23 conference presentations made.

Prof Michael Reade

**Burns**

Once again 2015 has been a successful year for the Burns research team. Michelle Donovan successfully submitted her Masters of Philosophy on the topic “Interim compression garments in donor sites”.

October saw many staff from the BTCCRC travel to the Australian and New Zealand Burn Association (ANZBA) meeting in Melbourne. Presentations were made by Martha Druery, Anita Plaza, Orlando Flores, Phillipa Ault, Zephanie Tyack and Jenny Paratz.

Publications in the burns area included one in the Journal of Trauma (Flores, Paratz, Stockton, Muller), Trials (Donovan, Simpson, Muller, Rudd, Paratz), Journal of Burn Care and Research (Orchard, Roberts, Blot, Paratz).

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

A/Prof Jenny Paratz
Journal Articles


Barnett A, Herbert D, Campbell M, Daly N, Roberts J, Mudge A, Graves N. Streamlined research funding using short proposals and accelerated peer review: an observational study. BMC Health Serv Res. 2015;15:55


Blot S, Afonso E, Labeau S. Recent advances in multidisciplinary critical care. Am J Crit Care 2015;24:75-86


Journal Articles (cont’d)


Cullen L. High costs for patients presenting at ED with symptoms of ACS. PharmacoEconomics & Outcomes News. 2015;72:16-9


Eley V, van Zundert A, Callaway L. Milestones in the development of labour analgesia in Australia. Anaes Intens Care 2015;43:12-21

Eley V, van Zundert A, Callaway L. What is the failure rate in extending labour analgesia in patients with a body mass index≥ 40 kg/m 2 compared with patients with a body mass index< 30 kg/m 2? a retrospective pilot study. BMC Anesthesiol 2015;1;115

Journal Articles (cont’d)


Journal Articles (cont’d)


Mahmoud I, Eley R, and Hou X. Subjective reasons why immigrant patients attend the emergency department. BMC Emerg Med 2015;15:1


Journal Articles (cont’d)


O’Callaghan D, Holley A, Lipman J. From the intensive care bed…. we need to hear and listen. Intens Care Med 2015;41:921–2


Reade MC. A quicker and more reliable method of excluding inadvertent arterial puncture during central venous line insertion. Anaesth Intens Care 2015;43:271-2


Roberts J, Taccone F, Lipman J. Understanding PK/PD. Intens Care Med 2015; in press


Publications
Journal Articles (cont’d)


Tabah A, Lipman J, Cotta O, Roberts J on behalf of the Working Group for Antimicrobial Use in the ICU within the Infection Section of the European Society of Intensive Care Medicine (ESICM). The ADMIN-ICU survey: a survey on antimicrobial dosing and monitoring in ICUs. 2015;70:2671-7


van Zundert A, Pieters B. Videolaryngoscopy offers us more than classic direct laryngoscopy. Minerva Anestesiolog 2015;81:933-934


Journal Articles (cont’d)


Wai-Tat Wong, Gordon Choi, Charles D Gomersall, Jeffrey Lipman. To increase or decrease dosage of antimicrobials in septic patients during continuous renal replacement therapy: the eternal doubt. Curr Opin Pharmacol 2015;24:68-78

Walker R, Reade M. 100 years of military health experience. MJA 2015;202:347-48


Book Chapters


Book Chapters (cont’d)


Reade MC. Military medical research as a catalyst for improvements in both military and civilian medical care. Commemorating Australian anaesthetists in conflict. Melbourne, ANZCA, 2015; in press


Books


Published Conference Proceedings

Reade MC. ADF Trauma Clinical Practice Guidelines – about time? JMVH 2015;23:10-11

Reade MC. Application of clinical governance in the Role 2E environment: the 2nd General Health Battalion experience. JMVH, 2015;23:11-12


Invited Presentations

Jason Roberts

- Meet the Experts – Antibiotics and ECMO, Interscience Conference on Antimicrobial Agents and Chemotherapy (ICPAC), San Diego, USA, Sept 2015
- Meet the Experts – Individualised antibiotic dosing: a tale of two cities, ICAAC, San Diego, USA, Sept 2015
- Prolonged vs continuous application of antibiotics, International Congress of Sepsis and Multi-organ Dysfunction (ICSM), Weimar, Germany, Sept 2015
- Precision medicine: Obesity and pharmacotherapy, ICSMD, Weimar, Germany, Sept 2015
- Therapeutic drug monitoring of β-lactams in the ICU, European Conference on Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark, Apr 2015
- Can PK/PD get us better outcomes for infected ICU patients? ECCMID, Copenhagen, Denmark, Apr 2015
- My research, ECCMID, Copenhagen, Denmark, Apr 2015
- Therapeutic drug monitoring of β-lactams in the ICU, Université Lyon Short Course on Antimicrobial Monitoring, Lyon, France, Apr 2015
- Anti-infective therapy in the past, present and in the future—a PK/PD perspective, Stuttgarter Intensivkongress, Stuttgart, Germany, Feb 2015
- Prolonged β-lactam infusions in the ICU, Stuttgarter Intensivkongress, Stuttgart, Germany, Feb 2015
- The Difficult Patient – How to dose the antibiotics? Infectious Diseases and Critical Care Conference, The Alfred Hospital and Monash University, Melbourne, Sept 2015
- The Pharmacology, PK and PD of Antimicrobials, Society of Hospital Pharmacists of Australia (SHPA) Infectious Diseases Clinical Seminar, Perth, Aug 2015
- Individualised dosing and therapeutic drug monitoring, SHPA Critical Care Seminar, Sydney, Aug 2015
- β-lactam therapeutic drug monitoring in ICU, ANZ Therapeutic Drug Monitoring Workshop, Sydney, May 2015

Michael Reade

- The PATCH-Trauma trial. ATS Annual Scientific Meeting, Oct 2015
- Translating battlefield resuscitation to the civilian setting. Australian Resuscitation Council Spark of Life Conference, Melbourne, Australia, 2015
- Hypertonic solutions in trauma. 35th ISICEM, Brussels, 2015
- Military vs civilian trauma guidelines: How they differ. 35th ISICEM, Brussels, 2015
- What we learned from military practice. 35th ISICEM, Brussels, 2015
- Massive bleeding – the military experience. 35th ISICEM, Brussels, 2015

Jeffrey Presneill

- unpacking the stats for measuring outcomes. ANZICS Clinical Trials Group and ANZICS Centre for Outcome and Resource Evaluation (ANZICS CORE), Critical Care Health Services, Research Forum, Rydges Hotel, Sydney Airport, Mar 2015
- Evidence based medicine and statistics. College of Intensive Care Medicine (CICM) of Australia and New Zealand, Primary Short Course, Mater Hospital Brisbane, Jul 2015

Heather Reynolds

- Skin Integrity: State of the Evidence Symposium: NHMRC Centre of Research Excellence in Nursing (NCREN), Griffith University, Brisbane Convention Centre, Jul 2015

Jeremy Cohen

- Social Media and Critical Care Conference (SMACC) 2015, Chicago, USA

Therese Starr

- The art of juggling: keeping the research project on track. Intensive Care Research Coordinator Interest Group, Mar 2015

Victoria Eley

- Providing care for the obese pregnant woman – a challenge for all theatre staff. Perioperative Nurses Association of Queensland Conference, Coolum, 2015
- Pre-eclampsia has many faces: An interactive case based clinical session. Royal College of Obstetricians and Gynaecologists World Congress, Brisbane Apr 2015

Jenny Paratz

- Optimization of the intensive care patient from intensive care to home CRPA Conference, Gold Coast, Oct 2015
- Intensive care follow up Advanced Mechanical Ventilation, Melbourne, Jul 2015
Invited Presentations (cont’d)

Stijn Blot
- Oral care in intubated patients: to brush or not to brush. 35th ISICEM, Brussels, Mar 2015
- Early management of burn victims. 35th ISICEM, Brussels, Mar 2015
- Antibiotic therapy: what your nurses should know. 35th ISICEM, Brussels, Mar 2015
- Prevention of catheter-related bloodstream infection – what are the hidden costs? Health Care Academy – IV Leadership Summit, Prague, Apr 2015
- Avoiding micro-aspiration – a key element in VAP prevention. Annual Congress of the Critical Care Society of Southern Africa (ACCCSSA), Sun City, Jul 2015
- Antibiotic therapy in the ICU: what nurses should know. ACCCSSA, Sun City, Jul 2015
- Pressure ulcers in the ICU: incidence, risk factors and prevention. ACCCSSA, Sun City, Jul 2015
- Determinants of arterial blood pressure – a conceptual framework. ACCCSSA, Sun City, Jul 2015
- Limiting the attributable mortality of healthcare-associated infection and multidrug resistance in intensive care units. 26th International Nursing Research Congress of the Sigma Theta Tau Honor Society of Nursing, Puerto Rico, Jul 2015
- Nosocomial infections and multidrug resistant microorganisms: benefits of surveillance. 28th European Society of Intensive Care Medicine (ESICM) Annual Congress, Berlin, Germany, Oct 2015
- Pressure ulcers: identification and management. 28th ESICM Annual Congress, Berlin, Germany, Oct 2015
- DecubICUs – Decubitus in intensive care units. 28th ESICM Annual Congress, Berlin, Germany, Oct 2015
- Debate session: mobilization in the ICU benefit for patients vs. burden of staff. 28th ESICM Annual Congress, Berlin, Germany, Oct 2015
- How to manage and prevent the different faces of pneumonia: ventilator-associated pneumonia. Athena International Conference, Approaching the Severely Infected Patient, Athens, Greece, Nov 2015
- Let’s talk about inhaled antibiotics: the story. Athena International Conference, Approaching the Severely Infected Patient, Athens, Greece, Nov 2015

Jeffrey Lipman
- Annual CICM, Darwin, Australia, Jun 2015
- International Association of Student Surgical Societies’ (IASSS) Surgical Symposium, Jul 2015
- Tropical Queensland Medical Conference, Nov 2015
- Portuguese Critical Care Congress, Portugal, Mar 2015
- Chinese Critical Care Society, China, Sept 2015
- 28th ESICM Annual Meeting, Berlin, Germany, Oct 2015

Tony Brown

Louise Cullen
- 8th Asian Conference on Emergency Medicine, Taiwan, Nov 2015
- 32nd Australian College of Emergency Medicine (ACEM) Annual Scientific Meeting (ASM), Brisbane, Nov 2015
- SMACC, Chicago, USA, Jun 2015
- Current role of troponin, Cardiology Clinical Summit, New York, USA, May 2015

Andre van Zundert
- Anaesthesia – The Next Level of Teaching, Training, Testing, Quality Care & Research, 12th IndoAnaesthesia Congress, Jakarta Indonesia, Feb 2015
- Parameters of Difficult Airway – Which parameters to evaluate?, 12th IndoAnaesthesia Congress, Jakarta Indonesia, Feb 2015
- Airway management for the difficult or impossible airway, World Congress on Larynx Cancer 2015, Cairns, Australia.

Anthony Holley
- Blast Lung. Ventilation through The Ages, Johannesburg, South Africa, Feb 2015
- Pre-Hospital Physicians. Royal Australian College of Surgery (RACS) ASM Perth, Australia, May 2015
- The Procoagulopathy of Trauma. RACS ASM, Perth, Australia, May 2015
- Pro - Con Debate. ICP monitoring in trauma is last season, SMACC, Chicago, USA, Jun 2015.
- Time and Tide Wait for No Man, NSW Military Symposium, Sydney, Australia, Nov 2015.
- Making Sense of Surviving Sepsis, ACEM ASM, Brisbane, Nov 2015
Presentations

Heather Reynolds
- Informing Practice of Dressing and Securement of Peripheral Arterial Catheters: Back to the Future, Association for Vascular Access Dallas, Texas 2015 (Oral and Poster)
- The changing tides of evidence for dressing and securement of perioperative arterial catheters, Perioperative Nurses Association of Qld (PNAQ) Conference, Twin Waters, 2015
- Informing Practice of Dressing and Securement of Peripheral Arterial Catheters: Back to the Future. RBWH Symposium 2015, Australia (Poster)

Julie Lee
- Intra-operative blood product usage pre- and post-implementation of ROTEM® thromboelastometry in a tertiary hospital setting, National Blood Symposium, Brisbane (Poster)
- A survey of anaesthetists’ experiences with ROTEM® thromboelastometry in a tertiary hospital setting, National Blood Symposium, Brisbane 2015 (Poster)
- Intra-operative blood product usage pre- and post-implementation of ROTEM® thromboelastometry in a tertiary hospital setting, RBWH Health Symposium, Brisbane, Oct 2015 (Poster)
- A survey of anaesthetists’ experiences with ROTEM® thromboelastometry in a tertiary hospital setting, RBWH Health Symposium, Brisbane, Oct 2015 (Poster)
- WebAIRS Airway Complications, ANZCA ASM, Adelaide

Susannah Sherlock
- HBOT and hearing loss, Advanced Professional Education Conference, Silver Star, British Columbia
- HBOT, ethics and research, HTNA Webinar Nov 2015
- HBOT and Sudden sensorineural hearing loss, RBWH Quality and Assurance Meeting
- HBOT and soft tissue radiation injury: Review of the evidence, Surgical Grand Rounds, RBWH

Stijn Blot
- Borkowska M, Labeau S, Blot S. Nurses’ practice concerning sedation during weaning from mechanical ventilation. 28th ESICM Annual Congress, Berlin, Oct 2015
- Borkowska M, Labeau S, Blot S. Nurses’ practice concerning weaning from mechanical ventilation in the intensive care unit. 28th ESICM Annual Congress, Berlin, Oct 2015
- Afonso E, Blot K, Blot S. The effect of using chlorhexidine washcloths in bloodstream infections in the adult and paediatric ICU – a systematic review and meta-analysis. 28th ESICM Annual Congress, Berlin, Oct 2015
- Borkowska M, Labeau S, Blot S. PRAKTIJKVOERING BIJ VERPLEEGKUNDIGEN NAAR WEANING VAN DE VENTILATOR OP INTENSIEVE ZORGEN AFDELING. Flemish Society of Critical Care Nurses (FSCCN) Annual Congress, Nov 2015
- Borkowska M, Labeau S, Blot S. VERPLEEGKUNDIGE SEDATIEPRAKTIJKEN IN DE CONTEXT VAN WEANING VAN MECHANISCHE VENTILATIE OP INTENSIEVE ZORGEN AFDELING. FSCCN Annual Congress, Nov 2015

Martha Drury
- Keeping it real: What the outcomes literature means for your patient. 39th Australia and New Zealand Burn Association (ANZBA) Annual Scientific Meeting, Melbourne, Oct 2015
- Quality self care: the art and the science of building your own trauma resilience. 39th ANZBA Annual Scientific Meeting, Melbourne, Oct 2015

Victoria Eley
- Eley V, Kamp R, Blain S, Hoy M. Epidural extension for Category 2 C-Section. 2. Anaesthesia Society of Australia (ASA) 2015
- Lee K, Eley V, Owen T, Pelecanos A. Anaesthesia for Category 1 Caesarean Section: An Audit of Practice at the RBWH 2010-2013, ASA 2015

Orlando Flores

Danny Tsai
- How to kill a kidney, Grand Rounds, Alice Springs Hospital, Feb 2015
Presentations (cont’d)

Jason Roberts
- Carlier M, Roberts J, Stove V, Verstraete A, Lipman J, De Waele JJ. Lack of PK/PD target attainment in de-escalated antibiotic therapy in critically ill patients: less is not always more. ECCMID, Copenhagen, Denmark, Apr 2015 (Poster)
- Roberts J, Roger C, Wallis S, Lipman J, Muller L, Lefrant JY. The comparative effects of continuous venovenous haemofiltration vs continuous venovenous haemodiafiltration on the pharmacokinetics of linezolid in critically ill patients. ECCMID, Copenhagen, Denmark, Apr 2015 (Poster)
- Farkas A, Guan L, Villasurda P, Dolton M, Roberts J. Comparative evaluation of the predictive performance of three different structural population pharmacokinetic models to predict future voriconazole concentration. ECCMID, Copenhagen, Denmark, Apr 2015 (Poster)
- Roehr A, Frey O, Helbig S, Farkas A, Roberts J, Brinkmann A. Continuous Infusions of Linezolid, a 4Year Practical Experience with Critically Ill Patients. ICAAC, San Diego, USA, Sept 2015 (Poster)
- Farkas A, Frey O, Roberts J, Roehr A. Evaluation of the utility of a Bayesian feedback method at predicting future linezolid concentrations in critically ill patients. ICAAC, San Diego, USA, Sept 2015 (Poster)
- Bergen P, Lipman J, Bulitta J, Millen N, McGregor M, Kirkpatrick C, Roberts J, Landersdorfer C. Differences in suppression of regrowth & resistance despite similar initial killing for meropenem & piperacillin/tazobactam against P. aeruginosa & E. coli. ICAAC, San Diego, USA, Sept 2015 (Poster)
- Farkas A, Gujadhur N, Yasin B, Felton T, Roberts J. Model-based prediction of piperacillin concentrations in critically ill patients: a comparison of nine approaches against clinical data. ICAAC, San Diego, USA, Sept 2015 (Poster)
- Carlier M, Roehr A, Roberts J, Brinkmann A, Frey O. Which routinely available measures of kidney function best predict β-lactam clearance in ICU. ICAAC, San Diego, USA, Sept 2015 (Poster)

Michael Read
- Van Zyl N, Milford E, Diab S, Dunster K, Reade M, Fraser J. A reduction in factor VIII levels is associated with coagulopathy in an ovine model of trauma and haemorrhage. ATS Annual Scientific Meeting, Oct 2015
- Reade M. Dexametomidine to lessen ICU agitation - the DaHLLIA trial. ANZICS Clinical Trials Group Annual Meeting on Clinical Trials in Intensive Care, Noosa, 2015

Martin Culwick
- Patient Safety: The latest incident data from webAIRS. ANZCA Annual Scientific Meeting, Adelaide 2015.
- Patient Safety: It’s only a routine case what could possibly go wrong. Australian Society of Anaesthetists & New Zealand Society of Anaesthetists, Combined Scientific Meeting, Darwin 2015

Jenny Paratz
- Mortality in burn survivors – need for increased follow up ANZBA Melbourne, Oct 2015
- Paratz J, Leung B, Stockton K, Muller M, Younger J. Does burn injury increase cardiovascular risk? CRPA
Presentations (cont’d)

Tony Brown
- NOACs and their effect on the Emergency Department, Chair and moderator, Breakfast Symposium. 32nd ACEM ASM, Brisbane, Australia, Nov 2015

Louise Cullen
- Cullen L, Greenslade J, Carlton E, Than M, Aldous S, Pickering J, et al. Sex-specific vs. overall cut points for a high sensitivity troponin I assay in predicting 1 year outcomes in ED patients presenting with chest pain. Acute Cardiovascular Care, Vienna, Austria, Oct 2015

Danny Tsai
- Antibiotics use in the remote setting—Therapeutics for Remote Area Nurses Workshop, Aug 2015

Jeffrey Lipman
- BASIC course - intensive care trainees, senior nurses, medical officers

Louise Cullen
- SMACC, Chicago USA, Oct 2015

Andre van Zundert
- New Techniques in Airway Management, Department of Anaesthesia, Udayna University Denpasar, Bali, Feb 2015

Workshops/Courses

Michael Reade
- EMST

Jeff Presneill
- Course convenor for Basic assessment and support in intensive care (BASIC) introduction to ICU, RBWH Skills Development Centre, Nov 2015

Gladness Nethathe
- BASIC course, RBWH Skills Development Centre, Nov 2015

Martha Druery
- Mind Full or Mindful: An Introduction to Mindfulness (with Lynne Heyes), Julian Burton Burns Trust Burn Survivor and Family Education and Support Forum, Sydney, Jul 2015
Achievements and Awards

Jason Roberts
• Young Investigator Award for Research in Clinical Microbiology and Infectious Diseases, ESCMID, Feb 2015

Stijn Blot
• Borkowska M, Labeau S, Blot S. Praktijkvoering bij verpleegkundigen naar weaning en sedatie bij mechanisch geventileerde patiënten. VVIZV Award 2015 - best research in the field of intensive care nursing, Flemish Society for Critical Care Nursing, Ghent, Belgium, Nov 2015
• International Nurse Researcher Hall of Fame Honoree, Honor Society of Nursing - Sigma Theta Tau International, for the achievement of significant and sustained international recognition and for research that impacted the profession and the people it serves. San Juan, Puerto Rico, Jul 2015
• Prolongation of mandate as research professor by the Fund for Scientific Research at Ghent University, Belgium, Oct 2015 – Sept 2020

Louise Cullen
• Awarded PhD - Faculty of Health and Social Work, Queensland University of Technology

Andre van Zundert
• Honorary Member, Belgian Society of Anesthesia & Reanimation, Nov 2015
• Visiting Professor - Certificate of Appreciation, Department of Anaesthesiology and Intensive Care, Faculty of Medicine Udayana University/Sanglah General Hospital, Badung-Bali, Dec 2015

Susannah Sherlock
• South Pacific Underwater Medical Society Diploma in Diving and Hyperbaric Medicine in Sept 2015

Jeffrey Lipman
• Elected to “Fellow of Intensive Care Foundation” (only 2nd person to receive this award)

Jenny Paratz
• Medal for Contribution to Research, RBWH Symposium, Oct 2015

Tony Brown
• Outstanding Teaching Award, Royal Brisbane Clinical School, SOM, UQ

Anthony Holley
• Meritorious Unit Citation for service with Task Group 66 Australian Operational Services Medal. (Middle East Region)
Teaching

Jeremy Cohen
- Deputy Chair of the CICM Examination Committee
- Examiner CICM Final Fellowship Exam
- Lecturer Wellington ICM Course
- Lecturer Brisbane Exam Preparation Course
- Lecturer Current Concepts in Critical Care

Jason Roberts
- SOM MD Program Lectures

Jeffrey Presneill
- Clinical tutorials at RBWH ICU

Heather Reynolds
- Griffith University Course Facilitator for Post Graduate Subject: Intravenous Access and Care

Julie Lee
- Supervision of medical students for the UQ Summer School Student Research Program
- Assistance in co-ordination of Senior Registrar tutorials at RBWH
- Educator for the RBWH Primary Exam Tutorial Program
- Examiner for practice anaesthetic vivas for final exam candidates at RBWH
- Instructor for procedural skills tutorial for UQ Critical Care Module, MBBS IV students, Advanced Life Support (ALS)
- Instructor for MBBS III UQ students
- Educator for training of interns in IV cannulation, RBWH
- Assistance in running simulation training for anaesthetic technicians, registrars and consultants within the RBWH anaesthetic department, including involvement in Simulation Training for Anaesthetic Technicians (STAT)

Susannah Sherlock
- Examiner for Final year medical students
- Lecturer for ANZCA Primary Course
- Effective Management of Anaesthetic Crisis (EMAC) instructor

Stijn Blot
- Interuniversity course in hospital hygiene, Master-after-master organized by Flemish universities (PK/PD of antimicrobials)
- Advanced course in emergency and critical care nurses, bachelor-after-bachelor, University College Ghent (basics of research in healthcare)
- Advanced course in peri-operative nursing, bachelorafter-bachelor, University College Erasmus Brussels (Aspects of hospital hygiene)

Michelle Donovan
- Prevent Alcohol and Risk-related Trauma in Youth (P.A.R.T.Y) Programme Education sessions, RBWH
- Clinical Mentor for HP 3 Burns Occupational Therapists

Martin Culwick
- Supervision and training of medical students in the field of anaesthesia
- Supervision and training of residents in the field of anaesthesia
- Supervision and training of anaesthetic trainees

Victoria Eley
- ANZCA Scholar Role Tutor for the RBWH
- ANZCA Obstetric Special Unit Supervisor
- Anaesthesia for Category 1 Caesarean Section: It's not about the needle. Department of Anaesthesia and Perioperative Medicine, Consultant Continuing Professional Education, RBWH
- What is all that Scholar Role Stuff? Department of Anaesthesia and Perioperative Medicine, Consultant Continuing Professional Education, RBWH
- Scholar Role Activities at RBWH, Department of Anaesthesia and Perioperative Medicine, Registrar Training Session, RBWH

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

Jenny Paratz
- UQ—2nd and 3rd year Physiotherapy; Cardiology; Intensive Care; 4th year and GEMS; Simulated patients
- Australian Catholic University—3rd year Sepsis
- Griffith University—2nd year Intensive Care
- Queensland Skills Centre—PaCCman; BASIC
- Cardiorespiratory Australia

Andre van Zundert
- Parameters of Difficult Airways – Presentation of a New Airway Evaluation Form, CME Department of Anaesthesia & Perioperative Medicine, RBWH
- Airway Management – New Challenges, Udayna University Denpasar, Department of Anaesthesia
- Research for Registrars, CME Department of Anaesthesia & Perioperative Medicine, RBWH

Despoina Koulenti
- High Fidelity Simulation in Critical Care—MBBS 4
Professional Organisation Activities

Jeremy Cohen
- Associate Editor: Monitor Current Awareness Journal
- Reviewer: NHMRC Project Grant

Jason Roberts
- Secretary: ESCMID PK/PD Study Group (EPASG) Executive Committee
- Co-Chair: ESCMID Clinical Guidelines for Nebulised Antibiotics in Mechanically Ventilated Patients
- Chair: Working Group for Antimicrobial Use in ICU, ESICM
- Panel member: Critical Review Panel, ATS/IDSA Guidelines on HAP, HCAP and VAP; American Thoracic Society and Infectious Diseases Society of America
- Committee member: Infectious Diseases Committee of Specialised Practice, SHPA; Critical Care Committee of Specialised Practice, SHPA; PK/PD Study Group, ESCMID
- Section Editor: International Journal of Antimicrobial Agents, Journal of International Society of Chemotherapy
- Associate Editor: Journal of Pharmacy Practice and Research, SHPA

Michael Reade
- Member: Executive Committee, Australasian Trauma Society (ATS); Publications Committee, ATS; Toowoomba Hospital Grants Review committee; Repatriation Foundation Committee; Australian Resuscitation Council National Committee (ADF Representative); Australian Trauma Quality Improvement Program; Executive Committee (Qld representative); ANZICS CTG

Jeffrey Presneill
- Member: Trial Management Committee for NHMRC Project Erythropoietin in Traumatic Brain Injury; Trial Management Committee for NHMRC Project The Prophylactic Hypothermia Trial to Lessen Traumatic Brain Injury; Trial Management Committee for NHMRC Project STandaRd Issue TrANSfusion versus Fresher red blood cell Use in intenSive carE (TRANSFUSE): a randomised controlled trial

Stijn Blot
- Chair, Nursing and Allied Health Professionals, ESICM Executive committee member, Flemish Society of Critical Care Nurses
- Editorial board member: Austrian Crit Care, Am J Crit Care
- Organiser; FSCCN Annual Congress

Louise Cullen
- Reviewer Map of Medicine – Cardiology Pathways: Chest pain and Atrial Fibrillation Metro North Medicare Local
- Research Committee Member, Department of Emergency Medicine, RBWH
- Editorial committee member: Emergencias - the official journal of the Spanish Society of Emergency Medicine

Weragoda Abeypala
- ANZCA Committee member: development of Patient Blood Management Guidelines, Module 5 for Obstetrics and Maternity by the National Blood Authority of Australia

Heather Reynolds
- Member of Griffith University research group: Alliance for Vascular Access Teaching and Research (AVATAR)

Therese Starr
- IRCIG, Mentor QLD

Andre van Zundert
- Chair, PhD Confirmation of Dr. Chinichiro SAKATA from Clinical Skills Development Centre

Martin Culwick
- Member: Safety and Quality Committee ANZCA; Queensland Committee of the Australian Society of Anaesthetists (ASA); Queensland Perioperative and Periprocedural Anaesthetic Mortality Review Committee (QPPAMC)
- Medical Director, Australian and New Zealand Tripartite Anaesthetic Data Committee (ANZTADC)

Victoria Eley
- Organising Committee Member, ANZCAAnnual Scientific Meeting 2017
- Reviewer, Anaesthesia and Intensive Care
- Clinical Co-Lead: Statewide Maternity and Neonatal Guideline: Obesity in Pregnancy

Jenny Paratz
- Reviewer: Am J Crit and Resp Medicine, Crit Care Medicine, Anaesthesia and Intensive care, Intensive care Medicine, NHMRC Project grants, Intensive Care Foundation grants
- Thesis examiner, University of Sydney
Jeffrey Lipman
- Editorial Board Member: International Journal Of Antimicrobial Agents - Sub Editor; Anaesthesia and Intensive Care; Medicina Intensiva; Journal of Intensive Care (Journal of Japanese Society of Intensive Care; Intensive Care World Monitor; ICU Management; The Open Respiratory Medicine Journal; Current Infectious Disease Reports
- Reviewer: Antimicrobial Agents and Chemotherapy; Critical Care; Critical Care Medicine; Expert Opinion On Drug Metabolism and Toxicology; International Journal of Antimicrobial Agents; Journal of Antimicrobial Chemotherapy; PLOS One

Tony Brown
- Chair: Idarucizumab Advisory Board, Boehringer-Ingelheim
- Board Member: Hereditary Angioedema Advisory Board, Shire Pharmaceuticals
- Section Editor for sections on Resuscitation; Critical Care; Orthopaedic Emergencies; Endocrine; Rheumatology and Musculoskeletal; Dermatology; O&G; and Pain in Textbook of Adult Emergency Medicine

Despoina Koulenti
- Head of the Working Group on Pneumonia of the ESICM
- Reviewer for Research Grants proposals of ESCMID
- Abstract reviewer for ECCMID
- Reviewer: Intensive Care Medicine; Critical Care; International Journal of Antimicrobial Agents; Respiratory Care; Minerva Anestesiologica; Annals of Intensive Care; Journal of Critical Care; Journal of Infection and Public Health Revista Brasileira de Terapia Intensiva
- Member: International Advisory Board of the Turkish Journal of Medical and Surgical Intensive Care Medicine
Visitors to the BTCCRC

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<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Reason for Visit</th>
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<tbody>
<tr>
<td>Dr Simone Giuliano</td>
<td>Universita Di Roma, Italy</td>
<td>Training in clinical application of PK/PD and therapeutic drug monitoring to improve therapy for critically ill patients</td>
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<tr>
<td>Dr Axel Hamprecht</td>
<td>Universitätsklinikum Köln, Germany</td>
<td>Training in clinical application of PK/PD and therapeutic drug monitoring to improve therapy for critically ill patients</td>
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<tr>
<td>Dr Claire Roger</td>
<td>Centre Hospitalier-Universitaire</td>
<td>Developing expertise with PK/PD analysis of data and experience in dose individualisation for beta-lactams in critically ill patients</td>
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<td>Intensivist Oct 2015-Nov 2016</td>
<td>Nimes, France</td>
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<tr>
<td>Prof Håkan Hanberger Professor</td>
<td>Institute of Clinical &amp; Experimental Medicine, Linköping Sweden</td>
<td>Collaborative activities</td>
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<td>of Infectious Diseases</td>
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<td>Prof. Dietmar Enk, Maastricht</td>
<td>University Medical Centre, Maastricht, Netherlands</td>
<td>Visiting Professorship Talk - Rescue Ventilation Through a Small-Bore Tracheal Cannula</td>
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NEWS & EVENTS

- Jason Roberts—ESCMID Observership Centre; Funding for HFIM lab; Recruitment of Fekade Sime and Os Cotta; Strengthened linkages with School of Pharmacy
- Michael Reade—Deployed as Director of Clinical Services at the ANZAC Role 2E Hospital, Operation Okra, Apr—Sept 2015
- Jeffrey Presnell—Admitted as Graduate Statistician by the Statistical Society of Australia Inc
- Danny Tsai—appeared in local newspaper ‘Centralian Advocate’ with the story ‘Antibiotic study under way’, 9th Oct 2015
- Department of Anaesthesia employed two new Clinical Research Nurses; Lianne Dalgleish and Cienwen Town
- Bioanalytical lab successfully reduced plasma sample size from 100 µL down to 2.5 µL (40 times smaller) for some assays in line with microsampling goals and published the first article reporting a method for measuring an antibiotic (fosfomycin) in a VAMS microsampling device (Parker, et al Bioanalysis 2015;7:2585–2595)
- Orlando Flores—PhD confirmation of candidature awarded Jul 2015
- Despoina Koulenti—The international PneumolINSPIRE study led by Dr Despoina Koulenti, (Co-ordinating centre: BTCCRC) was officially endorsed by the ESICM.

BTCCRC heARTfelt Dinner Fundraiser

Our research centre, along with the RBWH Foundation, once again hosted its annual fundraiser on Fri 6th Nov, raising just under $28,000. One hundred guests filled Aqualinea Restaurant, Teneriffe for an incredible night of fine wine, entertainment and an amazing three-course meal. The highlight of the Dinner was the exciting art exhibition featuring generously donated artwork by Marc Chapall (Chase Gallery), Barbara Fletcher, Bruce Ellem, Di Cox, Jaime Kruuismaa, Julie Cane, Julie Chadwick, Lars Vester, Margaret Turner, Robert Brownhall, Stef Dunn, Svetlana Trellova and Tony Walker. 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.

Our MC for the evening was Loretta Ryan from Made For Media and our guest speakers were Charlotte Adderley, one of our patients who was treated in our Burns Unit and Prof Michael Reade. The evening could not have been the success it was without the generosity of our Silver Sponsors ABRI Homes, our Event Partners Aqua Linea, Black Arts and A Nobel Event and prize sponsors James Connoisseur Meats, Healthy World Pharmacy, Queensland Massage and Fitness Therapy, The Coffee Club, The Greek Club and Convention Centre, Dan Murphy Woolloongabba, Nic’s Beauty Haven, Atrium Plaza Pharmacy, Sand Dunes Resort, Indigo Cut and Colour, Susan Driver Jewellery, George and Tricia Yanardasis, Betty Yanardasis, Aliki’s Art in Mind, Camargue, Cork & Chroma, Deep Grey Photography, Golf Central, Lefkas Taverna, Paper Boat Press, Sacha Drake, The Hour Glass, Urban Climb, Yellow Cabs, Aromas, Brisbane Photography Courses, Ginger Factory, Halcyon House, Pondera Physio and Pilates, Radiance Clinic, Travel About Corporate & Leisure Travel, Victoria Park Golf Club, Good Life Health Clubs, No More Knots. We thank them and the wonderful volunteers who supported our fundraiser.
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