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In the past seven years, Jayne Bancroft has witnessed the direct patient benefits of research. As the hospital’s Mechanical Circulatory Support Coordinator, she provides care and expertise to people awaiting a heart transplant.

Her career has almost been predestined. Jayne left school wanting to be a nurse, but wasn’t eligible to start training until she was 19. Her first nursing position was allocated by the matron – the cardiothoracic intensive care unit.

The experience took her to Saudi Arabia as an Enrolled Nurse where she worked in an Army hospital which performed the country’s first heart transplant. ‘I remember he was a lovely 13 year old boy,’ she says.

After a couple of years she returned to England to complete her Registered Nurse training, then moved to Bahrain to work in a new cardiac surgery centre. ‘The best part of the job was that the coronary care nurses would go out with the ambulance crews for chest pain calls,’ she says.

Jayne returned to England to do her cardiothoracic speciality at London Chest Hospital and worked for 10 years in the Papworth Hospital ICU as a senior nurse and teaching sister. There she met Dr Keith McNeill from the transplant program at TPCH.

When she and her husband decided to move to Australia, Jayne already knew where she wanted to work.

Jayne’s role in the transplant team includes participating in preoperative assessment and postoperative care, as well as looking after patients with ventricular assistance devices (VADs) and training them and their families to manage the devices.

VAD technology has rapidly progressed from unwieldy pumps attached to large machines to today’s artificial heart, smaller than an apple, connected to a battery less than half the size of a shoebox.

For patients it means they’re no longer stuck in a hospital bed. Some patients are able to go home and live relatively normal lives while they wait for a heart transplant.

‘I love that the role has a lot of patient contact and teaching,’ Jayne says. ‘I learn something new every day about the technology.’

The job has also allowed Jayne to participate in device trials and transplant research projects such as an audit of infection rates and a survey of VAD coordinators to look at different practices across the world.

She hopes the questionnaire results will be published and presented at the international VAD coordination meeting in Germany.

‘It’s very interesting data,’ she says. ‘There are great variances across sites with things like discharge processes, bloods, dressings, clinics. A lot of it comes down to resources available in different hospitals such as equipment and staffing, but also the number of implants they do.

‘We get a lot of great ideas from what people are doing around the world.’

Jayne and fellow transplant nurse Margaret Porra also coordinate the regular nursing grand rounds lectures, to share nursing practice and research across the hospital.
For 60 years, The Prince Charles Hospital has always been ‘ahead of the pack’ when it came to answering the needs of the ever changing clinical landscape. As researchers today, we can look so much further by standing on the shoulders of the giants who made Prince Charles the world leading cardio-thoracic centre for more than half a century.

Originally commissioned as a part of the national strategy to combat tuberculosis, the then Brisbane Chest Hospital was birthing some great researchers right from the start. Imagine the ingenuity of radiologist Dr Jim Hood in the 1950s to rig up the angiograph to a movie camera to create moving images of the heart. Necessity truly is the mother of invention.

I am constantly impressed by the passion and creativity of researchers at The Prince Charles Hospital. Our teachers and mentors weaned us on a culture that nothing was too hard, and no question should be left unattempted. They inspired a culture that encouraged clinicians and scientists of all disciplines to look for better, more effective, less dangerous ways of improving patient outcomes. Not knowing wasn’t good enough. The ‘Charlie’s way’ meant going the extra yard, coming to the lab on your days off, and being in the library till closing time. Seeing a patient doing that bit better was reward enough.

Achieving that improved outcome takes an outstanding team. It starts with the cleaners and wardies, whose extra care results in the lowest infection rate anywhere in Australia. The team extends across all the disciplines in the hospital – and their extra effort and work is what makes Prince Charles a great place to work and research. Innovation and research is ‘99% perspiration and 1% inspiration’.

It also includes our research partners, granting bodies like our own The Prince Charles Hospital Foundation which continues to increase its support of research in response to the needs of our growing research community, and the wider community who give so generously to help others.

My mentor Dr John McCarthy used to say: ‘Remember, you can probably learn more from your patients than you can ever hope to teach them.’

Research where the patient does not feature prominently at the start, middle and end, probably will never go too far. Their bravery in facing illness, whilst agreeing almost universally to assist in studies always humbles me. ‘If it can help anyone else Dr, then I am happy to help’ would be the answer to the vast majority of research requests I have ever made.

Whether we’re driven by the thrill of discovery, the desire to ease suffering, or the need to solve mysteries, ultimately we’re all working to make life better for our patients now and the many who will come. The wonderful thing about research is even if we’re just trying to make life easier for the person right in front of us, the work will benefit people around the world. As clinicians first and foremost, our ultimate outcome is improved patient outcomes through improved understanding, investigation, innovation, and integration of our work into daily clinical practice.

I acknowledge and pay gratitude to the generations of clinicians and researchers who have come before us. You have bestowed on us a great and precious legacy. I can proudly say that 60 years on, the researchers of The Prince Charles Hospital nurture and value the great gift you have left us: Today’s researchers advance the work you began all those years ago. Their tools may be different, but their burning desire to leave the world that wee bit better continues unchanged.

On your behalf, and the patients that will benefit through their work, I thank and commend them.
Adult Congenital Heart Disease Unit

Congenital heart disease affects one percent of Australian babies. In past times, to be born with structural heart abnormalities indicated likely death in infancy or childhood.

Now, because of progress in medicine, medical imaging, surgery and intensive care, such children are able to be treated and live to become adults. The Adult Congenital Heart Unit cares for such patients. We help teenagers with congenital heart disease make the transition from paediatric to adult care and understand their heart problem so they can start taking care of their own health.

Our research addresses the quality of life which we can offer to our young patients born with heart defects.

We aim to elucidate the medical and psychological problems of these young people and to remedy all we can. Those in whom we elucidate psychological problems are given face to face or telephone support and they are taught coping mechanisms.

HIGHLIGHTS

A major achievement has been the Australia wide and New Zealand cooperative research looking at various aspects of those born with the most severe congenital heart defects. They are the ones treated by complex surgery known as the Fontan operation.

A National Health and Medical Research Council Partnership Project Grant for $1,125,000 has been awarded for ongoing work in Australasia for the next five years.

Scientific report papers from this work are well received internationally, as the studies involve the entire experience of two countries.

GRANTS

The unit is part of an Australasian research collaboration which received an NHMRC Partnership Project grant of $1,250,000 over the next five years. The project will look at giving an adult life after Fontan surgery to those with the most severe congenital heart conditions.
PUBLICATIONS AND PRESENTATIONS

There were five publications including a chapter in an Adolescent Medicine book. The latter aimed to educate students and doctors about congenital heart problems.

Our staff gave educational and scientific presentations at national Echocardiography and Cardiology meetings, as well as at the World Congress of Paediatric Cardiology and Cardiac Surgery in South Africa.

AWARDS

Theresa Malpas our Clinical Nurse Consultant in Adult Congenital Heart Disease was awarded The Prince Charles Hospital Outstanding Achievement Award in 2013.

RESEARCH STUDENTS

The group has one PhD candidate in Psychology.

RESEARCH COLLABORATIONS

The Adult Congenital Heart Unit collaborates with the University of Queensland School of Psychology, Royal Children’s Hospital Melbourne, and the ANZ Fontan Registry.

Congenital heart disease affects one percent of Australian babies.

$1,250,000

NHMRC Partnership Project grant
Advanced Heart Failure and Cardiac Transplant Unit

The Advanced Heart Failure and Cardiac Transplant Unit is a clinical care service with an active program encouraging research into aspects of the unit's clinical care provision, namely advanced heart failure and cardiac transplant.

It therefore encompasses various studies into aspects of the diagnosis and care of patients with advanced heart failure, recipients of heart transplants, and those who receive follow up via Telehealth.

The group aims to improve the outcomes of transplant recipients and people with heart failure, improve selection and outcomes for patients requiring ventricular assist devices, and enhance health care for rural and remote patients by using Telehealth.

The individual patients themselves benefit from closer follow up and greater contact with clinical staff.

Their participation provides the data towards research of techniques and technologies that may later benefit patients.

HIGHLIGHTS

This year showed the strength of the allied health and nursing staff of the Advanced Heart Failure and Cardiac Transplant Unit in promoting further research into the issues seen and addressed by non-medical staff in the care of these patient groups.

Most prospective clinical studies were in the allied health and nursing arenas.

A few ongoing clinical studies from earlier years continued throughout the study period producing more data, with those studies still yet to conclude.

Junior medical staff within the team contributed a number of presentations on aspects of ventricular assist devices and sleep disordered breathing in heart failure patients.
PUBLICATIONS AND PRESENTATIONS

Our publications and presentations for the year covered a broad multidisciplinary range of topics in heart failure and cardiac transplantation.

Published articles included a case report on an unusual cause of right ventricular outflow tract obstruction and a pilot study into the role of thermal underwear in reducing hospitalisation in heart failure patients over winter.

Presentations included topics such as mobilisation of heart failure patients, data that might better predict outcomes in ventricular assist device patients, new echocardiography techniques for evaluation of pulmonary hypertension, and the role of screening for sleep disordered breathing in heart failure patients.

GRANTS

The unit received a New Investigator grant from The Prince Charles Hospital Foundation to complete the OAT Study (Obesity and Activity in heart Transplant recipients) investigating the relationship between overall activity levels in heart transplant recipients and their levels of obesity.

RESEARCH COLLABORATIONS

We have research collaborations with Australian Catholic University School of Nursing and Midwifery, Institute of Nursing Science in Basel Switzerland, and Bayer in Germany.
Aortic aneurysm disease and the associated conditions affect young to middle aged adults. It is a silent but life threatening condition. The risk of death is high in untreated aneurysm and surgical repair is the only effective treatment. Despite extensive studies of aortic aneurysm the cause is not known.

Based on data from post mortem studies there are approximately 3000 deaths pa in Australia from thoracic or aortic aneurysm complications - about 500 deaths pa in Queensland. Understanding the genetic mechanisms underlying aneurysm development will aid in the identification of subjects at risk. This has the potential to identify new therapeutic approaches. The research will be beneficial for targeting specific treatments or preventative steps to eliminate aneurysm disease. New approaches will minimise the need for repeated surgical procedures and improve quality of life for subjects with this common abnormality.

Our research may assist in finding novel treatment and prevention of aortic aneurysm and the identification of genetic and environmental risk factors.

We have used animal models to identify early changes prior to disease development to determine pathophysiological mechanisms underlying aneurysm and dissection. Furthermore therapeutic approaches in animals to determine the effects of inhibition or slowing down of disease progression are also being examined.

In clinical studies in patients with aneurysm we conduct special clinics and collect samples of aneurysm tissue at surgery to compare findings from our animal work. Genetic variants can influence cellular and connective tissue metabolism and are likely to contribute to pathological abnormalities.

We are focussed on identifying mechanisms that might be influenced to benefit patients at risk as well as instituting demonstrated preventative measures.

In an animal model we are assessing the efficacy of angiotensin II inhibition on aortic aneurysm prevention and slowing down of aneurysm progression. The completion of this study may help to identify targets for drug intervention as well as identifying preventative measures.

**HIGHLIGHTS**

We are collaborating with Dr Fraser Russell from the University of the Sunshine Coast. The ongoing research is in the topic of aortic aneurysm using mice models investigating the efficacy...
of dietary supplementation with omega-3 polyunsaturated fatty acids in aortic aneurysm development. We have joint supervision of 1 PhD student and 3 Honours students.

We are setting up a collaboration with BakerIDI Heart & Diabetes Institute in Melbourne where Professor Alex Bobik and Dr Tin Soe Kyaw have an established animal model designed to investigate the role of B and T cells in the development of atherosclerosis. Our project will investigate the role of B and T cells in the development of aortic aneurysm.

Our research with Dr S Prabowo from Hang Tuah Medical School in Surabaya, Indonesia, includes an ongoing project on the role of hyperbaric treatment in diabetic wound healing.

Dr Maria Nataatmadja was invited as a speaker in the International Workshop & Symposium on Medical Hyperbaric Oxygen Treatment and the 1st National Congress of the Indonesian Hyperbaric Medical Association in Surabaya in November 2013.

We published journal articles on whole exome sequencing for mutation detection in osteogenesis imperfecta and Marfan syndrome, the effects of angiotensin II inhibition, and influenza in chronic obstructive pulmonary disease patients.

We have had a paper accepted for publication in Health, titled ‘Hyperbaric oxygen treatment in a diabetic rat model is associated with a decrease in blood glucose, regression of organ damage and improvement in wound healing’ by Sulistiana Prabowo, Maria Nataatmadja, Janto Poernomo Hadji, Irmawati Dikman, Fitri Handajani, Sihning E J Tehupuring, Iswahyudi, Mohammad Guritno Suryokusumo, Aulanni’am, Anita Herawati, Malcolm West.

**GRANTS**

The group received over $200,000 in grants including $30,000 from Medical Advances Without Animals, and two experienced researcher project grants from The Prince Charles Hospital Foundation.

**RESEARCH STUDENTS**

Professor M West had a supervisory or advisory role with eight higher degree candidates during 2013, including two PhD candidates and six MPhil students.

**RESEARCH COLLABORATIONS**

Our research group collaborates with the University of the Sunshine Coast, BakerIDI Heart and Diabetes Institute in Melbourne, and Hang Tuah Medical School in Surabaya, Indonesia.
Cardiology Clinical Research Centre

The Cardiology Clinical Research Centre has been actively involved in various leading edge heart technology and research in Transcather Aortic Valve Implantation (TAVI) since 2008 and is the Lead Investigational Site across Australia and New Zealand for the SOLACE Au Registry of the use of the Edwards Sapien Device in patients with high risk aortic stenosis.

Cardiology Clinical Research Centre has completed more than 50 clinical studies which are designed to capture both the clinical and patient derived benefits of life saving technologies and therapies. The centre is recognised as one of the top recruiters in device and drug trials producing quality data and efficient conduct of clinical trials. It has become one of the few lead research sites in Australia undertaking the role of coordinating multi centre Ethics submissions.

The main focus of our research is the development of new therapies for treating ischaemic heart disease, structural heart disease and cardiac rehabilitation. These areas represent some of the most significant contributors to cardiac morbidity and mortality in the Australian context. Unfortunately, heart disease continues to be the single greatest burden of disease in our community.

The Cardiology Clinical Research Centre is one the country’s leading cardiac clinical trials unit. The Centre conducts industry sponsored clinical trials, academic research projects and investigator initiated translational research in the fields of interventional cardiology, general cardiology and cardiac rehabilitation.

The research team has a particular interest in novel cardiac device technology, innovative procedures, new drug therapies, and outcome based clinical registries. Early phase trials, especially first-in-man studies, are given priority.

The Centre has been at the forefront of the introduction of transcatheter heart valves, percutaneous valve repair systems, new coronary stent technologies and novel oral anticoagulants into Australia. Our team has been the national lead site for a number of international and national pivotal trials.

Our research has reduced mortality in the treatment of valvular heart disease in the (often elderly) high surgical risk patient with aortic stenosis and mitral regurgitation.

These are the most common heart valve diseases affecting Australians. New stent and imaging technologies have made treating ischaemic heart disease safer for patients. A number of the new drugs have been shown to reduce mortality and are safer.

RESEARCH HEAD
Professor Darren Walters
to use in the treatment of patient with ischaemic heart disease and arrhythmia.

The Transcatheter Valve Replacement and Mitra Clip programs provide an option for patients who are deemed unsuitable for surgery, and provide an alternative for high risk surgical patients.

In most instances there are substantial benefits to patients who consent to be involved in our studies including improving outcomes, a reduction in mortality, morbidity and hospital admissions, increased quality of life and easing some of the economic burden of their health care on the community.

**HIGHLIGHTS**

The Cardiology Clinical Research Centre has been a stand out site for studies in structural heart disease. Professor Walters is the national lead and principal investigator for the SOLACE AU Registry of the use of the Edwards SapienXT transcatheter heart valves (TAVI) in patients with intermediate to high risk aortic stenosis.

In 2013, multi-centred international clinical trials and national and local investigator driven studies undertaken in the centre included studies of the renal denervation procedure, bioabsorbable coronary stents, new technologies in implantable defibrillators and pacemakers, cardiac magnetic resonance imaging of heart valve repair systems, intravascular ultrasound, fractional flow reserve, optical coherence tomography, novel ICT strategies for the cardiac rehabilitation, as well as drug trials for acute coronary syndrome and coronary artery disease.

The centre is also continuously collecting data for the CONCORDANCE Registry (Cooperative National Registry of Acute Coronary Care Guideline Adherence and Clinical Events), and The Massachusetts General Hospital Optical Coherence Tomography Registry.

In 2013, the group published 27 papers in peer-reviewed journals and were authors on three book chapters. There were more than 20 abstracts accepted for presentation.

Numerous invited speaker faculty presentation were undertaken by group members at international and national conferences including ANZET 2013, the annual scientific meeting of the Cardiac Society of Australia and New Zealand, Euro-PCR in Paris, Transcatheter Coronary Therapeutics conference in San Francisco, the London Valve Meeting, the national meeting of the society of Cardiothoracic surgeons, the Singapore Live conference and the Complex Coronary Therapies conference in Japan.

**PUBLICATIONS AND PRESENTATIONS**

A key publication for the year was the first published clinical trial of TAVI in Australia and New Zealand in the International Journal of Cardiology.

**AWARDS**

QLD Innovation Award 2014 (iAward) for the MOTER platform for management of IHD.

Health Round Table award for National Grants Over $1,700,000
Cardiology Clinical Research Centre (continued)

Excellence and Innovation, ‘Improving health reimbursement through quality coding’.

GRANTS
The Cardiology Clinical Research Centre has received over $1,700,000 in industry support and grants, including significant support for clinical trials.

RESEARCH STUDENTS
The Cardiology Clinical Research Centre had two PhD candidates and three MPhil students during 2013.

RESEARCH COLLABORATIONS
The centre has extensive Australian research collaborations including: the University of Queensland; Griffith University; eCSIRO; Royal Brisbane and Women’s Hospital; Cairns Hospital; Concord Hospital, NSW; The Northern Hospital, Victoria; Royal Adelaide Hospital; St Vincent’s Hospital Victoria; St Vincent’s Hospital NSW; Prince of Wales Hospital NSW; Royal Melbourne Hospital NSW; Royal North Shore Hospital NSW; John Hunter New England NSW; Gosford Hospital NSW; St George Hospital NSW; George Institute NSW; Flinders Medical Centre SA; South Australia Health and Medical Research Institute SA; Monash University; Monash Heart, Victoria; and Royal Perth Hospital.

Internationally we collaborate with industry and medical partners including: Edwards Lifesciences USA; Medtronic USA; Boston Scientific USA; St. Jude Medical USA; Abbott Vascular USA; Bayer Germany; Servier France; Amgen; Biosense Webster USA; Sanofi-Aventis France; Biosensors; Reva Medical USA; Vessix USA; Johnson and Johnson USA; Centre of Outcomes Research, University of Massachusetts Medical School (UMMS) USA; Massachusetts General Hospital; Harvard Medical School USA; Barons Medical; Global Genomics Group; Sanofi Aventis; Glaxo Smith Klein; Janssen Cilag; Stanford University USA; Imperial College UK; Oschner Clinic USA; and Siemens Germany.

EDITORIAL POSITIONS
Prof Darren Walters, Associate Editor, International Journal Cardiology.

Prof Darren Walters, Editorial Board, Heart Lung and Circulation.
Sascha Abdul-Rahman, research scientist
The Cardiac Electrophysiology research group consists of electrophysiologists Dr Haris Haqqani and Dr Russell Denman, EP Fellow Dr Himabindu Samardhi, and cardiac scientists Ms Colleen Taylor, Mr Daniel Wright and Mr John Betts.

The increasing global epidemic of heart failure and its associated heart rhythm disturbances continue to cause significant morbidity and mortality, particularly related to stroke and sudden death. An improved understanding of the mechanisms of these abnormal rhythms will lead to the development of targeted therapies for these common and devastating clinical problems.

The group aims to contribute to the mechanistic understanding of various heart rhythm disorders and to be involved in the development of novel therapies for them. The focus is particularly on potentially life-threatening ventricular arrhythmias in various at-risk patient cohorts.

Our work benefits patients through the possibility of improved treatments for the more complicated heart rhythm disturbances and the application of cutting edge technology to develop better pacing and ablation therapy.

HIGHLIGHTS

This year saw the continuation of several multicentre clinical trials of pacemaker and defibrillator technology and the commencement of the CAAN-AF trial looking at AV node ablation in biventricular defibrillator patients with atrial fibrillation. The SmartTouch study examining the use of contact force sensing for atrial fibrillation ablation concluded successfully without any adverse events and with confirmation of the utility of this new approach.

A protocol for a worldwide clinical trial examining a new pacemaker lead has been finalised with Dr Haqqani being appointed the global co-principal investigator. The existing investigator initiated project examining the mechanisms of idiopathic outflow tract arrhythmias continued recruitment.

New local and national collaborations were established with the University of Queensland and the University of Melbourne.

The statewide research and teaching forum Queensland Pacing Electrophysiology and Group (QPEG) was again convened throughout the year with increased attendances both in Brisbane and remotely via teleconference. A proctoring course for local and interstate electrophysiologists on the use...
of intracardiac echocardiography during ventricular arrhythmia ablations was successfully run in the electrophysiology lab. Teaching of medical students, residents, registrars, fellows, scientists and nurses continued throughout the year, particularly in the weekly ECG and EP meetings run by the group.

PUBLICATIONS AND PRESENTATIONS
The group published 6 papers in peer-reviewed journals in 2013 and one book chapter. Eighteen invited faculty presentations were delivered at national and international meetings and eight peer-reviewed abstracts were also presented. Dr Haqqani was an invited reviewer for seven journals and graded abstracts for one national cardiology meeting.

AWARDS
Dr Haqqani was again recognised by the Heart Rhythm Journal as a Remarkable Reviewer in 2013.

RESEARCH COLLABORATIONS
Within Queensland, the group collaborates with the University of Queensland and Princess Alexandra Hospital. We also have research relationships with the University of Melbourne and Royal Melbourne Hospital, and the University of Pennsylvania in Philadelphia, United States.

EDITORIAL POSITIONS
Dr Haqqani was an invited reviewer for seven journals and graded abstracts for one national cardiology meeting.
Echocardiography remains the most commonly used modality for imaging patients with cardiac disorders. It is widely available, is accurate and provides prognostic information.

Cardiac anatomical and physiological parameters are obtained using a non-invasive, safe and well tolerated technique. The echocardiography laboratory at The Prince Charles Hospital is actively involved in both pre-clinical and clinical research in the application of existing echocardiographic imaging techniques, as well as the expansion and development of ultrasound imaging in patients with heart disease.

**HIGHLIGHTS**

Research performed within the Echocardiography Department was presented at two international meetings in 2013. The role of echocardiography in ECMO was presented (four posters and one oral presentation) at the European ECMO ELSO scientific meeting in Stockholm, Sweden in May 2013.

Additionally, we had five abstracts accepted at the American Society of Echocardiography annual scientific meeting, in Minneapolis, USA in June 2013. Two of these were selected as finalists in the case report competition, admirably presented by Darryl Burstow.

There are currently numerous research projects being performed within the Echocardiography laboratory at The Prince Charles Hospital.

These include expanding the use of perfluorine microsphere contrast echocardiography, three dimensional transoesophageal evaluation of cardiac structures, and the role of strain/myocardial mechanics in stress echocardiography.

There is also active research in the area of infective endocarditis, especially cardiac device related infective endocarditis (CDRIE).
PUBLICATIONS AND PRESENTATIONS

The group had four publications in major journals, including the International Journal of Cardiology and the European Heart Journal Cardiovascular Imaging. Researchers from the group had five abstracts at the American Society of Echocardiography Annual Scientific Meeting in June 2013, and four posters and one oral at the European ECMO ELSO scientific meeting in Stockholm, Sweden in May 2013.

RESEARCH COLLABORATION

The researchers within the Echocardiography department at The Prince Charles Hospital work closely and collaboratively with other units both within the hospital, within Queensland and also internationally. Our collaborations include all cardiac sub-specialities within The Prince Charles Hospital, cardiac surgery, adult intensive care unit and thoracic medicine. We also work closely with Innovative Cardiovascular Engineering and Technology Laboratory (ICETLab) and Critical Care Research group.

Collaborative research and education links include the University of Queensland, Queensland University of Technology, Griffith University.

Internationally, there are collaborative links with the University of Washington, Seattle, Fujita Health University, Japan and the Department of Anaesthesiology and Intensive Care, Philipps University Marburg, Germany. There is also a collaborative research and teaching link with Ochsner Heart and Vascular Institute, New Orleans, USA.

“The most commonly used modality for imaging patients with cardiac disorders.”
The Cardiac Imaging Research Group (CIRG) undertakes clinical research within the Richard Slaughter Centre of Excellence in Cardiovascular MRI to progress the development of magnetic resonance imaging as a diagnostic tool for congenital and acquired heart disease.

The Prince Charles Hospital is the largest cardiac MRI centre in Australia.

Cardiac CT research by CIRG aims to improve patient safety through the optimisation of acquisition protocols and radiation reduction in patients undergoing cardiac CT.

Research is also focused on reducing cost and length-of-stay through the investigation of cardiac CT in the Emergency Department.

Our research focuses on accurate measurements of cardiac function for patients with congenital heart disease, ischaemic heart disease, cardiomyopathies and aortic disease; understanding right heart function at rest and stress in pulmonary hypertension; and early detection of myocardial fibrosis in hypertension.

The work benefits patients through improved accuracy and reproducibility of measurements of the left and right heart, and quantitation of valvular function, myocardial scar, and fibrosis. This leads to better informed treatment decisions based on quantitative assessment of left and right heart function, myocardial viability prior to surgery, or functional recovery after intervention (medical or surgical).

We apply new MRI techniques to better image the heart and great vessels and provide more accurate diagnoses.

**HIGHLIGHTS**

Through an international research collaboration with Siemens Healthcare, the CIRG was one of the first MRI research groups in the world to have access to advanced technology enabling the capture of ultra-fast images of the heart.

This ground-breaking technology makes magnetic resonance imaging during exercise clinically feasible by maintaining spatial resolution and reducing the image acquisition time more than ten-fold (whole-heart imaging in one breath hold, rather than the usual ten breath holds).

In collaboration with the TPCH Pulmonary Hypertension Program and Griffith University, CIRG is using this technology combined with an MRI-compatible cycle ergometer, to capture MR images of the heart while the patient exercises inside the MRI scanner.
Tour-de-France Champion and Siemens Ambassador, Cadel Evans opened the Exercise Cardiac MRI research program in November 2013.

This event was broadcast internationally, and received significant media attention.

We completed the CT-COMPARE randomised trial which showed that cardiac CT angiography for chest pain is superior to exercise stress testing in an emergency department, and provides significantly decreased length of stay and reduced cost.

**GRANTS**

Members of the research group received a Smart Futures Research Fellowship Early Career Grant (2012-2015) from the Queensland Government, a main research grant providing cash support for research and fellows, and in-kind support from UQ Centre for Advanced Imaging, and a UQ Academic Title Holder Research Grant which provided leveraged cash support for research assistant and ultra-high-field scanning at 7.0Tesla.

Additionally, the group received a Capacity Grant from The Prince Charles Hospital Foundation to build research capacity within the Richard Slaughter Centre of Excellence in CVMRI.

**PUBLICATIONS AND PRESENTATIONS**

Christian Hamilton-Craig was invited to present at the Society of Cardiovascular CT, National Heart Institute of Malaysia, and World Congress of Thoracic Imaging. Wendy Strugnell was invited to present at the 22nd international meeting of the Section for Magnetic Resonance Technologists of the International Society for Magnetic Resonance in Medicine (SMRT/ISMRM) in Salt Lake City, and the 9th Annual Meeting of the SMRT/ISMRM ANZ Chapter in Sydney.

The group had four publications in major international journals and 10 abstracts at national and international meetings.

**AWARDS**

Wendy Strugnell received an international award (the 2013 Crues Kressel Award) from the Section for Magnetic Resonance Technologists of the International Society for Magnetic Resonance in Medicine for outstanding contributions to the education of MR Technologists.

**RESEARCH STUDENTS**

During 2013 there were three PhD students in the group, two with UQ Centre for Advanced Imaging, and one with the UQ School of Medicine.

**RESEARCH COLLABORATIONS**

Locally, CIRG has research collaborations with the Centre for Advanced Imaging at the University of Queensland, Griffith University School of Allied Health Sciences, and The Prince Charles Hospital’s Cardiology Program, Critical Care Research Group, and Queensland Lung Transplant Service.

Other Australian collaborations include St Vincents Hospital, Melbourne and University of Melbourne, the Charles Perkins Centre for Imaging at the University of Sydney.

International collaborations are with Siemens Healthcare, Erlangan, Germany, and the Cardiology and Radiology Programs, University of Washington, Seattle USA.

**EDITORIAL POSITIONS**

Associate Professor Christian Hamilton-Craig holds editorial positions with nine international journals including Circulation: Cardiovascular Imaging, the European Heart Journal, and World Journal of Cardiology.
Heart disease is the number one killer in Australia.

Current drug treatments are often inadequate and therefore new drug targets are urgently needed.

The aim of the in vitro human heart laboratory is to identify novel drug targets that can be used for the management and treatment of human heart diseases including heart failure and arrhythmias.

The laboratory is uniquely placed to use live human beating heart samples to understand disease processes, to elucidate mechanisms and to identify drug targets, directly in the human heart.

Human heart disease carries a significant and unacceptable burden in the community.

Patients with heart failure are at increased risk of sudden death due to the occurrence of an arrhythmia.

The research carried out in the in vitro human heart laboratory seeks to identify chemicals, receptors, biochemical pathways and specific proteins that lead to progression of heart failure and the occurrence of arrhythmias.

It therefore may be possible to identify new drug targets that can more effectively manage and treat heart disease.

In order to identify new drug targets for patients, it is necessary to understand disease processes.

The findings of the laboratory are made available to the research and clinical community so that they can contribute to the development of treatment strategies for patients.

**HIGHLIGHTS**

During 2013 the group had three major studies published in the British Journal of Pharmacology and PLoS One.

Noradrenaline is a naturally occurring chemical in the body. It is released from nerves and activates receptors in the heart (beta-adrenoceptors) to make the heart beat faster and harder so that more blood can be pumped around the body.

This effect is appropriate when we are exercising since it allows more oxygenated blood to be pumped to vital organs.

However chronic activation of beta-adrenoceptors in the context of heart failure, or inappropriate activation during a heart attack can cause a progression of heart failure and arrhythmias which can lead to death.

We used human heart tissues to discover that enzymes called phosphodiesterases (PDEs) can...
dampen the biochemical pathway that noradrenaline uses to stimulate the heart. Drugs called beta-blockers can be used to protect the heart by preventing noradrenaline from binding to its beta-adrenoceptor (hence the name beta-blocker).

One such beta-blocker, metoprolol, blocks the access of noradrenaline to the beta-adrenoceptor and has a beneficial, protective effect on the heart.

We found that metoprolol also works by a novel mechanism by increasing the activity of PDEs. Thus the beta-blocker metoprolol is likely to produce a protective effect by at least two ways, by blocking in human heart to causes cardiotimulation. It works in a highly organised way by binding to highly specific regions of the beta1-adrenoceptor.

Some time ago we discovered another distinct, highly localised region of the beta1-adrenoceptor that can be activated, and called it the beta1L-adrenoceptor binding site.

Activation of the beta1L-adrenoceptor binding site stimulated the heart. However the effect of chronic stimulation of the beta1L-adrenoceptor was not known.

In collaboration with Helen Kiriazis and Xiao Jun Du of the Baker IDI Heart and Diabetes Institute, Victoria, we found that chronic activation is harmful to the heart and makes the heart grow inappropriately, a process known as hypertrophy.

Therefore drugs that can block beta1L-adrenoceptor could be useful to prevent hypertrophy.

Our collaborators at the University of Queensland, Professor Walter Thomas and his team discovered novel bitter taste receptors in human heart. However it was not known what they did to human heart function. In an honours degree program, BSc student Danielle Edwards and PhD student Simon Foster investigated what happens when the bitter taste receptor is activated in human heart.

They found that some ligands that activated the receptor caused severe cardio-depression.

The next step in this project will be to investigate which biochemical pathways are responsible for this effect and to develop blockers.

“Heart disease is the number one killer in Australia.”

The chemical noradrenaline works by activating beta1-adrenoceptors in human heart to causes cardiotimulation. It works in a highly organised way by binding to highly specific regions of the beta1-adrenoceptor.

In Vitro Human Heart Laboratory | Living & Breathing | Research

The group received a grant from The Prince Charles Hospital Foundation to investigate the influence of beta-blocker treatment on phosphodiesterase 3A regulation in human heart failure. We discovered that the continued use of the beta-blocker metoprolol in human heart
failure caused an increase in the phosphodiesterase (PDE3) control of harmful signalling by noradrenaline which occurs naturally in the human body. An increase in PDE3 is protective in patients with heart failure and patients who have arrhythmias. In this grant we want to determine how PDE3 increases its activity. If we understand the mechanism, it may provide a specific drug target for patients with heart failure and arrhythmias.

PUBLICATIONS AND PRESENTATIONS
Researchers from the in-vitro human heart laboratory had two publications in the British Journal of Pharmacology and one article in PLoS One B.

RESEARCH STUDENTS
During 2013 the group had one PhD candidate and one BSc Honours student.

RESEARCH COLLABORATIONS
Locally, the group has research relationships with the University of Queensland and Queensland University of Technology. Across Australia we partner with Baker IDI Heart & Diabetes Institute, Victoria; University of Newcastle, NSW; Canberra University, ACT; and Victor Chang Research Institute, NSW.

Our international collaborations include University of Cambridge, UK; Dresden University of Technology, Germany; University Medical Centre Hamburg Eppendorf, Germany; University of Oslo, Norway; and University of Murcia, Spain.

EDITORIAL POSITIONS
Associate Professor Peter Molenaar is an Associate Editor of Pharmacology & Therapeutics, and Editor of Naunyn-Schmiedeberg’s Archives of Pharmacology.
Biomedical engineer Frank Nestler
Christian Hamilton-Craig

Translating cutting edge technology to direct patient benefits is the drive behind Christian Hamilton-Craig’s clinical research.

As a cardiologist, Christian finds new cardiac imaging techniques essential to getting the best overall results for his patients.

‘I’m interested the application of new technology to clinical practice,’ he says. ‘How can we get better quality, more reproducible images to answer the questions? It’s translational research. The feedback loop is immediate.’

Christian’s research focuses on magnetic resonance imaging and ultrahigh field magnet 7 Tesla scanning.

The Prince Charles Hospital has Australia’s only exercise bike MRI, opened by Tour de France champion Cadel Evans who also participated in a research study.

‘MRI is non-invasive, has no radiation and is safe,’ he says. ‘We’re at the absolute forefront globally for MRI.

‘That’s the legacy of Dr Richard Slaughter who started the Centre of Excellence in Cardiac Imaging in 2002, with the support of a Smart State grant from the then-Beattie government.’

That allowed TPCH to become the biggest cardiac imaging centre in Australasia and led to a state level partnership between Queensland and Washington State in the US. Christian received the first grant from the Queensland Washington Transpacific agreement.

‘It’s a visionary grant because it’s small money but has a big impact for creating pathways for capacity building,’ he says. ‘I’m still on staff at the University of Washington.’ Strategic knowledge partnerships are one of Christian’s passions. He’s been building and maintaining informal knowledge partnerships since he took a year out of medical training to do his research Honours at Cambridge.

He returned home and finished his cardiology specialisation then a clinical PhD which took him to the US and Europe for one year each.

‘I learnt a lot about the business of research and leveraging grants to build capacity,’ he says. ‘Research must have an other-focused motivation and be collaborative and inclusive. That doesn’t mean I don’t do the work myself, but I bring people in to get involved.’

Early in his career, Christian was advised to have at least three projects on the go so that there was always something happening when other projects inevitably stalled or slowed down.

The key he’s found is to diversify without being fragmented.

Despite being a self-described cliché – balding middle-aged husband and father of two with a golden retriever and a white picket fence – Christian’s focus is on forging new paths and creating new knowledge. His philosophy is to jump in and give things a rip.

‘I could see all these new technologies coming into medicine. How do you know what’s real and what’s spin? You have to test them out for yourself,’ he says.

‘It’s important to engage positively with industry. My research has been enabled by early access to technology in my clinical practice. That’s immediately beneficial to my patients.’

Support life saving research. Visit www.tpchfoundation.org.au
The Prince Charles Hospital Anaesthesia Research group was started as a departmental initiative in order to maintain safety and quality of anaesthetic practice through high standard research driven by clinical goals.

Despite being very recently established, it has been a rapidly growing group with involvement in several clinical trials. Our initial objective is to promote a positive atmosphere for research activity in our department such that research is seen as an essential component of our practice.

The priorities are to build adequate research infrastructure and attract funding by engaging in multidisciplinary, national and international collaborative research, particularly in our area of expertise and thereby creating a productive research environment.

Our research helps us to improve and review our anaesthetic practice to provide exceptional patient care along their surgical pathway.

The focus of our research is patient related outcomes.

Currently our areas of interest are pain management, ultrasound guided regional blocks for pain relief, perioperative medicine including preoperative optimisation, perioperative outcomes, pulmonary hypertension and perioperative blood management.

**HIGHLIGHTS**

In 2013, the major highlights included the start of five investigator initiated trials, collaboration with other departments and hospitals for multicentre trials and a pilot grant from the Australian New Zealand College of Anaesthetists (ANZCA).

Our group of anaesthetists, residents, medical students, and perioperative nursing staff have been actively involved in these projects.

We are thankful to other units, namely the Critical Care Research Group, orthopaedic, general, and cardiothoracic surgery, thoracic medicine, and the Nursing Research and Practice Development Centre for their involvement and support of our projects.

Inadequate treatment of postoperative pain can be one of the main reasons for persistent post-surgical pain.

A randomised double blind trial was conducted to evaluate at the efficacy of pregabalin and celecoxib in managing pain following laparoscopic cholecystectomy.
This study received funding from The Prince Charles Hospital Foundation.

A retrospective analysis of data from all the hip and knee replacement surgeries between 2006 and 2010 at The Prince Charles Hospital was commenced to analyse the relationship between body mass index and adverse postoperative outcomes. A pilot study was started to compare the ability of waist circumference with body mass index in predicting major postoperative adverse outcomes following non-cardiac surgeries.

The hypothesis is that body mass index, being a ratio, is not an accurate measure of obesity whereas waist circumference is more reflective of adiposity around viscera and hence can more accurately predict complications.

Orthopaedic surgeons use ketorolac along with local anaesthetics for infiltration into the joints following hip and knee joint replacements.

The pharmacokinetics of ketorolac following intramuscular and intravenous routes has been well studied.

However, there have been no previous studies in humans on the kinetics of ketorolac following intra-articular and peri-articular infiltration.

Also the effect of such an infiltrated ketorolac on renal function is unknown.

Our study aims to assess the kinetics of infiltrated ketorolac and the change in renal parameters in the first 24 hours postoperative.

Elderly patients are more prone to hypothermia because of increased frailty, comorbidities, and impaired thermoregulation with age. In the current study, we aim to study the changes to the body temperature in patients undergoing hip fracture surgery through the perioperative course.

The secondary aims are to calculate the prevalence of hypothermia in the patients undergoing hip fracture surgery arriving at the post anaesthesia care unit and to evaluate postoperative length of stay in the recovery room as a consequence of hypothermia.

Other highlights are our collaboration with other national and international hospitals for multicentre projects including the RELIEF trial, the METS study and the IronNOF study.

RELIEF trial (Restrictive versus Liberal Fluid Therapy in Major Abdominal Surgery): This project is initiated by the Alfred Hospital Department of Anaesthesia and Perioperative Medicine and funded by an NHMRC grant.

This project aims to identify optimal fluid management strategy for major abdominal surgery. The sample size is 2800 patients and the project is expected to run for three years.

The important aspect is that our TPCH anaesthesia group will be running an obesity substudy on all the 2800 participants.

This substudy is aimed as assessing the effects of obesity, with various body composition measures, on the development of major septic complications following major abdominal surgery.

Measurement of Exercise Tolerance for Surgery (METS) study and six-minute walk test substudy: This is a multicentre international prospective cohort study on 1312 patients, worldwide and initiated by Toronto Hospital (Canada) and Alfred Hospital (Australia). The primary objective is to compare preoperative cardiopulmonary exercise testing to physicians’ subjective assessments of functional capacity for predicting postoperative 30-day death or non-fatal myocardial infarction in patients undergoing major elective non-cardiac surgery.
IronNOF study: Ongoing discussions with Fremantle Hospital, Western Australia, for collaboration in their study on assessing the benefits of iron infusion on the elderly patients undergoing hip fracture surgeries.

If found beneficial, this may lead to changes in transfusion practices by avoiding unnecessary transfusion in this cohort of patients.

Dr Ivan Rapchuk is involved with CCRG in the multicentre randomised controlled superiority trial comparing peripheral intravenous device dressings and securement methods (SAVE trial) to reduce the incidence of catheter failure, which may increase infection and reduce cost effectiveness.

PUBLICATIONS AND PRESENTATIONS

There were four publications in peer-reviewed journals and five abstract/poster presentations in 2013.

We presented a poster on the retrospective analysis of the relationship between body mass index and complications following 1,666 total knee replacements.

Through collaborative research, abstracts were presented on the safety of a mesenchymal-like adherent stromal cell (PLX-PAD) in a human model of pulmonary arterial hypertension, feasibility and effectiveness of establishing an ex vivo lung perfusion service in Queensland, point of care testing in cardiac surgery patients and pilot study on the novel approach to securing peripheral arterial catheters.

Dr Faulke and Dr Natani were invited national and international speakers on perioperative blood management, ROTEM, TAVI and perioperative echocardiography.

GRANTS

ANZCA pilot grant 2013 of $5,000 was awarded for the study on obesity and major adverse outcomes following non-cardiac surgeries.

AWARDS

Bronwyn Pearse received the International Nurses Day awards for Emerging Researcher and Clinical Excellence.

RESEARCH COLLABORATIONS

The Anaesthetic Research Group has local research collaborations with the University of Queensland, Griffith University’s AVATAR group & Centre of Research Excellence in Nursing, and across The Prince Charles, Princess Alexandra and Redcliffe Hospitals.

Within Australia, the group collaborates with Department of Anaesthesia and Perioperative Medicine, Alfred Health, Victoria, and Fremantle and Royal Perth Hospital, Western Australia.

The group has collaborative relationship with the Applied Health Research Centre, St.Michael’s Hospital, Toronto, Canada.
Griffith University biomedical engineering student Ned Granger
Emergency Medicine Research Group

The Emergency Medicine Research Group was only formed in 2012 following the massive expansion of Emergency Medical Services (EMS), resulting from the government initiative for TPCH to widen its scope of practice. Its remit is to develop research capacity within the EMS.

In line with the nature of emergency medicine and our position as the access point for hospital-based care, our areas of interest span the whole age spectrum (paediatrics-geriatrics) plus a wide range of categories.

These include, but are not limited to, critical care, cardiology, respiratory, mental health, ultrasound, medical education plus process and patient-flow related topics.

Despite our relative youth, efforts are beginning to pay off with the first projects reaching the publication stage, providing impetus for ongoing growth that will be further strengthened by the collaborations we have built with other Emergency Departments.

Every day around 200 patients of all ages present to TPCH EMS with a whole spectrum of undifferentiated symptoms.

One of the challenges of emergency medicine is to increase the speed, efficiency and accuracy with which we deliver care to these patients while minimising harm.

Our research therefore not only spans the spectrum of specialities that ‘medicine’ traditionally divides disease entities into but also looks at the delivery of emergency care from a number of different perspectives.

These include studies on the symptoms that patients present with rather than the final diagnosis and how we investigate these with a view to increasing future accuracy. Other studies include audits/registries to document compliance and uptake of best practice, and improving patient follow-up and flow, all within a rapidly changing environment with high staff turnover.

All our studies are aimed at improving the quality of care but approach this from a number of different angles.

These include increasing awareness of and compliance with best practice plus monitoring/improving systems that cross-check the delivery of quality care.

Those related to patient flow not only aid compliance with government targets with resulting improvement in hospital reputation and function but also decrease complications related to extended stays within the ED. Studies aimed at novel ways of doing things...
include those aimed at preventing deterioration through to those investigating ways of reducing invasive or potentially harmful diagnostic and treatment strategies without reductions in efficacy or accuracy.

This also has benefits in terms of direct cost reductions but also indirect benefits related to litigation and reduced hospital stay.

Our studies benefit patients requiring EMS on a number of levels. Process/flow-related research may not seem to benefit the individual but is actually very important to overall function.

For example more rapid transit through the EMS, when appropriately applied, not only results in reduced complications or negative outcomes but also improved comfort and satisfaction with the patient journey.

Advantages for patients related to reduced use of invasive diagnostic or treatment options are more intuitively obvious, but their full impact is not perhaps appreciated unless one has been in the position of the patient or carer.

For example, the ability of a novel oxygen therapy to reduce intubation in bronchiolitic children is being investigated which is clearly desirable.

Less obvious are the benefits in avoiding transport to a specialist centre and reduction in the attendant stress on the family.

HIGHLIGHTS

Although the Emergency Medicine Research Group (EMRG) has only been in existence for a few years it continues to grow at a rapid pace. In line with the strategic plan for its development, collaborations have been actively built in the early phases both with the established specialties already engaged in research at The Prince Charles Hospital and with other researchers within the emergency medicine field throughout Queensland, interstate and even internationally.

Dr Kinnear, the founder and director of EMRG, is also deputy-chair of the Queensland Emergency Research Collaborative (QERC), a group of multidisciplinary medical researchers who aim to improve the quality and impact of emergency health research activities by supporting multi-centre research. The group is currently coordinating the involvement of a number of emergency departments from Queensland in several statewide and national studies. A number of its members also recently participated in the Australian arm of an international study.

In addition, having now satisfied the criteria of having 15,000+ paediatric presentations per year and a growing research profile, EMRG has applied for membership of the Steering Committee of the Paediatric Research in Emergency Departments International Collaborative (PREDICT).

The foundations thus constructed provide a solid base for development and the first projects are now nearing the end of the research cycle.

Successful completion of projects not only helps cement the relationships for future collaborations but also begins the process of growing the reputation of EMRG as a developing research group with the attendant influence on attracting grant money for future studies.

For example, a multisite study of intramuscular Droperidol (DORM II) has recently been completed, with TPCH contributing over 10% of the total patient enrolments.

The results of this trial have the potential to change practice in an area of emergency care that is fraught with difficulties: namely, the sedation of the patient with acute behavioural disturbance. They are being prepared for publication.

EMRG is also participating in a number of ‘snapshot’ studies. These include an international study to investigate the characteristics of patients presenting...
with shortness of breath and how they are investigated, an Australia and New Zealand study on the prevalence of alcohol-related presentations to the Emergency Department plus a Queensland-wide study looking into current practice in investigating patients suspected of having a subarachnoid haemorrhage.

Not only will the projects concerned provide data to inform future studies in these important fields but the methodology employed and the resulting collaborations are already being used to kickstart other projects.

For example, through the role of members of EMRG contributing to a primary spontaneous pneumothorax trial, including coordinating the Queensland sites, several other trials with the Centre for Clinical Research in Emergency Medicine, Western Australia, are now under development in fields highly pertinent to the practice of emergency medicine – namely sepsis and pulmonary thrombo-embolism.

The latter is to some extent being based on the model being used in the other snapshot studies and will ultimately lead to further studies designed to guide investigation in patients suspected of having this relatively rare but potentially life threatening condition. These developments also cement our relationship with this important group active in emergency medicine research, as indeed do a number of other collaborations mentioned herein.

Although, the focus up until this point has been to develop research capacity and culture by aligning with established researchers, themes are also now beginning to emerge according to the interests of members and their areas of expertise.

These include studies designed to improve the delivery of care in the emergency environment and to minimise harm.

For example the group is participating in a study run by the Australasian College of Emergency Medicine designed to investigate common errors, in an Australia-wide airway registry, plus a trial to investigate the implementation of evidence-based recommendations for the management of patients with mild traumatic brain injuries.

Another study looks at the potential for lung ultrasound to help differentiate heart failure from other causes of breathlessness in the elderly while there is also a paediatric trial investigating the use of high flow nasal cannula oxygen in bronchiolitis.

The former is a novel use of this diagnostic modality in this country while the latter is a relatively new therapy being adopted into the emergency environment for use in a range of conditions.

Other studies relate to education, a strong focus within the department.

Yet others are designed around the experiences related to the rapid growth of the department and in particular the development of the dedicated paediatric services both from a staff and patient perspective.

These are obviously ongoing but preliminary results have been presented and prepared for publication as indeed has work related to the delivery of care at the opposite end of the age spectrum, performed with a view to developing quality indicators for geriatric care.

All these projects look at the delivery of quality care at the front line, albeit from a number of different perspectives.

Another exciting development within EMRG is that, in line with the aim of making research part of core business of the multidisciplinary team in Emergency, a grant has been secured for a six-month project in collaboration with the Nursing Research and Practice Development Centre.

This will investigate the role of a
Navigator Nurse in improving patient flow and meeting NEAT targets in the ED with the research nurses working alongside the other Emergency staff, thus embedding research within the clinical process.

In summary, only a few short years after its formation EMRG is now poised at a critical and exciting position in its journey as a developing research group. It has strong working relationships with a number of the established specialties within TPCH and has developed important links within the emergency research field active in Australia.

The first projects are now coming to fruition and it is strongly positioned to capitalise on these foundations, a process greatly facilitated by the employment of a research co-ordinator, Dr Mike Watson in late 2013.

**PUBLICATIONS AND PRESENTATIONS**

Dr Fran Kinnear and Dr Michelle Davison presented the results of their research projects (DORM II and Paediatric High Flow for bronchiolitis) at the Australasian College of Emergency Medicine QLD Research Symposium.

Two papers arising from the Improving Quality of Care of Older People with Cognitive Impairment in ED study have been accepted in Academic Emergency Medicine Journal to be published in 2014.

The results of a recent simulation study to improve staff confidence and orientation in the new children’s emergency service have been submitted to Medical Teacher.

**GRANTS**

EMRG has received funding from a number sources to continue its research activities. The funding received from Queensland Emergency Medicine Research Foundation (QEMRF) and University of Western Australia has allowed the clinical trial investigating the treatment of primary pneumothorax to continue and also provides operational support for the trial across other sites in southern Queensland.

Funding received from other sources such as the Victorian Traffic Accident Commission, QEMRF, TPCH Foundation, AushSI have allowed the lung ultrasound trial, paediatric high flow in bronchiolitis trial, Navigator Nurse trial, and the study implementing evidence-based recommendations for patients with mild traumatic brain injuries to continue.

**RESEARCH COLLABORATIONS**

Within Queensland EMRG has ongoing research collaborations with the Royal Brisbane and Women’s, Mater and Ipswich Hospitals, the University of Queensland, Queensland University of Technology, and Australian Catholic University.

Interstate EMRG has ongoing collaborations with the Centre for Clinical Research in Emergency Medicine (WA), Dept. Clinical Pharmacology and Toxicology, Calvary Mater Hospital (NSW), Joseph Epstein Centre for Emergency Medicine Research (VIC) and Central Clinical School, Monash University (VIC).

Internationally, EMRG collaborates with the London School of Tropical Medicine & Hygiene (UK).
The Critical Care Research Group (CCRG) is a multidisciplinary team that specialises in translational research in areas relevant to critically ill patients.

By utilising a systematic approach that combines basic science and biomedical engineering research, in vivo animal work and national and multinational clinical studies in critically ill patients, we aim to:

- Increase our understanding of the many issues that face the critically ill patient;
- Translate this new knowledge regarding critically ill patients into new or improved treatment modalities;
- Develop the quality and significance of our research to become a nationally and internationally recognised research centre; and
- Facilitate inter-departmental and international collaboration between key specialties and opinion leaders involved in acute care medicine.

Our research addresses most importantly the diverse healthcare needs of a critically ill patient.

This is dependent on the advanced understanding of technology and its clinical application, appreciation of pathophysiology and understanding of disease and smooth functioning of a multidisciplinary team involved in the care of these patients.

Our work continues to refine basic and mechanical cardiorespiratory support for critically ill patients.

Equally, our work in areas of resuscitation and blood transfusion has implications for care of any acutely ill patient.

Allied health research in areas of nutrition, physical therapy, speech pathology and podiatry all ensure the holistic research process, with the critically ill patient always being at the centre.

Our research also allows millions to benefit from simple respiratory support interventions in resource poor settings demonstrating our quest for innovation and our global relevance.

Clinically, a multidisciplinary team is essential for best outcomes in the sickest patients in the hospital.

Our research team mirrors the clinical team with interdigitation of all the relevant teams through research.

We believe that involving all these teams acting synergistically, we can improve clinical practice and patient outcomes, reduce pain and morbidity whilst shortening ICU and hospital length of stays. In turn, we aim to...
improve efficiency and reduce costs to healthcare.

The patient is the ultimate beneficiary as our research comprehensively addresses many aspects of management of a critically ill patient.

Better understanding of the disease process and pathophysiological sequelae of available treatments, innovations driven by clinical needs and cutting edge research into advanced organ support techniques and equal emphasis on qualitative aspects of ICU all lead to better outcomes for a critically ill patient.

**HIGHLIGHTS**

Our research activities in 2013 were focused on multiple facets of intensive care patient management.

The broad areas researched included basic and advanced cardiorespiratory management, advanced extracorporeal cardiorespiratory support and other mechanical assist devices, effects of fluid resuscitation and blood transfusion in animal models of sepsis and trauma, pathophysiology of thoracic organ transplantation, neurological injury during percutaneous cardiac interventions, inhalational drug delivery in critically ill, ex vivo lung perfusion, facilitating communication with the ventilated patient, nutrition and physical therapy in the intensive care unit (ICU) and qualitative research into areas including handover practices in ICU and clinical information systems.

Our work in the above areas includes both mechanistic and clinical research undertaken within our science, engineering and animal laboratories and clinical areas.

CCRG was well represented with over 25 invited lecturers and around 45 high impact publications nationally and internationally ensuring that our work was presented in a timely manner to the right target audience facilitating further collaboration and global participation.

This year saw the completion of the three-year NHMRC funded ovine ECMO model.

This study was developed to increase our understanding of how artificial lung support can be optimised to allow even better outcomes in patients who cannot be supported by normal means.

To date, over 20 publications, abstracts and presentations have derived from this study with many more pending. This study has elevated the CCRG to the forefront of ECMO research internationally.

2013 also saw the development of an ovine model for acute traumatic coagulopathy.

This model, supported by the Australian Military, accurately mimics the evolution of coagulation issues following trauma and haemorrhage and is an exciting new vehicle to assess novel treatment modalities.

CCRG was awarded NHMRC funding for investigating sepsis resuscitation in an ovine model, commencing 2014.


Our ICET Lab was highly productive in 2013 under Dr Shaun Gregory’s watchful eye, both developing new technology and testing existing devices and systems in their state of the art laboratory and in our animal lab.

The year held incredible progress for the BiVACOR total artificial heart with the miniaturised device implanted in a waking animal trial with our colleagues at Texas Heart Institute, under Dr Dan Timms’s leadership. Research conducted by our engineering team in 2013 not only allowed for improvements on existing devices, but also saw the development of a number of new systems and devices,
Critical Care Research Group (Continued)

with multiple successful animal studies using two mechanical hearts to replace the function of the native biological heart.

CCRG not only initiated several investigator led clinical studies but also participated in numerous studies conducted by other research groups.

Some of our key clinical research areas included transfusion and critical illness including point of care coagulation testing; oxidative stress in cardiac surgery; drug and nutrient pharmacokinetics during extracorporeal life support; respiratory support in intubated and non-intubated patients using high flow gas delivery devices; neurological injuries during transaortic valve implantation; nutritional therapy during mechanical cardiorespiratory support; speaking valves in tracheotomised patients; respiratory weaning; electric impedance tomography in monitoring respiratory support and progress in ventilated patients; ECMO cannulae securement.

These studies have potential to significantly alter ICU practice. For example, in an investigator driven study examining securement methods of ECMO cannulae, a medical grade ‘superglue’ was shown to have a higher pull-out force than standard practice and resulted in a practice change in our ICU.

Furthermore, following microbiological testing of dressings, it was revealed that medical grade ‘superglue’ had bacteriostatic properties and inhibited bacteria migration at the insertion site unlike Opsite (standard practice).

The physiological research we conducted into HiFlo respiratory devices in our clinical research led us to believe that these devices may assist children in resource poor countries, such is their simplicity.

Working with Professor Kath Mailtand in Kenya, we were awarded a $4.3 million grant from the Wellcome Trust in 2013, and work begins in 2014 into improving the outcomes in children with pneumonia in our study across four African countries.

We participated in a multi-centre randomised controlled trial coordinated by the ANZICS CTG to determine best ventilator practice in critically ill patients with acute respiratory distress syndrome (PHARLAP study).

We were also involved in a number of studies to determine the ideal securement method for peripherally inserted intravascular devices.

Failure rates of these devices are high and associated with pain to the patient, worsened outcome and increased cost.

The CCRG initiated these studies through basic research which started in the animal lab and has now grown into three multi-centre randomised controlled trials examining securement access devices.

These studies aim to identify the best securement methods in an attempt to reduce device failure, infection rates and costs to the healthcare system.

Our research also focuses on staff practices such as clinical handover, as it is clear that poor communication is linked to adverse patient events.

Two studies were conducted in ICU which resulted in implementation of an electronic minimum dataset for handover and education packages.

These studies aim to improve communication practices and reduce adverse events associated with miscommunication.

Our work was appropriately recognised nationally and internationally and led to our active involvement in various global organisations such as Extracorporeal Life Support Organisation (ELSO) and the international ECMO network which provide best practice guidelines for optimal use of extracorporeal life support therapies.

We now chair the Research and
Protocols Chair for the entire Asia Pacific region of ELSO – a fantastic achievement and important task in this rapidly evolving area of extracorporeal life support.

PUBLICATIONS AND PRESENTATIONS

Members of the group gave 30 invited lectures and another 27 conference presentations.

GRANTS

The group received 25 grants in 2013 totalling over $1M for the year, including $450,000 awarded by The Prince Charles Hospital Foundation and three-year funding of $400,000 per year from the National Health and Medical Research Council.

AWARDS

Dr Kiran Shekar, as lead author, received the Graeme Neilson Best Published Paper Award for ‘Sequestration of drugs in the circuit may lead to therapeutic failure during extracorporeal membrane oxygenation’ published in Critical Care 2012.

RESEARCH STUDENTS

CCRG had 27 higher degree research students in 2013.

RESEARCH COLLABORATIONS

CCRG collaborates across Australia with the University of Queensland; Griffith University; Mater Hospital; Queensland University of Technology; CSIRO; Royal Brisbane and Women’s Hospital; Princess Alexandra Hospital; Holy Spirit Northside; Nambour General Hospital; Austin Hospital; Victoria; Royal North Shore Hospital, NSW; Royal Adelaide Hospital, South Australia; Australian Red Cross Blood Service, NSW; RMIT University, Victoria: Royal Children’s Hospital; The University of New South Wales, NSW; The Alfred Hospital; University of Western Australia; The Children’s Hospital, NSW; Royal Perth Hospital; Royal Prince Alfred Hospital; and Royal Adelaide Hospital.

International collaborations include University of Malaya; Imperial College, UK; Malmo University Hospital, Sweden; National Cardiovascular Centre Research Institute, Osaka, Japan; Rayne Institute, King’s College, London; Xian Hospital, Xian, China; National Heart Hospital, Malaysia; Ibaraki University, Japan; PREVOR, France; University of Texas, USA; St Michael’s Hospital, Canada; Bonfils Blood Centre, University of Colorado, USA; Helmholtz Institute, RWTH Aachen University, Germany; Fisher and Paykel Healthcare Ltd, Auckland, New Zealand; Texas Heart Institute, USA; National University Heart Centre, Singapore; Universiti Teknologi Malaysia, Johor Bahru, Malaysia; RWTH Aachen University, Germany; Mbale Hospital, Uganda; and Steve Biko Hospital, South Africa.

EDITORIAL POSITIONS

Professor John Fraser is the Editor of Intensive Care Medicine experimental (ICMx), and Burns, and an Editorial Board Member of Current Anaesthesia and Critical Care.
Living & Breathing | Research | Innovative Cardiovascular Engineering and Technology Lab

Innovative Cardiovascular Engineering and Technology Lab

It has been estimated that approximately 277,700 Australians were living with heart failure in 2008, while only 71 heart transplants were performed in the following year.

Clearly there are insufficient donors to match the demand. Mechanical assist devices are a proven therapy to treat patients while they wait for a donor heart to become available or as a destination therapy.

The aim of the ICET Lab is to combat cardiovascular disease by forming a strong link between the clinic and the engineering department.

Specific aims of the ICET Lab centre on the development of new ventricular assist device and artificial heart technology, evaluation of clinical monitoring tools and development of systems to assist in new medical device development and medical training.

Research in the ICET Lab is focused on the development of mechanical assist devices through new pump design, control techniques and implantation procedures.

Research is also underway to reduce postoperative complications such as bleeding and stroke while improving quality of life by making ergonomic wearable components with built in controllers that allow patients to return to regular day to day activities at home, rather than being confined to a hospital bed.

We aim to improve patient lifespan and quality of life through delivering optimised alternatives to heart transplantation.

We also focus on the evaluation of various cardiovascular devices and medical monitoring equipment using our highly developed representation of the heart and circulatory system.

HIGHLIGHTS

There were many highlights in 2013 in the ICET Lab.

The BiVACOR total artificial heart received over $2 Million in funding and development moved to the world-class facilities of the Texas Heart Institute.

The device has since been miniaturised and implanted in a waking animal trial for over 80 hours of artificial heart support, a record to date and a demonstration of the amazing progress made by all researchers involved.

Meanwhile in Brisbane, researchers implanted two devices normally used to support the left side of the heart as a total heart support system.

Research Heads
Professor John Fraser and Dr Shaun Gregory

Researchers
The adjustments made to the system, including banding the surgical grant on the right-sided pump to reduce the blood pressure delivered to the lungs, demonstrated the capacity of these clinically available systems to be used in a wider range of patients.

The results were subsequently used to adjust clinical practice when implanting these devices.

New devices and systems were also developed in the ICET Lab.

A patent application was submitted for a new passive control system which automatically adjusts mechanical assist device flow rate based on what the patient needs.

Another patent application was submitted for a new implantation tool for mechanical assist devices which can dramatically reduce surgical time, postoperative bleeding and other postoperative complications.

The vast amount of research completed in the ICET Lab through 2013 resulted in five publications, 17 presentations (6 international, 1 national and 10 local), a variety of research awards and approximately $230,000 in awarded competitive research funding.

Shaun Gregory and Nicholas Greatrex were awarded their PhDs, Kristin Moser was awarded her Masters and five ICET Lab students successfully completed their undergraduate engineering degrees.

The annual ICET Lab symposium, which brings together national and international researchers working towards mechanical assist device development, was a success with tremendously positive feedback on research to date and planning for future research strategies.

Researchers in the ICET Lab received nine New Investigator and Research Equipment grants from The Prince Charles Hospital Foundation totalling over $195,000.

BiVACOR Artificial Heart Funding

"We aim to improve patient lifespan and quality of life."

The ICET Lab team gave 17 presentations in Australia and internationally and had five journal articles published.

Michael Stevens received the Stenning PhD Top up award, and the Michael Ray Best Basic Science / Translational Research Presentation award at The Prince Charles Hospital research forum.

Jo Phillip Pauls received the Stenning Travel award.

Emma Schummy received the ABEC Best student presentation award, the DePuy Synthes Award for the best final year project in the Bachelor of Medical Engineering, and the Engineers Australia JH Curtis Award for the best overall project in the Bachelor of Engineering.

GRANTS

Researchers in the ICET Lab received nine New Investigator and Research Equipment grants from The Prince Charles Hospital Foundation totalling over $195,000.

AWARDS

Michael Stevens received the Stenning PhD Top up award, and the Michael Ray Best Basic Science / Translational Research Presentation award at The Prince Charles Hospital research forum.

Jo Phillip Pauls received the Stenning Travel award.

Emma Schummy received the ABEC Best student presentation award, the DePuy Synthes Award for the best final year project in the Bachelor of Medical Engineering, and the Engineers Australia JH Curtis Award for the best overall project in the Bachelor of Engineering.
Innovative Cardiovascular Engineering and Technology Lab (Continued)

RESEARCH STUDENTS
During 2013, the ICET Lab had seven PhD candidates, three Masters students, and nine Honours students. Dr Shaun Gregory and Dr Nicholas Greatrex had their PhDs conferred.

RESEARCH COLLABORATIONS
The ICET Lab has Australian partnerships with the University of Queensland; Griffith University; Queensland University of Technology; Princess Alexandra Hospital; University of NSW; Austin Hospital, Melbourne; Royal North Shore Hospital, NSW; Royal Adelaide Hospital; Australian Red Cross Blood Service, NSW; St Vincent’s Hospital; The University of New South Wales; University of Western Australia; Royal Perth Hospital; The Alfred Hospital; and Royal Prince Alfred Hospital.

Internationally, the group collaborates with Helmholtz Institute, Aachen University, Germany; Fisher and Paykel Healthcare Ltd, Auckland, New Zealand; Texas Heart Institute, USA; National University Heart Centre, Singapore; and Universiti Teknologi Malaysia, Johor Bahru, Malaysia.

17 Presentations
Research scientist Luke Samson
The Cystic Fibrosis research group aims to improve fundamental understanding of the complications of cystic fibrosis as a multi-system disease and to enhance all aspects of care delivered to our patients and improve clinical outcomes.

The group studies the pathophysiology of CF focusing on infection and inflammation of CF airways using laboratory based in vitro and in vivo (mouse model) techniques to complement our clinical studies.

A major focus is to attract and retain (and train) members of the CF multi-disciplinary team in research methods and principles ensuring future sustainability of the CF research program at The Prince Charles Hospital. Increasing population of adults with CF who are growing older and a number of emerging complications are now common place.

The team aims to better understand how best to diagnose and manage each of these complications and the aetiology of manifestations such as an increased risk of colonic cancer.

Cross-infection is now well established and our research aims to improve understanding of how this occurs and what the implications of such infection are to our patients. We are also concentrating on the optimal model of care to deliver to our patients in the geography of Australia and the growing numbers of adults with CF, particularly through diagnosis and treatment of lung infection, the major cause of mortality and morbidity of cystic fibrosis.

Clinical trials give patients the opportunity to be involved in international studies trialling novel therapies and new device technologies. Currently, 10 patients have access to ivacaftor therapy (for the 2nd most common CF gene, G551D mutation). Research has also led to delivery of safer care to patients attending CF centres by changing practice in outpatient clinics and in the inpatient wards to reduce the risk of cross-infection.

Research provides better understanding of treatments offered to our patients and the optimal way to deliver them, for example preparation for colonoscopy, effectiveness of Telehealth, role of mentoring for patients to enhance engagement and adherence. Better diagnostic testing to evaluate infection in CF allows better early diagnosis of cross-infection and better understanding of resistance to antibiotics. Through research we have improved understanding of modes of cross-infection, which informs evidence based infection control policies and delivery of care at TPCH, nationally and internationally.
A major research theme over the past 10 years for our group has been to increase understanding of the prevalence and clinical impact of shared Pseudomonas infection in patients with CF. A large national study was published in the European Respiratory Journal and reported the largest such study performed to date. Shared strain infection is common and associated with increased treatment requirements for patients with CF, the two most common strains (AUST-01 and AUST-02) each cause infection in ~20% of Australians with CF.

This work was funded by the NHMRC and our pilot work initially funded by The Prince Charles Hospital Foundation. Our group published an important paper describing enhanced methods for the diagnosis of shared Pseudomonas strain infection using state of the art technology and will improve our ability to continue our national Pseudomonas study (longitudinal study to determine clinical impact of these infections over time).

We completed a clinical study to determine how far and for how long bacteria travel and remain viable after coughing in adolescents and adults with CF. This landmark study involved a multi-disciplinary research team of clinicians (adult and paediatric), infection disease and infection control experts, aerosol scientists and molecular microbiologists.

This work was funded by the TPCH Foundation and has just been published in the journal Thorax with an accompanying Editorial article highlighting the importance of this work. Cough aerosols travel much further (4 metres) and remain airborne much longer (45 minutes) than previously thought and this has major implications of the models of the care we deliver. This work is likely to influence care delivery internationally and builds on our cough work published over the past five years.

The lung of adults with CF is infected with many different bacterial species, which together comprise the lung microbiome. In a novel study, employing bacterial DNA sequencing techniques, we were able to explore the effect of intravenous antibiotics on the CF lung microbiome.

In this study, performed in collaboration with biostatisticians from QIMR Berghofer Medical Research Institute and to be published in the European Respiratory Journal, we demonstrate the apparent rapid adaptation and resistance of infection to antibiotic therapy. This work is of great interest and has potential to change opinions on how antibiotic therapy should be delivered in the future.

For several years we have been interested in understanding the impact of climate on infection in patients with CF. Ramsay, Ranganathan and Price published papers examining bacterial infections common in CF (Burkholderia cepacia complex, Burkholderia pseudomallei and Pseudomonas aeruginosa). It is clear that risk of infection with some bacteria is more common in certain geographical and climatic conditions. This work is ongoing and involves collaborations with colleagues in Darwin, Melbourne, Canberra and internationally.

Several reviews and editorials were published from our groups highlighting important aspects of the delivery of CF care in 2013 focusing on the complications of CF in the older patient, costs and modes of care and the influence of regulators such as the FDA and EMA on trial design. Original work also reported improved ways of supporting care for the patient (utilising information technology tools), involving collaborations with colleagues at the RCH in Brisbane and Tasmania.

The group had 16 papers published during the year involving collaborations with authors from 18 other research groups in Australia and internationally.
The NHMRC-funded national Pseudomonas study, which commenced in 2007 and has generated more than 10 original papers to date, published the key clinical paper in the ERJ in 2013. Our work on the longitudinal aspects of this study will be completed in 2014.

Scott Bell presented plenary lectures at the TSANZ Meeting (Darwin, April 2013) and Australasian CF Conference (Auckland, August 2013). David Reid and Scott Bell were invited speakers at European CF Conference in Lisbon, Portugal (June 2013). Scott Bell is the Chair of the Organising Committee for the ECFC Pulmonology/Immunology Assembly (’13 & ’14).

Many members of the CF Multidisciplinary Team presented oral presentations and posters at the TSANZ and Australasian CF Conference in 2013.

The team was awarded more than $1.6million grant support including - Scholarships, Fellowships, Project and Program grants (including NHMRC and QCH Program Grant).

Scott Bell received the Queensland Health Health Research Fellowship.

Kay Ramsay and Anna Tai each received Cystic Fibrosis Australia Postgraduate Scholarships in 2013, and Kate Myslinski was awarded a TPCH Foundation New Investigator grant.

**AWARDS**

David Reid holds an NHMRC Practitioner Fellowship and a Queensland Health Health Research Fellowship.

Scott Bell has a Queensland Health Health Research Fellowship.

Dr Timothy Kidd was awarded The University of Queensland Dean’s Award for Research Higher Degree Excellence.

Dr Anna Tai was awarded best poster prizes at the TSANZ Conference and RBWH Research Expo, and best oral presentation at the Queensland Children’s Medical Research Institute Student Research day.

**RESEARCH STUDENTS**

Scott Bell supervises two PhD candidates. David Reid supervises two PhD candidates and one international Honours student.

**RESEARCH COLLABORATIONS**

The Cystic Fibrosis research group has multi-disciplinary collaborations in Australia with Queensland Children’s Medical Research Institute; University of Queensland School of Population Health; Queensland University of Technology International Air Quality Laboratory; QIMR-Berghofer Institute of Medical Research; Clinical Genetics, Royal Children’s Hospital, Brisbane; Monash University, Vic; The Alfred Hospital, Vic; Royal Prince Alfred Hospital, NSW; Macquarie University, NSW; Menzies School of Health Research, NT; University of Tasmania; and Child Telethon Institute, UWA.

Internationally, the group collaborates with Johns Hopkins Medical Research Institute, USA; University of North Carolina at Chapel Hill, USA; Massey University, Auckland, NZ; Otago University, NZ; University of Toronto, Canada; University of Swansea, UK; International Pseudomonas Consortium, Laval University, Canada and Queen’s University, Belfast, UK; Cambridge Medical Research Institute and Sanger, Cambridge, UK; and Royal Brompton Hospital, UK.

**EDITORIAL POSITIONS**

Professor Scott Bell is Editor-in-Chief of the Journal of Cystic Fibrosis.
Laboratory technician Leanne Morrison
The goal of the Qld Lung Transplant and Pulmonary Hypertension Research Program is to improve patient outcomes through innovation.

Our broad ranging research into incurable lung diseases focuses on basic science, translational and clinical research.

Research is embedded within our clinical programs, ensuring not only that we deliver state-of-the-art care, but also that our research questions are highly relevant to human lung disease.

It also means that we can rapidly translate what we find in the laboratory into improved outcomes for our patients.

Bringing our clinicians and scientists together in this way benefits everyone, invigorates our clinical program, and ensures that Queenslanders will always have access to world class care.

Our program researches advanced lung disease and lung transplantation, which encompasses a range of lung diseases for which there are no or few therapeutic options available.

Our research aims to both understand the biology of lung disease and to trial potential new therapies.

As our research program is embedded in the clinical program, our research has direct clinical benefit for our patients.

The clinical trial program trials new therapies to stop the progression of advanced lung disease and many patients have had positive results.

The clinical trial program directly trials new therapies for the benefit of the patients, while studies from the laboratory have identified the increased presence of specific T cells in poorly functioning lung transplants.

These results are then directly translated into the clinical management of the patients.

Finally, the basic research continues to help us better understand the biology of lung disease, and the transplanted lung, so that in the future new therapeutic targets can be identified.

HIGHLIGHTS

In 2013 our Research Program was again recognised as a world leader. We continue to be one of the top contributors at The International Society for Heart and Lung Transplantation annual scientific meeting and published 15 original studies during the year.

In collaboration with the Australian Centre for Ecogenomics (ACE, UQ),
we established our Centre as the world leader in the study of the lung allograft microbiome and presented our data in the Opening Plenary at the International Society for Heart and Lung Transplantation Annual Scientific Meeting.

We remain the world’s largest centre for stem cell therapy for lung disease and in 2013 completed the world’s first trial of stem cell therapy for idiopathic pulmonary fibrosis. We also remain the world’s largest recruiter of patients to trials of new therapies for idiopathic pulmonary fibrosis.

GRANTS
Our research program was supported by approximately $700,000 in competitive grant support in 2013, including funding from the world’s most prestigious funding source for solid organ transplant research. In addition, our clinical trials program was supported by over $400,000 from industry.

PUBLICATIONS AND PRESENTATIONS
Our group published a total of 15 original papers in 2013. We had seven presentations, including five oral presentations and one talk in the Opening Plenary at the International Society for Heart and Lung Transplantation Annual Scientific Meeting, again placing our program amongst the top in the world.

RESEARCH STUDENTS
The program has four PhD students, two MPhil, one MClin Pharm, and one MBBS (Hons).

RESEARCH COLLABORATIONS
Our Australian collaborators include Australian Centre for Ecogenomics; University of Queensland; Griffith University; QIMR Berghofer; University of Melbourne; Cell & Tissue Therapies WA, Royal Perth Hospital; and Princess Margaret Hospital, WA.

Internationally, we collaborate with Harvard, Boston; United Therapeutics, North Carolina; and University of Vermont.

EDITORIAL POSITIONS
Associate Professor Dan Chambers is a member of the Editorial Board of the European Respiratory Journal.
The University of Queensland Thoracic Research Centre (UQTRC) is a longstanding research centre that conducts research in partnership with the University of Queensland School of Medicine, and has a large multidisciplinary team of clinicians, scientists, students and researchers.

Clinical and translational research is conducted in respiratory medicine with the aim of improving lung health. Research interests include lung cancer, mesothelioma, chronic airways diseases (such as chronic obstructive pulmonary disease & asthma), sleep medicine, pulmonary infection and respiratory diseases caused by air pollution.

The UQTRC is also developing research strategies in population based health and health service improvement, as well as health consumer participation approaches.

Our research program conducts clinical and translational research in airways diseases (such as lung cancer, mesothelioma, asthma and COPD) with a focus on methods for prevention such as lifestyle management and smoking cessation; investigating innovations in early detection, screening diagnostic techniques using digital tomosynthesis (DT), computed tomography (CT) screening, volatile organic compounds (VOCs) and bronchoscopy; genomics and biomarkers to support the discovery of personalised treatments; medication repurposing; and, the methods and processes through which air pollution can lead to respiratory diseases.

Our research aims at finding better ways to detect and diagnose lung cancer and other respiratory diseases at an earlier stage in the disease process, when identification can often result in a broader range of options for treatment and an improved prognosis.

Our biomarker research program aims to identify biomarkers in the human genome, through blood or tissues samples, that may lead also to more personalised targeted treatments that have a stronger ability to combat the disease process and limit the damage caused to the body.

In some cases, our work in the area of trialling new diagnostic techniques also aims at finding diagnostic tests that are less invasive and more comfortable for patients to experience, for example a simple non-invasive breath or blood sample may be more comfortable and lower risk for patients than tissue samples removed through a formal procedure or surgery.

HIGHLIGHTS

This year we have two PhD, three MBBS (Hons), and two BSc (Hons)
students graduating; with one PhD, two MPhil and four MBBS Honours students commencing. Continuing students include seven PhD students.

A large number of grant applications were submitted to a range of funding bodies. Training in grant writing and project management was provided to our laboratory staff and students and as a result many have been successful in obtaining scholarships or new researcher grants.

The team developed a total of 21 publications this year (20 Journal articles and one book chapter), with an additional three under review or in press, and over 20 presentations were given at conferences or seminars, with 11 of these peer-reviewed abstracts published. In addition one of our MBBS (Hons) students (Joseph Burke) has published a Cochrane protocol on the use of glycopyrronium bromide for chronic obstructive pulmonary disease.

Professor Fong was the Co-Chair for the 2013 IASLC World Lung Cancer Conference in Sydney.

We have developed new collaborations with a number of internationally renowned researchers including, for example, Dr Natthaya Tribuhridet in Bangkok, Dr Lutz Krause at QIMR, Dr Darryl Irwin at Sequenom, and Dr Tim O’Meara at GE Healthcare.

We continued our collaboration with The Cancer Genome Atlas (TCGA), National Cancer Institute (USA) for genomic analysis with samples continuing to be submitted.

The National Health and Medical Research Council Project Grant studying methylation biomarkers in lung cancer continues, as does recruitment for the NHMRC-funded AMAZES randomised controlled trial of azithromycin in asthma, in collaboration with John Hunter Hospital. Our study continued during the year using air-liquid interface models for primary human bronchial epithelial cells to test air pollution exposure (ARC Discovery Grant awarded with QUT collaborators).

PhD students in our group have published in the fields of lung cancer, expired breath analysis, and COPD.

The group published 21 journal articles on air pollution, mesothelioma, LDCT screening, genomics and biomarkers, and tomosynthesis. We also published one book chapter, one clinical guideline, and one clinical protocol. We have one journal article accepted for publication (in press) and two under review. Of particular note is the book chapter in the World Allergy Organization (WAO) White Book on Allergy on the potential of genetics in allergic diseases, and the clinical guideline published in COPDX on the management of chronic obstructive pulmonary disease.

We also published 12 presentations in peer-reviewed journals. Our PhD students published in the fields of lung cancer, expired breath analysis, and COPD.

**GRANTS**

The UQTRC had $2,205,003 to support research projects during 2013, including $489,559 in new funding, $931,233 available in ongoing grants from NHMRC and $784,211 available from other funding. New Grants received included UQ/NHMRC major equipment grant ($81,702), two TPCHF experienced researcher grants to support molecular studies ($199,379), three TPCHF new researcher grants ($30,000), QH Allied Health Thesis Assistance Scheme ($26,126), and two TPCHF Scholarships ($152,352).

**AWARDS**

Associate Professor lan Yang received The Prince Charles Hospital Award for Excellence in Clinical Research 2013.

**RESEARCH STUDENTS**

The UQTRC currently has seven PhD students; two MPhil Students; four
MBBS (Hons) students, of these one PhD, two MPhil and four MBBS Honours students commenced during 2013. During the year two PhD students, three MBBS (Hons) and two BSc (Hons) completed their studies. A total of nine summer students also attended the UQTRC during 2013.

**RESEARCH COLLABORATIONS**

The UQTRC has extensive research collaborations in Queensland including Royal Brisbane and Women’s Hospital; Queensland Institute of Medical Research - Berghofer Research Institute; QFAB; CSIRO; Asia Pacific Sequenom Bioscience; International Air Quality Laboratory, Queensland University of Technology; Lung and Allergy Research Centre University of Queensland/Princess Alexandra Hospital; Royal Children’s Hospital, Brisbane; Princess Alexandra Hospital; Queensland Health Closing the Gap initiative; Mater Hospital.

Nationally, we work with National Health and Medical Research Council (NHMRC) Centre for Research Excellence for Asbestos Disease Research; Bernie Banton Asbestos Diseases Centre, University of Sydney; Lowy Cancer Research Centre, University of NSW; John Hunter Hospital, Newcastle; NHMRC Centre for Research Excellence National Centre for Asbestos Related Disease, & University of Western Australia; Alfred Hospital, Victoria; Garvan Institute for Medical Research; GE Healthcare; Sir Charles Gairdner Hospital, and UWA; The Clive and Vera Ramaciotti Centre for Lung Cancer Research; Children’s Cancer Research Centre, UNSW; Peter MacCallum Cancer Centre, East Melbourne; and Royal Perth & Princess Margaret Hospitals, Perth.

Our international research collaborations include Hamon Center for Therapeutic Oncology Research, Texas; National Cancer Institute, NIH - NCI Cancer Genome Atlas project; University of Southampton; University of Hong Kong; University of British Columbia and British Columbian Cancer Agency (BCCA); Brock University, Canada; Toronto Lung Transplant program; Cancer Services NSW Cancer Institute; Pan-Canadian Early Detection of Lung Cancer Study; Zhongshan Hospital & Medical College of Fudan University in Shanghai; VU University Medical Centre, the Netherlands; Radboud University Nijmegen, the Netherlands; and Chulabhorn Hospital, Bangkok, Thailand.

**EDITORIAL POSITIONS**

Professor Kwun Fong is an editor and reviewer for several international scientific and medical journals and a grant reviewer for cancer councils, NHMRC, and TPCH Foundation. He is a higher degree thesis examiner for seven Australian and international universities.

Associate Professor Ian Yang is an editor for five journals and reviewer for 10 international scientific journals. He is a member of the Australian Satellite of the Cochrane Airways Group.
The Core Thoracic Research Group evaluates a range of thoracic disease processes including pulmonary emboli, pneumonia, pneumothorax, COPD, and asthma.

Through our multidisciplinary approach, we aim to improve service to non-cystic fibrosis bronchiectasis patients, and improve assessment and management of a variety of lung diseases leading to better outcomes for our patients. Research allows access to new therapies for our patients.

**HIGHLIGHTS**

The group presented multiple abstracts at the Thoracic Society of Australia and New Zealand annual meeting, including a presentation on the new Thoracic Close Observation Unit which has improved patient care.

**PUBLICATIONS AND PRESENTATIONS**

The Core Thoracic Research Group made nine presentations including personalised care for COPD, the cost of precise documentation, and the impact of a clinical pharmacist in a thoracic outpatient clinic.

**GRANTS**

Dietician Jenna Stonestreet received a New Investigator grant from The Prince Charles Hospital Foundation to study the influence of malnutrition on clinical outcomes in patients hospitalised with an infective exacerbation of chronic obstructive pulmonary disease.

**AWARDS**

Liz Pardede Presentation Prize 2013

**RESEARCH COLLABORATIONS**

We collaborate with the Queensland University of Technology Physiotherapy Department.

**RESEARCH HEAD**

Dr Philip Masel
If you want something done, ask a busy person.

That seems to be the motto guiding James Walsh’s life at the moment.

He has three kids, plays and coaches basketball, and is currently involved in no fewer than 15 research projects, on top of his job as a senior physiotherapist with Queensland’s heart and lung transplant programs.

James’s PhD, which he completed in 2013, was an examination of the predictive factors of success in pulmonary rehabilitation. He found that patients who were weaker in the quadriceps were more likely to benefit from the rehabilitation program, allowing physiotherapists to better plan rehabilitation programs.

The study has been cited in numerous other research projects around the world.

‘I’m interested in the next stage of the research looking at the response to rehabilitation,’ he says. ‘Do people who complete the program have less healthcare needs, less doctor visits, fewer emergency department presentations?’

His personal research is currently focused on frailty for transplant, the tight balance between being both sick enough and well enough for transplantation, and post-transplant recovery and exercise capacity.

Since 2000, James has worked primarily with the thoracic program, but this year his role changed to encompass both lung and heart transplantation.

He’s keen to expand his research into the physiotherapy needs of cardiac patients.

‘I’m very passionate about research,’ he says. ‘I’ve got my own research path and interests, but I also really like to support young researchers develop their projects.’

His own path has been fairly straight, starting at the Royal Brisbane Hospital as a graduate, and spending a year in private practice before coming to The Prince Charles Hospital.

‘I love exercise. I love the sport side of physio, but this area is very interesting and has captivated my attention for more than a decade. It’s important work.

‘It’s nice to see my patients get well again,’ he says. ‘I meet them when they’re sick and sometimes they get sicker, but I watch them get well again and get their life back.’
Sleep Disorders Centre Research Group

The Sleep Disorders Centre Research Group aims to heighten awareness through clinical research of the fundamental importance of sleep for optimal health.

Our research includes studies into insomnia, obstructive sleep apnoea, and other causes of sleep disruption.

A key area of research is how to improve the quality of life for patients with neuromuscular disease (and their carers) in the presence of these disorders characterised by universal increasing respiratory failure and whether mouth-piece ventilation in addition to standard care improves quality of life.

The mouth-piece ventilation study will allow patients with neuromuscular disease and their carers to be better informed about choices for assisted ventilation as respiratory failure progresses.

Concomitant insomnia occurs in about 30% of patients with OSA. Both disorders have the potential to negatively impact on each other. There is effective treatment available for both conditions.

The CoMISA study will address whether sequential treatment improves outcomes in both these common sleep disorders.

If the CoMISA study yields a positive outcome, then combined treatment to manage these common disorders may become standard of care.

We are looking at whether treatment of OSA with CPAP improves cardiovascular outcomes through the SAVE study.

The aim of the study is determine whether the addition of CPAP to standard cardiovascular risk factor management lowers the incidence of new cardiovascular events in patients with established cardiovascular disease and moderate to severe OSA.

This will mean that for patients with cardiovascular disease, there will be another treatment option to further lower cardiovascular risk.

Sleep is a fundamental ingredient for optimal health and tissue repair. Recognizing and improving poor sleep quality in hospitalized patients may improve patient outcomes.

We are also interested in metrics and novel technology, such as accelerometry, to improve standards and measurement of disrupted sleep, including within the hospital setting.

The accelerometer study will provide a better understanding of the role of periodic leg movements in the genesis of sleep disruption and daytime dysfunction.

Deanne Curtin & Greg Jorgensen

Researchers
HIGHLIGHTS

During 2013 we commenced an NHMRC funded project grant looking at co-morbid insomnia and sleep apnoea (CoMISA study).

This multi-site study will examine in a randomised control trial design, the benefit of cognitive behavioural therapy for insomnia in addition to continuous positive airways pressure (CPAP) for obstructive sleep apnoea (OSA) in patients with both of these sleep disorders.

Our group has previously demonstrated the high prevalence of both of these disorders coexisting together. Both disorders have effective treatment, but it is unknown whether sequential treatment of the disorders will be beneficial.

We have completed the recruitment phase of the sleep apnoea cardiovascular endpoints (SAVE) study.

This is the largest intervention study into obstructive sleep apnoea ever conducted in OSA.

It is a multi-national study with over 2800 participants enrolled.

The Cardiology, Cardiac Surgical and Internal Medicine Programs all contributed patients for this study.

TPCH recruited the third largest number of patients from Australia and New Zealand.

Follow up of patients will extend to 2016. Additionally TPCH was involved with a cardiac MRI sub-study for SAVE.

Support Service.

Lynn Hoey, as part of her PhD candidature, examined the impact of sleep disturbance in hospitalised patients.

This is an essential area of research especially in an ageing population undergoing more complex procedures in hospital.

In order to define the relevance and prevalence of this problem, robust and easy to administer tools are required.

The initial part of Lynn’s PhD will focus on what published methods to assess sleep in hospitalised patients currently exist.

The research group is extremely grateful for the fantastic support we received from the Medical Imaging Department at TPCH for this sub-study.

We also commenced a quality of life study examining the impact of mouth-piece intervention in patients with neuromuscular diseases and their carers.

This study involves collaboration with Institute of Sleep and Breathing in Victoria and the Victorian Respiratory Support Service.

The sleep scientific staff, in conjunction with Medical Diagnostic Technologies in Queensland MedTeQ (University of Queensland), are examining the utility of accelerometers transmitting data wirelessly to more accurately define the presence and the consequence of periodic leg movements (PLMs) in the genesis of sleep disruption.

“Largest interventional study into obstructive sleep apnoea”
This research has the potential to redefine the measurement of this common cause of sleep disruption.

GRANTS

The Sleep Disorders Centre received our first NHMRC Grant for the CoMISA study which will provide $96,731 per year for 2013-2015 to fund the research across TPCH & QUT for this project.

This prestigious grant will allow our group to examine this important question.

Physiotherapist Kim Meden received a Coopers Foundation Grant of $9,627 for the mouth-piece ventilation study in patients with neuromuscular disease.

PUBLICATIONS AND PRESENTATIONS

We published our study of home mechanical ventilation in the European Respiratory Journal. This study retrospectively examined the indications and outcomes of patients undertaking long term domiciliary noninvasive ventilation in Australia and New Zealand. It allowed comparison to an earlier published study, the Eurovent study, which examined similar data in Europe.

AWARDS

Lynn Hoey received the Thoracic Medicine Clinical Research Fellowship ($33,000) which allowed her to commence her PhD candidature examining sleep in hospitalised patients.

RESEARCH STUDENTS

The Sleep Disorders Centre Research Group has one PhD candidate.

RESEARCH COLLABORATIONS

We collaborate with (CARRS Q) Queensland University of Technology & (MedTeQ) University of Queensland; Institute of Sleep & Breathing, Victoria; Adelaide Institute of Sleep Health, South Australia; Flinders University, South Australia; and The George Institute for Global Health, Australia.
Eunike McGowan, critical care researcher
The Orthopaedic Research Group aims to improve the quality of life of patients with osteoarthritis through improved surgical outcomes and prevention of disease progression.

Our research focus is primarily on osteoarthritis and total joint replacement surgery.

The aim of our osteoarthritis research is to show the progression of disease.

Our clinical research has highlighted the high standard of care delivered to the patients presenting with fractured femurs at TPCH.

More rational use of resources has resulted as a consequence of research showing that regular follow up of patients with total hip replacement is costly and unnecessary.

HIGHLIGHTS
The Orthopaedic Research Unit had a busy 2013.

We published more than 23 peer-reviewed papers on topics ranging from pure basic science through to clinical outcomes.

Our continuing publications from the fractured neck of femur unit, known as NO FEAR (Neck Of Femur Education, Administration and Research), highlight the excellent outcomes now achieved from a dedicated unit.

The unit is covered by physicians, a dedicated nursing and paramedical staff, and the orthopaedic department.

The cooperation of the anaesthetic department has led to a rapid throughput of patients with minimal delays to surgery.

Further research into the appropriate peri-operative management of this difficult group of patients is ongoing.

The unique collaboration with QUT & tissue engineering research continues to be fruitful.

Much progress has been made in understanding the pathways of osteoarthritis.

Though a cure is many years away, we are gradually gaining insights into the cellular mechanisms that contribute to it.

Researchers come to theatre to see procedures and tissue is collected at surgery - clearly always with appropriate consent.

Patients are very excited to know that they can contribute to basic science research and always excited to hear that their stem cells have been cultured in the laboratory.
Implant design remains an area of focus for the unit and the understanding of what may contribute to fractures around implants has greatly increased.

We believe that the overall incidence of peri-prosthetic fractures nationwide may be decreased by appropriate use of implants.

**PUBLICATIONS AND PRESENTATIONS**

In 2013 the Orthopaedic Research Unit produced 23 referred journal articles, eight presentations, six abstract publications or conference proceedings and one book chapter.

**GRANTS**

Orthopaedic Research received funding from 15 grants in 2013.

**RESEARCH STUDENTS**

In 2013 Ortho Research had 16 PhD students and eight masters students.

**RESEARCH COLLABORATIONS**

The group has significant collaborations with Queensland University of Technology; Holy Spirit Northside Hospital; St Vincent’s Hospital, Melbourne; Exeter Hip Unit; Princess Elizabeth Orthopaedic Centre, Royal Devon and Exeter Hospital, Exeter UK; and Stryker Corp, USA.

**EDITORIAL POSITIONS**

Professor Ross Crawford is an editor of the Journal of Arthroplasty, and a reviewer for ANZ Journal Surgery and CORR.

Dr Bill Donnelly is an editor of the Journal of Arthroplasty.
A chance news bulletin seen in an Irish pub changed the course of Dan Chambers’s life.

The young doctor was offered a research job in Birmingham by someone he didn’t know. He was planning to turn it down until he saw Professor John Ayres appear on the news on the pub TV.

‘I realised he was famous and I should take the job,’ Dan says. ‘He’s still probably my main mentor.’

That serendipitous moment led Dan to become a thoracic physician and then complete his cystic fibrosis specialist training at Papworth Hospital. ‘Who should I bump into in the tea room than my good friend from university Peter Hopkins?’

A few years later Dan finished his transplant speciality and now works with Peter in the Queensland lung transplant service at The Prince Charles Hospital.

He previously worked in Perth where a bone marrow project sparked his interest in lung cell therapy.

The research has grown and The Prince Charles Hospital is now the world’s largest lung cell therapy program as well as a world leader in lung transplantation.

‘The most interesting part about research is discovering new things before someone else. I love using my imagination to see things not as they are conventionally seen,’ Dan says. ‘To do research you have to understand the dogma and the evidence of the medicine – are they irrefutable or shaky?’

His passion for discovering and questioning the status quo has paid off. Dan’s research has included creating new treatments for lung fibrosis and preventing transplanted lung rejection.

He is collaborating with QIMR on a world-first project, funded by NHMRC, to transplant the patient’s own treated T cells to manage lung failure.

Dan sees cell therapies as the future of thoracic medicine, with the potential to deliver a range of cell functions to damaged cells.

He is also on the Pulmonary Committee for the International Society for Cell Therapy which is working to regulate cell therapies across the world.

‘A lot of problems are caused by exhaustion of the person’s own cells,’ he says. ‘They can’t maintain the organ and problems arise such as lung fibrosis.

‘Cell therapy has got the capacity to be far more effective,’ he says. ‘But there’s a lot of unregulated treatment. There’s a risk of harm to the patients and the risk to the reputation of the whole field.’
Allied Health Ageing and Rehabilitation Research Group

The Allied Health Ageing and Rehabilitation Research Group is a collaborative comprising multiple allied health disciplines including occupational therapy, physiotherapy, psychology, speech pathology, social work, and nutrition and dietetics.

The group collaborates across many of the medical programs at The Prince Charles Hospital, other state and national health services, and numerous universities across the country and internationally.

The group aims to use research to improve health outcomes for older patients and those individuals requiring rehabilitation to maximise participation and reduce long-term disability.

Broadly speaking, allied health research seeks to change the lives of people living within our community and this research group focuses particularly on those requiring rehabilitation services or who are ageing.

Key areas of research include: improving rehabilitation processes and outcomes for survivors of stroke; optimising the recovery and functioning of the frail, aged patient; and early identification and management of vestibular dysfunction (i.e., people who are dizzy, or fall) to prevent hospitalisation and increase life participation.

Members of the research group are also key team members in clinical trials research investigating drug therapies for people with Alzheimer’s disease.

Research conducted by the group seeks to improve assessment techniques and treatment options available to our patients.

It also enables us to identify the most appropriate management for each patient group, with a focus on right patient, right place, and right time.

Research conducted by the Allied Health Ageing and Rehabilitation Research Group is driven by the clinical practice with the aim of improving the health outcomes of our patients and reducing long-term disability levels.

The patients are our research participants and so they are part of the research evidence as it evolves.

The research ensures patients receive the most appropriate clinical management for their condition, that evidence-based and cost-effective treatment options are available, and that the staff treating them continue to question their practice and improve the service quality in a rigorous and systematic way.
HIGHLIGHTS

Members of the research group presented at state, national and international conferences including the International Association of Geriatrics and Gerontology World Congress of Gerontology and Geriatrics, Canadian Association for Occupational Therapists National Conference, and the International Society for Posture and Gait.

Dr Suzanne Kuys along with collaborators from the University of Queensland and University of Sydney were awarded an NHMRC Project Grant to investigate high intensity treadmill training following stroke to improve physical activity.

Speech pathologists Dr Petrea Cornwell and Ann Finimore have collaborated as associate investigators with members of the Centre for Clinical Research Excellence in Aphasia Rehabilitation in a successful NHMRC Partnership Grant comparing two models of service delivery for aphasia rehabilitation post stroke.

Dr Cornwell travelled to Beijing, China, to meet with researchers at the Chinese Academy of Sciences and Peking University to discuss research collaborations.

Late 2013 saw formation of the Centre for Innovative Psychology Practice, Education, and Research (CIPPER) within the Metro North HHS as an adjunct to the existing Allied Health research groups at The Prince Charles Hospital.

The centre draws upon a small, but skilled, psychology workforce and involves a number of training and research partnerships with four leading universities (Australian Catholic University, Griffith University, Queensland University of Technology, and the University of Queensland).

CIPPER aims to be a centre of clinical innovation and research excellence in the field of medical psychology with a number of small projects already underway with the aim of improving access to services, patient experiences, and evidence-based health care outcomes.

PUBLICATIONS AND PRESENTATIONS

The group published 22 papers in international peer-reviewed journal during 2013. Members of the group also made 54 presentations of research findings at state, national and international conferences.

Papers and presentations from the researchers continue to build a national and international profile for The Prince Charles Hospital in the areas of stroke and other acquired brain injury, assessment and treatment vestibular dysfunction, with growth in the area of frailty.

GRANTS

The Allied Health Ageing and Rehabilitation Research Group received approximately $450,000 in research from local and national competitive grant agencies including National Health and Medical Research Council, The Prince Charles Hospital Foundation, and Queensland Health (Health Practitioner Grants).

AWARDS

Dr R Mustaffa Kamal and Dr Emily Nalder were awarded PhDs, and Mrs Brooke Wadsworth was awarded her MPhil.

RESEARCH STUDENTS

The Allied Health Ageing and Rehabilitation Research Group has four current Doctorate of Philosophy candidates, and six current and two new Master of Philosophy candidates enrolled.

The candidates are drawn from a range of allied health disciplines (physiotherapy, speech pathology, psychology) and enrolled through various universities (University of Queensland, Queensland University of Sydney, and Griffith University).
Allied Health Ageing and Rehabilitation Research Group (Continued)

RESEARCH COLLABORATIONS

Research collaborations
The Allied Health Ageing and Rehabilitation Research Group has extensive state-based research collaborations, including with Metro South, West Moreton, Gold Coast Hospital and Health Services. Collaborations also exist with the following universities: Griffith University, Australian Catholic University, and University of Queensland.

The Allied Health Ageing and Rehabilitation Research Group has established national collaborations with the Centre for Clinical Excellence in Aphasia Rehabilitation, University of Sydney, and NaCorr - Faculty of Health Sciences ACU Research Centre (Stroke & CV Disease), Australian Catholic University.

The Allied Health Ageing and Rehabilitation Research Group has developing international collaborations with the Institute of Psychology, Chinese Academy of Sciences (Beijing, China), Baycrest, Rotman Research Institute (Toronto, Canada) and Department of Physical Therapy, Universidade Federal de Minas Gerais, Belo Horizonte MG, Brazil.

EDITORIAL POSITIONS

Dr Donna Pinsker is a Reviewer for Oxford Handbook of Geropsychology.

Dr Petrea Cornwell is a member of the Editorial Committee for Brain Impairment.
Dr Stephanie Yerkovich, Chief Scientist, Qld Lung Transplant Program
The Allied Health Complex Chronic Disease Research Group is a collaborative comprising multiple allied health disciplines including: occupational therapy, physiotherapy, podiatry, speech pathology, social work, and nutrition and dietetics.

The group collaborates across many of the medical programs at The Prince Charles Hospital, other state and national health services, and numerous universities across the country and internationally.

The group aims to use research to improve health outcomes for patients with complex chronic diseases through evaluating the effectiveness of screening programs, best practice interventions, and prevention of long-term disability.

Broadly speaking allied health research seeks to change the lives of people living with chronic health conditions.

Key areas of research include: early identification and management of foot disease (ie foot ulcers and infections) to prevent avoidable hospitalisation and leg amputations; examining the role of exercise in improving health outcomes for heart and lung patients; and maximising patients quality of life through considering the impact of chronic health conditions on varied aspects of everyday living such as mood, communication, eating and drinking, memory, and participation in basic life activities.

Research conducted by the group seeks to improve in assessment techniques and treatment options available to our patients.

It also enables us to identify the most appropriate management for each patient group, with a focus on right patient, right place, and right time.

Research conducted by the Allied Health Complex Chronic Disease Research Group occurs at ‘the coalface’ of health care. The patients are our research participants and so they are part of the research evidence as it evolves.

The research ensures patients receive the most appropriate clinical management for their condition, that evidence based and cost effective treatment options are available, that the staff treating them continue to question their practice and improve the service quality in a rigorous and systematic way.

**HIGHLIGHTS**

Members of the research group presented at state, national and international conferences including the European Respiratory Society, Australasian Cystic Fibrosis Conferences, and the International
Society of Heart and Lung Transplantation Annual Scientific Meeting.

James Walsh, a physiotherapy researcher within the group, was invited to present at the Thoracic Society of Australia and New Zealand on Exercise Rehabilitation Pre- and Post-Lung Transplantation.

Peter Lazzarini, Senior Research Fellow (Podiatry), was invited to present at the International Diabetic Foot Conference in Sydney.

**PUBLICATIONS AND PRESENTATIONS**

The group published 32 papers in international peer-reviewed journal during 2013. Members of the group also made 39 presentations of research findings at state, national and international conferences.

Papers and presentations from the podiatry members of the group continue to build a national and international profile for The Prince Charles Hospital as a leader in research in foot disease.

While physiotherapy researchers working in Heart and Lung continue to build their national and international profile as leaders in the field through these publications and presentations.

**GRANTS**

The Allied Health Chronic Complex Disease Research Group received approximately $200,000 in research from local and national competitive grant agencies including The Prince Charles Hospital Foundation, Queensland Health (Health Practitioner Grants), and Speech Pathology Australia.

**AWARDS**

Tamara Milne, Ewan Kinnear, Helen Martin, and Peter Lazzarini were awarded Best Poster Presentation at the Australasian Podiatry Conference.

The Allied Health Complex Chronic Disease Research Group has six current and two new Doctorate of Philosophy candidates, and two new Masters of Research candidates enrolled.

**RESEARCH STUDENTS**

The candidates are drawn from a range of allied health disciplines (physiotherapy, speech pathology, psychology and podiatry), and enrolled through various universities (University of Queensland, Queensland University of Technology, James Cook University, and Griffith University).

**RESEARCH COLLABORATIONS**

The Allied Health Complex Chronic Disease Research Group has extensive state-based research collaborations, including with Metro South, Central Queensland, West Moreton, Townsville, Gold Coast, Cairns, and Sunshine Coast Hospital and Health Services.

**A collaborative comprising multiple allied health disciplines**
Collaborations also exist with Griffith University, Australian Catholic University, The University of Queensland, James Cook University, Queensland University of Technology, and Central Queensland University.

The Allied Health Complex Chronic Disease Research Group has established national collaborations with Royal Adelaide, Royal Melbourne, Royal Prince Alfred, Royal Perth, St Vincent’s, Western Melbourne, Dandenong, Liverpool, and Launceston Hospitals.

University collaborations have also been made with the University of Sydney, Monash University and LaTrobe University.

The Allied Health Complex Chronic Disease Research Group has ongoing international collaborations with the University of Arizona (USA), University of West Indies (Jamaica), University of Ottawa (Canada), Khon Kaen (Thailand), and the University of Manchester. (UK).

**EDITORIAL POSITIONS**

Peter Lazzarini was a Guest Editor for the Journal of Foot and Ankle Research.
Internal Medicine Dementia and Ortho Geriatrics Research Group

The research group is comprised of interdisciplinary clinicians with a passion and interest in contributing to research and creating and testing innovative alternatives for better care for their patients.

It combines the Internal Medicine Dementia Research Unit (IMDRU) and the Neck of Femur Education and Research group (NOFEAR).

The goal of our research is to make clinical care better.

Interdisciplinary clinically based research is a driver for the continuation of contemporary evidenced based clinical practice.

Empowering clinician involvement in research is also an enabler for personal and professional skill development and continuation of quality improvement cycles.

The diverse research of IMDRU and NOFEAR ranges from team participation in research investigating cutting edge treatment alternatives and interdisciplinary therapeutic interventions to facilitate, promote and consolidate effective patient outcomes.

The research groups are overseen by the IMS Research Committee which aims to provide a centre of research excellence that drives clinical improvement.

The committee provides leadership and support to enable research and provides overall governance of all research undertaken within the wards of the program to balance burden of research with patient and ward clinical activity.

The committee also functions to provide peer review to researchers and provide opportunity to optimise research opportunity for all interdisciplinary clinicians.

Internal Medicine research addresses numerous health facets for the diverse patient cohort to which the program serves.

Specifically areas of health research include: delirium; dementia, including the use of recreational therapy to aid behavioural and psychiatric symptoms; frailty including goal setting, capacity /decision making, pain and pressure injuries; stroke and other acquired brain injury; functional impairment and treatment outcomes; falls; patient flow and pathways, including from the emergency department and returning home; functional outcomes and surgical predictors of hip fracture; and oncology and cancer care.

Research undertaken in Internal Medicine research addresses numerous health facets for the diverse patient cohort to which the program serves.

Specifically areas of health research include: delirium; dementia, including the use of recreational therapy to aid behavioural and psychiatric symptoms; frailty including goal setting, capacity /decision making, pain and pressure injuries; stroke and other acquired brain injury; functional impairment and treatment outcomes; falls; patient flow and pathways, including from the emergency department and returning home; functional outcomes and surgical predictors of hip fracture; and oncology and cancer care.

Research undertaken in Internal Medicine research addresses numerous health facets for the diverse patient cohort to which the program serves.

Specifically areas of health research include: delirium; dementia, including the use of recreational therapy to aid behavioural and psychiatric symptoms; frailty including goal setting, capacity /decision making, pain and pressure injuries; stroke and other acquired brain injury; functional impairment and treatment outcomes; falls; patient flow and pathways, including from the emergency department and returning home; functional outcomes and surgical predictors of hip fracture; and oncology and cancer care.
Medicine and NOFEAR assists in the search for a cure, diagnosis, assessment of risks and the opportunity for patients to trial possible new treatments in the area of cognitive decline, Alzheimer’s disease, Clostridium Difficile and fractured neck of femur. Research initiatives and outcomes benefit the patient journey and experience to ensure that all patients have equitable access to diagnostics, treatments, interventions and follow-up.

Research undertaken in the Internal Medicine and Dementia Research Unit (IMDRU) assists in the improvement of a diagnosis, the assessment of risks and the opportunity for patients to trial possible new treatments in the area of cognitive decline and Alzheimer’s disease.

Research initiatives and outcomes benefit the patient journey and experience to ensure that all patients have equitable access to diagnostics, focused action research studies provide a platform for identifying, implementing, evaluating and publishing improvements to clinical care within the scope of routine clinical practice.

HIGHLIGHTS

In 2013 the Internal Medicine and Dementia Research Unit (IMDRU) has strived for the transference of innovation and research to be fostered in a culture of contemporary interdisciplinary clinical practice.

The Neck of Femur Education & Research (NOFEAR) collaborative has established a growing international research track record in pragmatically focused studies targeting multidisciplinary clinical care improvements in patients with acute hip fracture.

Sixteen new research studies were commenced in 2013 to compliment the ongoing work from previous years and foster further research initiatives in the coming years.

Dr Chrys Pulle won the Richard Slaughter Research Award at The Prince Charles Hospital 2013 Research Forum with his presentation on the impact of delirium on 12 month mortality after hip fracture.

Dietician Jack Bell received the Health Round Table Innovation Award in the Stranded Patient stream for his presentation on multidisciplinary action research improves nutrition related outcomes post acute hip fracture.

Rebecca Ferrier was awarded a New Investigator grant from The Prince Charles Hospital Foundation to study the nutritional needs and outcomes of the elderly with hip fracture.

"Creating and testing innovative alternatives for better care for their patients"
functional outcomes at discharge in people with hip fracture, based on fracture stability and fixation.

Dr Eamonn Eeles was appointed to the Advisory Board of the Queensland Brain Institute.

Other successes included consolidation of systems and processes to support the balance of research in the clinical areas and appropriate governance and mentoring strategies, and successful recruitment into large international clinical drug trials for both Alzheimer’s disease and Clostridium Difficile.

The group published 16 articles and had 48 presentations (oral and poster) in 2013.

**PUBLICATIONS AND PRESENTATIONS**

The group had 16 publications and multiple presentations.

**GRANTS**

Researchers in the group received five grants including two SEED Innovation Funding grants totalling $201,000, two TPCH Foundation New Investigator grants, and $498,938 from the Health Innovation Fund.

**AWARDS**

Jack Bell received the Health Round Table Innovation Awards and Dr Chrys Pulle received an award for his presentation at the 2013 TPCH Research Forum.

**RESEARCH COLLABORATIONS**

Our research groups collaborate with the University of Queensland; Cambridge University Hospitals NHS Foundation Trust, UK; Cardiff University, United Kingdom; and Ochsner Clinical School, Jefferson, USA.

New Studies Commenced
Brielle Parris, research scientist
The Oncology Services Research unit is highly active in the participation of studies focusing on new therapies in the different stages of lung cancer.

We foster an ethos to undertake clinical trials which will improve treatments and outcomes for our patients.

This has been reflected in major changes to the treatment regimes our patients now receive.

During 2013 we actively recruited to seven pharmaceutical sponsored & collaborative group studies and followed patients in two studies which had closed to recruitment.

The program participates in studies that include the various stages of lung cancer treatment (adjuvant through to metastatic disease) and mesothelioma.

The program is involved in international studies that investigate novel therapies.

These therapies have changed outcomes for patients, such as the PROFILE 1014, study which included Crizotinib for people with ALK mutation positive lung cancer.

The program is also a leading collaborator with the Australasian Lung cancer Trials Group (ALTG).

The studies undertaken in the program often involve treatments that are less invasive as compared to standard treatments, which can impact on their quality of life.

The investigational drugs are often well tolerated, and the patients experience less side effects and to a lesser extent. The treatments potentially increase the patient’s survival.

HIGHLIGHTS

Some of the highlights for the program for 2013 include recruitment to a number of international studies; participating in practice changing studies such as PROFILE 1014 (Crizotinib) and LUX-Lung 7 (Afatinib); recruiting patients to the flagship Australasian Lung Cancer Trials Group (ALTG) NITRO study, which investigates adding a Nitroglycerin patch to standard chemotherapy in the hope of improving patient outcomes.

We also have an ongoing collaboration with Dr Kwun Fong and his team on the Mutation 177 study.

PUBLICATIONS AND PRESENTATIONS

The team had one publication in Lung Cancer and three presentations at the World Lung Cancer Congress in Sydney.
Grants Over

$300,000

GRANTS
Our program received approximately $100,000 in 2012 to support an investigator driven clinical trial, which has rolled over to 2013.

The program has also received approximately $200,000 for pharmaceutical sponsored clinical trials.

RESEARCH COLLABORATIONS
The Oncology Service Research Group collaborated with the UQ Thoracic Research Centre, the Australasian Lung cancer Trials Group (ALTG) in New South Wales, and the National Cancer Institute of Canada.

Presentations

3
The TPCH Nursing Research and Practice Development Centre (NRPDC) is relatively new but has had a significant impact on nurse-led research hospital-wide, generating grants, new projects and collaborations, and resultant publications.

Nursing research conducted via the NRPDC ensures a rigorous approach to both knowledge generation and knowledge transfer.

This is achieved through systematic research inquiry, evidence-based knowledge application, evidence-based intervention, implementation and testing, and evaluation of strategies that lead to measurable health outcomes for Queenslanders.

Research undertaken via the NRPDC is of particular value to TPCH patients because the results can be rapidly translated into clinical practice, thereby achieving demonstrable patient-focused outcomes in a relatively short time frame.

The NRPDC houses a nurse-led research team whose aim is to inspire, support, and undertake quality research within the hospital.

Its overall aim is to contribute to improved clinical outcomes and foster change through research and encourage the implementation of evidence-based practice regarding patient care.

Our current research priority areas are: falls injury prevention, pressure injury prevention, cardiac care, thoracic care, and emergency care.

HIGHLIGHTS

Two of the main research priorities for the NRPDC are pressure injury and falls injury prevention.

These research areas have been very productive, and the research focus on these helped TPCH to achieve an excellent result in the 2013 Australian Council of Healthcare Standards Accreditation, with a total of seven merits awarded in these two areas.

Research undertaken under the auspice of the NRPDC has been presented internationally, nationally and locally.

A highlight of 2013 was the one-day research seminar ‘Pressure Injury and Falls Prevention: Research and Implications for Practice’, which was held at TPCH. Several TPCH research projects were showcased to a large audience from across the state.

PUBLICATIONS AND PRESENTATIONS

Research via the NRPDC has resulted in 13 publications in peer-reviewed...
journals, two peer-reviewed published abstracts, 14 international conference presentations, and six national conference presentations.

GRANTS

NRPDC received a new investigator grant and a small research equipment grant from The Prince Charles Hospital Foundation totalling $14,511; an Australian Catholic University faculty grant for $10,000, and a University of Victoria faculty grant for $4,989.

We also received $74,000 from the Australian Centre for Health Services Innovation for a study in the emergency department to implement and evaluate a new ‘Navigator’ nursing role to improve timely delivery of patient care.

RESEARCH STUDENTS

During 2013, five PhD students, one MPhil student, three Master of Nursing (Research) students, and one Honours student were supervised via the NRPDC.

RESEARCH COLLABORATIONS

We collaborate in Australia with the Faculty of Health Sciences, Queensland University of Technology; Australian Catholic University; School of Public Health, James Cook University; Monash Health, Victoria; and Nursing Research Institute, St Vincent’s Hospital, Sydney.

Internationally, we work with Victoria University, Wellington New Zealand, and University of Witswatersrand, South Africa.

EDITORIAL POSITIONS

Paul Fulbrook is the editor for one peer-reviewed journal, and on the editorial board of another. He is also a journal referee for five nursing journals. Melanie Jessup is a journal referee for seven nursing journals and Sandra Miles is referee for one.
Felicia Goh

It’s internationally known for progressive heart surgery, lung cancer treatment and transplantation, but perhaps The Prince Charles Hospital could also lay claim to the largest number of young PhDs per capita.

Dr Felicia Goh is certainly doing her part in that area. At only 31, she’s already five years post PhD.

Four of those post-doctoral years have been in the University of Queensland Thoracic Research Centre, a research powerhouse hidden in an old orange brick building at The Prince Charles Hospital.

Felicia’s research currently focuses on the connection between ageing, lung cancer and chronic obstructive pulmonary disease with Associate Professor Ian Yang, and a study of the similarities between neuroendocrine cancers with Professor Kwun Fong.

That’s not the subject of her PhD though.

Felicia’s original research interest was how the immune system detects parasite products, as a joint PhD student with the CSIRO and UQ Institute of Molecular Biosciences.

‘I was working with livestock industries looking at parasites in sheep and cattle,’ she says. ‘Most of the work was in mouse models.’

Once she finished studying, Felicia decided she needed to work more closely with humans.

She found a good fit between the skills she picked up during her PhD and the needs of the UQTRC.

‘I wanted something more clinically based. It’s good to have direct access to patient samples,’ she says. ‘The research is directly relevant.’

Felicia has always been interested in science and human disease.

‘I find it interesting how the body deals with disease, whether through genetics, environmental factors or pathogens.’
# Grants

<table>
<thead>
<tr>
<th>Project</th>
<th>Chief Investigator</th>
<th>TPCH Investigators</th>
<th>Granting Agency</th>
<th>Total Funding</th>
<th>2013 Funding</th>
<th>Year of Funding</th>
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Support life saving research. Visit www.tpchfoundation.org.au
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<td>R Lord</td>
<td>P. Fulbrook, D. Williams, S. Miles, F. Kinneir, J. Rowland</td>
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<td>John Fraser, Ian Smith, Peter Tesar</td>
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<td>Anna Tai</td>
<td>Scott Bell</td>
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<td>Adaptive and innate immunity in children with bronchiectasis</td>
<td>Anne Chang</td>
<td>Yerkovich ST</td>
<td>Channel 7 Children’s Research Foundation</td>
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<td>Role of the mouthpiece non-invasive ventilation in neuromuscular disease</td>
<td>Kim Meden</td>
<td>James Douglas, Petrea Cornwell</td>
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<td>Clinical Consortium of Genomics data produced by Pseudomonas International Consortium</td>
<td>Scott Bell</td>
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<td>Non-Invasive Cardiac Imaging</td>
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<td>CHORuS-II - Coagulation, Haemorrhage and Oxygenation in Resuscitation of Severe trauma - Phase II</td>
<td>John Fraser, Elissa Milford, Yoke Lin Fung, John-Paul Tung, Kiran Shekar, Natasha Van Zy</td>
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<td>Goal planning in community rehabilitation settings exploration of the process and the relationship between client-centredness, contextual factors and outcomes.</td>
<td>Emmah Doig</td>
<td>Petrea Cornwell</td>
<td>Division of Rehabilitation CRWP Research &amp; Development Grants</td>
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<td>Cross sectional study of lower Airway infection, nasopharyngeal carriage and adaptive immunity in children immunised with synflorix</td>
<td>Anne Chang</td>
<td>ST Yerkovich</td>
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<td>Accelerated Transient Attack Pathways – TIA, Seizure, Syncope and Falls</td>
<td>Jeffrey Rowland, Rohan Grimley, Elizabeth Whiting, Kevin Clark, Hayley Middleton</td>
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<td>How transmissible is influenza by the airborne route?</td>
<td>Graham Johnson</td>
<td>Scott Bell</td>
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<td>Endothelin Blockade in Ex-vivo lung perfusion</td>
<td>John Fraser, Ryan Watts, Kimble Dunster</td>
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<td>Malcolm West, Maria Nataatmadja</td>
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<td>Eamonn Eeles, Kym Tattam, Kirstie Hastie</td>
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<td>Improving care of older orthopaedic patients</td>
<td>Chrys Pulle, Jack Bell, Margaret Cahill</td>
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<td>Personalised care for COPD - the COPD Snapshot</td>
<td>Ian Yang, Rayleen Bowman,</td>
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<td>Resuscitation in Endotoxoaemic Shock - Understanding Sepsis (RESUS)</td>
<td>John Fraser, Yoke Lin Fung, John-Paul Tung</td>
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<td>Giving an adult life after Fontan surgery to those with the most severe congenital heart conditions</td>
<td>Yves d’Udekem, Dorothy Radford</td>
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<td>National Health and Medical Research Council 2013 application: APP1063041 Clinical trial of coronary artery calcification scoring in COPD</td>
<td>Ian Yang, Darren Walters, Christian Hamilton-Craig</td>
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<td>Identification of the mechanisms of liver fibrinogenesis and the detection and prediction of clinical outcomes in paediatric cholestatic liver disease</td>
<td>GA Ramm, David Reid</td>
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<td>The AMAZES Study: Asthma and Macrolides: the AZithromycin Efficacy and Safety study</td>
<td>Gibson, Ian Yang</td>
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<td>Biological drivers of lung cancer</td>
<td>M Daniels</td>
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<td>Improving Physical ACTivity with Treadmill training following stroke: the stroke-IMPACT RCT trial.</td>
<td>Sandra Brauer, Suzanne Kuys</td>
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<td>A stratified randomized control trial of an intensive, comprehensive aphasia program to compare patient outcomes post stroke with usual care.</td>
<td>Linda Worrall, Petrea Cornwell, Ann Finnimore</td>
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<td>Prospective methylation biomarker validation study in lung cancer</td>
<td>Kwun Fong</td>
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<td>Breathe Well: A Centre for Research Excellence in chronic respiratory diseases and lung ageing</td>
<td>David Reid</td>
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<td>National Health and Medical Research Council</td>
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<td>MAPK/ERK pathway in osteoarthritis</td>
<td>Yin Xiao</td>
<td>R Crawford</td>
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<td>Improving Physical ACTivity with Treadmill training following stroke: the stroke-IMPACT translation trial.</td>
<td>Suzanne Kuys</td>
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<td>How to build a human lung</td>
<td>Daniel Chambers, D Chambers, J McQuailet</td>
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<td>A phase II trial of a novel intervention for social language use impairments following traumatic brain injury.</td>
<td>Emma Finch, Petrea Cornwell</td>
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<td>Developing a quality framework for the care of older patients in the Emergency Department (GERI)</td>
<td>Ellen Burkett, Fran Kinnear</td>
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<td>A randomised controlled trial of interventional versus conservative management treatment of primary spontaneous pneumothorax (PSPx)</td>
<td>Fran Kinnear</td>
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<td>Deconstructing the immunopathogenesis of non-tuberculous infection</td>
<td>John Miles</td>
<td>Scott Bell</td>
<td>QIMR-Clinician Research Collaboration Award</td>
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<td>Program inflammatory airways disease in children with a focus in cystic fibrosis</td>
<td>Peter Sly</td>
<td>Scott Bell</td>
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<td>CT compare phase II: CT coronary angiography assessment of emergency patients presenting with undifferentiated chest pain and intermediate risk of coronary artery disease (2009-2013)</td>
<td>Darren Walters</td>
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<td>Evaluation of health care utilisation benefits following pulmonary rehabilitation across twenty programs throughout Queensland</td>
<td>James Walsh</td>
<td>D Chambers, S Yerkovich</td>
<td>Queensland Health - Health Practitioner Research Grant</td>
<td>$26,241.95</td>
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<td>Functional outcomes for patients at 6 and 18 weeks follow up after fractured neck of femur: a randomised control trial</td>
<td>Rebecca Ferrier</td>
<td>Nancy Low Choy</td>
<td>Queensland Health Health Practitioner Grants</td>
<td>$19,565.00</td>
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<td>Diabetes foot ulcer study: Investigating gait and plantar pressure characterisits of type 2 diabetes and its relationship to foot ulceration.</td>
<td>Malindu Fernando</td>
<td>Peter Lazzarini</td>
<td>Queensland Health Health Practitioner Grants</td>
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<td>Diabetes Amputation Mobile Phone (DAMP) Project: Does regular mobile phone image monitoring of diabetic foot ulcers improve patient outcomes?</td>
<td>Damien Clark</td>
<td>Peter Lazzarini, Ewan Kinnear</td>
<td>Queensland Health Health Practitioner Grants</td>
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<td>Evaluation of health care utilisation benefits following pulmonary rehabilitation across twenty programs throughout QLD</td>
<td>James Walsh</td>
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<td>Delivering heart failure rehabilitation programs to patients at home via tele-rehabilitation: a randomised controlled trial</td>
<td>Jared Bruning</td>
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<td>Longer term outcomes from immediate and delayed (wait-list) service models to inform best practice for the Vestibular Rehabilitation Service at TPCH</td>
<td>Vicky Stewart</td>
<td>Nancy Low Choy</td>
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<td>A novel ex-vivo model of human lung disease to treat Pulmonary Arterial Hypertension</td>
<td>Daniel Chambers S Yerkovich, B Basker</td>
<td>Rebecca L. Cooper Medical Research Foundation Ltd</td>
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<td>Assessment of airway rejection in lung transplantation – no longer B grade?</td>
<td>Daniel Chambers ST Yerkovich</td>
<td>Roche Organ Transplant Research Fund</td>
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<td>Prevalence and nature of dysphagia in Chronic Obstructive Pulmonary Disease</td>
<td>Michelle Slee</td>
<td>Petrea Cornwell, Ian Yang, Lisa McCarthy</td>
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<td>ENLIGHTN</td>
<td>Darren Walters</td>
<td>St Jude Medical</td>
<td>$30,186.00</td>
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<td>Stryker - A Prospective, Randomised, Single-blind, Multi-centre Clinical Study to Evaluate the Comparative Effectiveness of the Scorpio and Mobile Bearing Knee (R. Crawford)</td>
<td>R Crawford</td>
<td>R Crawford</td>
<td>Stryker South Pacific - Australia</td>
<td>$1,071,985.00</td>
<td>$108,000.00</td>
<td>2002-2013</td>
<td>Industry sponsored</td>
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<td>Optical Coherence Tomography (2012-2013)</td>
<td>Darren Walters</td>
<td>The Prince Charles Hospital Foundation</td>
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<td>MA24PAU perivascular flow sensor</td>
<td>Shaun Gregory</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$3,920.00</td>
<td>2013</td>
<td>Small Equipment Grant</td>
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<td>Understanding biofilm in Pseudomonas aeruginosa infection derived from different niches</td>
<td>Scott Bell</td>
<td>David Reid</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$83,500.00</td>
<td>$41,750.00</td>
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<td>Detection of treatment-responsive lung cancer mutations</td>
<td>Brett Hughes</td>
<td>Rayleen Bowman, Kwun Fong, Felicia Goh, Houston</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$94,515.00</td>
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<td>Experienced Researcher, Project</td>
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<td>Personalised lung cancer treatment with precise molecular genotyping</td>
<td>Kwun Fong</td>
<td>Rayleen Bowman, Ian Yang, Leong</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$99,515.00</td>
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<td>2013 (extended)</td>
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<td>Precision Molecular Diagnosis for lung cancer</td>
<td>Kwun Fong</td>
<td>Rayleen Bowman, Clarke</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$99,793.00</td>
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<td>Whole genome sequencing for neuroendocrine lung cancer</td>
<td>Kwun Fong</td>
<td>Rayleen Bowman, Ian Yang, Clarke</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$99,586.00</td>
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<td>Is FGFR1 amplification an early lung cancer biomarker?</td>
<td>Marissa Daniels</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,174.00</td>
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<td>Epigenetic changes in the ageing lung</td>
<td>Emily Impey</td>
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<td>The Prince Charles Hospital Foundation</td>
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<td>The effects of primary versus aged diesel emissions on bronchial epithelial cells at an air-liquid interface</td>
<td>Annalicia Vaughan</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
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<td>Optimising 3D spheroid tumour model for personalized cancer treatment.</td>
<td>Tianmun (Kelly) Chee</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,976.00</td>
<td>$9,976.00</td>
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<td>Finding cancer mutations in bronchial washing samples</td>
<td>Louise Franz</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,976.00</td>
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<td>Equipment grant for Ion Proton and Ion Personal Genome Machine items</td>
<td>Kwun Fong</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
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<td>The Prince Charles Hospital Foundation equipment grant (small)</td>
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<td>Minus 86°C Freezer</td>
<td>John Fraser</td>
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<td>The Prince Charles Hospital Foundation</td>
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<td>Belts for Respitrace QDC 220V machine</td>
<td>Anna-Lisa Sutt</td>
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<td>Sepsis risk with aged vs fresh red blood cell transfusions: A retrospective study</td>
<td>Beatrice Sim</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$9,780.50</td>
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<td>MPW-55 micro-centrifuge</td>
<td>Saul Chemonges</td>
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<td>The Prince Charles Hospital Foundation</td>
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<td>The double whammy: impact of activated endothelium and stored blood transfusion on microparticle formation and thrombosis</td>
<td>Monica Ng</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,998.00</td>
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<td>Study of Disposition of Macro and Micronutrients in Ex-Vivo Extra Corporeal Membrane Oxygenation (ECMO) Circuits: To Optimise Nutritional Delivery during ECMO</td>
<td>Kristine Estensen</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,830.36</td>
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<td>Development of a novel assay to characterise the inflammatory responses to transfusion of stored blood in an ovine model of smoke-induced acute lung injury and extracorporeal membrane oxygenation.</td>
<td>Eunike McGowan</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,887.00</td>
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<td>What are the prevalence rates of foot complications in inpatient populations?</td>
<td>Peter Lazzarini</td>
<td>Suzanne Kuys, Ewan Kinnear</td>
<td>Wound Management Innovation CRC</td>
<td>$30,000.00</td>
<td>$30,000.00</td>
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<tr>
<td>Improving communication in the ventilated patient: assessing changes in lung volume when using a speaking valve.</td>
<td>Anna-Lisa Sutt</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$9,997.85</td>
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<td>Alteration of high mobility group box 1 expression accelerates pathogenesis in calcific aortic valve stenosis</td>
<td>Yoke Lin Fung</td>
<td>Margaret Passmore, Maria Nataatmadja, Bronwyn Pearse, Peter Tesar, John Fraser</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$80,445.34</td>
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<td>Experienced researcher Grant</td>
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<tr>
<td>Silent and Apparent Neurological Injury In Transcatheter Aortic Valve Implantation (SANITY) Study</td>
<td>John Fraser</td>
<td>Jonathon Fanning, Darren Walters, Judith Bellapart, Andrew Clarke</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$99,272.00</td>
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<td>The Implications of Brain Death in Donor Lung Injury: Investigation and Blockade of the Endothelin Axis</td>
<td>Ryan Watts</td>
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<td>The Prince Charles Hospital Foundation</td>
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<td>Validating the cryopreservation of ovine red blood cells for use in ovine models of transfusion</td>
<td>Elissa Milford</td>
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<td>The Prince Charles Hospital Foundation</td>
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<td>Fibreoptic spectrometer</td>
<td>Ashwaths Rajamani</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$4,420.70</td>
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<td>Force Transducer</td>
<td>Frank Nestler</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$5,000.00</td>
<td></td>
<td>2013</td>
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<td>Systemic Venous Compliance Chamber with Flow Sensor</td>
<td>Michael Stevens</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$3,148.00</td>
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<td>Physiological Controller Development for the BIVACOR Total Artificial Heart</td>
<td>Frank Nestler</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,976.24</td>
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<td>Improving the implantability of a total artificial heart through miniaturisation of the BIVACOR™ controller.</td>
<td>David Morales</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$8,919.85</td>
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<td>New Researcher Grant</td>
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<tr>
<td>Development and in-vivo evaluation of a novel inflow cannula for ventricular assist devices.</td>
<td>Shaun Gregory, Bruce Thomson, John Fraser</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$65,300.00</td>
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<td>2013</td>
<td>Experienced researcher Grant</td>
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<tr>
<td>Determination of mechanisms of ventricular interaction responsible for right ventricular failure found with left ventricular assist device implantation.</td>
<td>John Fraser, Mohanraj Karunanithi, David Platts, Harris Haqqani, Bruce Thomson, Shaun Gregory</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$86,052.00</td>
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<td>Experienced researcher Grant</td>
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<td>Development of a robust control strategy for Ventricular Assist Devices</td>
<td>Ashwaths Rajamani</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$9,209.55</td>
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<td>Developing an Injectable Drug Containing Hyaluronic Acid (HA) and ERK signaling pathway Modulators for Osteoarthritis Treatment.</td>
<td>Yin Xiao, R Crawford</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$73,250.00</td>
<td>$73,250.00</td>
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<td>A prospective evaluation of the utility of ultrasound guided radial artery cannulation versus the traditional blind palpation technique in adult cardiac surgical patients.</td>
<td>Justin Wong, Ivan Rapchuk</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,489.02</td>
<td>$9,489.02</td>
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<td>Obesity and Activity in Heart Transplant Recipients</td>
<td>Scott McKenzie, Rebecca Francis</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$9,498.64</td>
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<td>New Investigator Grant</td>
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<td>Marfan syndrome: using next-generation sequencing to identify Mendelian mutations and modifying genes.</td>
<td>M West, M Brown, E Duncan, K Summers</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$91,000.00</td>
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<td>Notch1, ApoE and osteopontin dysfunction in bicuspid aortic valve associated with aortic aneurysm.</td>
<td>M West, A Dettrick, M Nataatmadja, P Walker, J West, M Passmore</td>
<td></td>
<td>The Prince Charles Hospital Foundation</td>
<td>$98,432.00</td>
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<td>Radiometer TCM4 transcutaneous monitor and Sensor for tcpCO2 and tcpO2 (Adults and Paediatric).</td>
<td>Fran Kinnear</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$5,000.00</td>
<td></td>
<td></td>
<td>2014</td>
<td>Small Equipment Grant</td>
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<tr>
<td>Functional outcomes at discharge in people with Hip Fracture, based on fracture stability and fixation</td>
<td>Rebecca Ferrier</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,982.92</td>
<td></td>
<td></td>
<td>2013</td>
<td>New Investigator Grant</td>
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<td>Cardiac Indigenous patients’ and their relatives’ experience of acute hospital care</td>
<td>V Mbuzi</td>
<td>Francie Ferrier</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,978.15</td>
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<td>Digital camera</td>
<td>P Fulbrook</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$4,533.38</td>
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<td>2014</td>
<td>Small Research Equipment Grant</td>
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<td>Intra-strain diversity of Pseudomonas aeruginosa in the lungs of patients with CF and their role in exacerbation</td>
<td>Scott Bell</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$94,797.00</td>
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<td>Physical Activity and Inflammatory markers in people with CF post hospitalisation</td>
<td>Kate Myslinski</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$10,000</td>
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<td>2013</td>
<td>New Investigator Grant</td>
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<td>A randomised controlled trial of recreational therapy for Behavioural and Psychiatric Symptoms of Dementia</td>
<td>Leah Thompson</td>
<td>Eamonn Eeles, Mujtaba Ahmed, Emily Gibbs</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,676.45</td>
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<td>New Investigator Grant</td>
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<td>Vestibular, Balance and Mobility Research Clinics at TPCH</td>
<td>Nancy Low Choy</td>
<td>Aaron Lamont, Rachel Williams, Greg Morrison</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$54,680.00</td>
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<td>Validation of a Vestibular Screening Tool in the acute hospital setting, in detecting vestibular dysfunction to facilitate referral of patients to Physiotherapy Vestibular Clinic</td>
<td>Vicky Stewart</td>
<td>Nancy Low Choy</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,646.00</td>
<td>$4,823.00</td>
<td>2013-2014</td>
<td>New Investigator Grant</td>
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<td>Maximising balance, mobility and community participation of people after surgery following fractured neck of femur.</td>
<td>Rebecca Ferrier</td>
<td>Nancy Low Choy</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,982.92</td>
<td>$4,991.46</td>
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<td>Does obesity post heart transplant relate to patient activity levels?</td>
<td>Rebecca Francis</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,498.64</td>
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<td>$9,498.46</td>
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<td>Inflammatory markers and physical activity capacity in adult cystic fibrosis population following an acute exacerbation requiring hospitalisation</td>
<td>Kate Myslinski</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,962.14</td>
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<tr>
<td>Towards an improved understanding of the effect of a speaking valve on lung volumes and communication in the critically ill tracheostomised patient</td>
<td>Anna-Liisa Sutt</td>
<td>John Fraser, Petrea Cornwell, Kimble Dunster</td>
<td>The Prince Charles Hospital Foundation</td>
<td>$9,997.85</td>
<td>$4,998.93</td>
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<td>New Investigator Grant</td>
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<tr>
<td>Towards an improved understanding of the effect of a speaking valve on lung volumes and communication in the critically ill tracheostomised patient</td>
<td>Anna-Liisa Sutt</td>
<td>John Fraser, Petrea Cornwell, Kimble Dunster</td>
<td>The Prince Charles Hospital Foundation</td>
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<td>The Lung Transplant Mycobioime</td>
<td>Daniel Chambers</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$95,762.00</td>
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<td>Airway stem cell exhaustion - predicting the lifespan of the lung allograft</td>
<td>Stephanie Yerkovich</td>
<td>Daniel Chambers</td>
<td>The Prince Charles Hospital Foundation</td>
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<td>Protein Repletion post lung Transplantation: Early Intervention Nutrition</td>
<td>Donna Hickling</td>
<td></td>
<td>The Prince Charles Hospital Foundation Novice</td>
<td>$9,780.38</td>
<td>$9,780.38</td>
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<td>A novel assay to distinguish and identify mesenchymal stem cells within the lung</td>
<td>Kenneth Sinclair</td>
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<td>The Prince Charles Hospital Foundation</td>
<td>$9,925.00</td>
<td>$9,925.00</td>
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<td>A randomised controlled trial of interventional versus conservative management treatment of primary spontaneous pneumothorax (PSPx)</td>
<td>Simon Brown</td>
<td>Fran Kinnear</td>
<td>University of Western Australia</td>
<td>$50,000.00</td>
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<td>2012-2014</td>
<td>project grant</td>
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<td>Intensive care nurses’ experiences of, attitudes towards, end of life care: a New Zealand perspective</td>
<td>M Coombs</td>
<td>P Fulbrook</td>
<td>University of Victoria</td>
<td>$4,989.00</td>
<td>$4,989.00</td>
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<td>Cardiac Magnetic Resonance</td>
<td>C.Hamilton-Craig</td>
<td>C Hamilton-Craig</td>
<td>University of Queensland</td>
<td>$60,000.00</td>
<td>$40,000.00</td>
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<td>Optimising organ function during ex-vivo lung perfusion - role of the endothelial glycocalyx</td>
<td>Daniel Chambers</td>
<td>J Hill</td>
<td>University of Queensland Academic Title Holder Research Fund</td>
<td>$37,078.00</td>
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<td>Contexts of learning: impact of an inter-service aged care placement on student interest and confidence in working with people 65 years and older</td>
<td>Ronelle Hewetson</td>
<td>Petrea Cornwall</td>
<td>Health Workforce Australia</td>
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Australia’s population is ageing and chronic disease is on the rise, contributing to 90% of deaths. The Prince Charles Hospital Foundation supports research to fight Australia’s most chronic diseases and debilitating conditions.

Since we were established in 1986, the Foundation has provided more than $16 million in grant funding to researchers at The Prince Charles Hospital. These grants have covered a vast range of health research from across the hospital, including surgery, nursing, nutrition, physiotherapy, mental health, transplantation, pure science, and speech pathology. This could not have been achieved without the generous support of community donors, payroll donors, corporate partners, event participants, and volunteers.

We fund researchers at all stages in their careers. In 2010, the Foundation introduced research equipment and new investigator grants to foster the next generation of researchers and provide broader support to the hospital community. Already 97 new investigators have been given a start in research through this program.

As a result of several years of consistent significant growth, in 2013-14 the Foundation introduced two new types of grants to support further research at The Prince Charles Hospital. We offered Program Grants to support specific programs of research across medical areas, such as multi-disciplinary patient or disease focussed collaborations. These are multiple year projects with bulk funding of $200,000 per year.

Building capacity for health and medical researchers is an important aim for the Foundation. To support this, we created PhD scholarships of $25,000 per year for three years. This will allow PhD students to reduce their paid working hours if necessary to dedicate more time to their research projects.

These new grants brought our funding pool for the year to over $2.1m. The Foundation’s goal is to distribute $5m annually in health and medical research funding by 2018. We raise money through donations, bequests, fundraising events, appeals, and commercial activities such as managing the Breeze Café and catering service to offset our administration costs.

We are committed to helping our health and medical researchers find new ways to diagnose and treat early, to prevent and cure the chronic, congenital and acquired diseases which cause suffering in Australia and around the world.

For information on research we support and to make a donation, visit www.tpchfoundation.org.au.
Research Partners

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MONASH University

St. Jude Medical

Stanford University
Research Partners
## Higher Research Degree Students

<table>
<thead>
<tr>
<th>Name</th>
<th>Higher Degree</th>
<th>Project</th>
<th>University Affiliation</th>
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<tr>
<td>Niru Mahendran</td>
<td>PhD</td>
<td>Ambulation recovery after stroke</td>
<td>The University of Queensland</td>
<td>Sandra Brauer</td>
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<td>Lee Pryoir</td>
<td>PhD</td>
<td>Evaluating speech pathology practice in the intensive care unit</td>
<td>The University of Queensland</td>
<td>Elizabeth Ward</td>
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<td>Sarah Mattin</td>
<td>PhD</td>
<td>Readiness for discharge from hospital to home in community: physiotherapist, family/caregiver and patient perspectives</td>
<td>Australian Catholic University</td>
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<td>Hannah Tehan</td>
<td>PhD</td>
<td>Brain Training in Prospective Memory for Those Suffering the Effects of Stroke or Other Forms of Acquired Brain Injury</td>
<td>Australian Catholic University</td>
<td>Mia Mariani</td>
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<td>Peter Lazzarini</td>
<td>PhD</td>
<td>Prevalence and risk factors of foot disease in inpatient populations</td>
<td>Queensland University of Technology</td>
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<td>Malindu Fernando</td>
<td>PhD</td>
<td>Plantar pressure and gait characteristics of diabetes foot ulcers</td>
<td>James Cook University</td>
<td>Jonathon Golledge</td>
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<td>Sharon Kwiatkowski</td>
<td>PhD</td>
<td>Investigation of home based exercise for severe COPD</td>
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<td>Julie Adsett</td>
<td>PhD</td>
<td>Safety, efficacy and acceptability of aquatic exercise for patients with chronic heart failure</td>
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<td>Judith Sheridan</td>
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<td>Exploring adherence to medical recommendations in the lung transplant populations</td>
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<td>Anna-Liisa Sutt</td>
<td>PhD</td>
<td>Towards an improved understanding of the effect of a speaking valve on lung volumes and communication in the critically ill tracheostomised patient</td>
<td>The University of Queensland</td>
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<td>James Walsh</td>
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<td>Predictive Factors of Success in Pulmonary Rehabilitation</td>
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<td>Nicole Bellet</td>
<td>PhD</td>
<td>Outcomes in Cardiac Rehabilitation: Use of the 6MWT, TUGT and the effects of Frequency of Program Delivery</td>
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<td>Ellie Newman</td>
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<td>An Exploration of Adjustment in Adult Congenital Heart Disease</td>
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<td>Esben Strodi</td>
<td>Judith Sheridan, Dorothy Radford</td>
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<td>Jim Crowhurst</td>
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<td>Nazil Bashi</td>
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<td>Katie Gillette</td>
<td>PhD</td>
<td>Beta-adrenoceptor determinants of contractility and arrhythmias in the human heart: the role of phosphodiesterase enzymes and ryanodine channels.</td>
<td>Queensland University of Technology</td>
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<td>Charles McDonald</td>
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<td>Oxidative stress and selenium modulation in extra corporeal membrane oxygenation.</td>
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<td>Rob Phillips</td>
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<td>USCOM: Development of a non-invasive haemodynamic device.</td>
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<td>David Platts</td>
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<td>Novel clinical indications and the interaction with mechanical cardiac circulatory support devices</td>
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<td>Kiran Shekar</td>
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<td>Characterisation of pharmacokinetics of commonly used sedatives, analgesics, broad spectrum antibiotics and their clinically relevant metabolites during ECMO using simulated circuits, clinical studies and an ovine model.</td>
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<td>Jonothan Fanning</td>
<td>PhD</td>
<td>The cerebral autoregulatory mechanism during intra-aortic balloon pump counterpulsation (IABP) weaning.</td>
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<td>Jo Phillip Pauls</td>
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<td>Yunhui Chen</td>
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<td>Advanced manufacturing method for hard and brittle materials</td>
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<td>Physiological control of rotary biventricular assist devices</td>
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<td>Anthony Yuen</td>
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<td>A Pilot Study on Haemocompatibility and the Effect of Pulsatility on Platelets in Artificial Hearts</td>
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<td>Qurain Alshammari</td>
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<td>MRI Relaxometry in hypertension</td>
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<td>Greg Brown</td>
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<td>Provision of a new paediatric service: An investigation of staff and ED attendees perceptions and experience of the transition from an adult emergency department</td>
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<td>Near infrared spectroscopy for non-destructive evaluation of articular cartilage</td>
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<td>How important is length? - mechanical testing and measurement of a cemented, polished, tapered femoral implant</td>
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<td>Nghiem Van Trong Doan</td>
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<td>Obesity and osteoarthritis: A new insight in understanding the role of leptin-induced osteocytes in osteoarthritis pathogenesis.</td>
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<td>Fixation Methods in Impaction Bone Grafting of the Acetabulum in Revision Total Hip Arthroplasty: An in vitro study</td>
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<td>An exploratory study of the potential of resurfacing articular cartilage with synthetic phospholipids</td>
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<td>Interactions between Undifferentiated and Osteogenic Differentiated Mesenchymal Stromal Cells during Osteogenesis</td>
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<td>The effect of defective iron handling on immune function and Pseudomonas aeruginosa in the Cystic Fibrosis lung</td>
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<td>Anna Tai</td>
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<td>Molecular mechanism of carbapenem resistance in Pseudomonas aeruginosa from patients with cystic fibrosis</td>
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<td>Kay Ramsay</td>
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<td>Phenotypic and genotypic characterisation of <em>Pseudomonas aeruginosa</em> to determine the differences between adaptation, adherence and transmission amongst strains isolated from the environment and patients with cystic fibrosis</td>
<td>Queensland Children's Medical Research Institute</td>
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<td>Janet Shaw</td>
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<td>Kelly Chee</td>
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<td>Next generation sequencing analysis of thoracic malignancies - optimisation of bioinformatics for somatic variant identification and validation strategies towards personalised therapy</td>
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<td>Screening for lung cancer by low-dose computerised tomography in Australia</td>
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<td>Danielle Wurzel</td>
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<td>Protracted bacterial bronchitis (PBB) in children – natural history, innate immunity, infection and obstructive sleep disorders</td>
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<td>Damien Clark</td>
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<td>Vicky Stewart</td>
<td>MPhil</td>
<td>Validation of a Vestibular screening tool to facilitate referral to physiotherapy vestibular services in the acute hospital setting</td>
<td>Australian Catholic University</td>
<td>Nancy Low Choy</td>
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<td>Rebecca Ferrier</td>
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<td>Development, validation, reliability and predictive capacity of motor recovery of The Acquired Brain Injury Physiotherapy Assessment (ABIPA): A tool for physiotherapists during early management of people following traumatic brain injury</td>
<td>Australian Catholic University</td>
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<td>Janelle Gesch</td>
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<td>Spaced retrieval, errorless learning and vanishing cues in retraining of sit to stand in people with dementia</td>
<td>Griffith University</td>
<td>Suzanne Kuys</td>
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### Publications

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<td>“Change in the Executive Team at JCF.”</td>
<td>J Cystic Fibrosis 12(6): 545-546</td>
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<td>“Glycopyrronium bromide for chronic obstructive pulmonary disease.”</td>
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Journal Editorial Positions

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ASSOCIATE PROFESSOR CHRISTIAN HAMILTON-CRAIG
Circulation: Cardiovascular Imaging; JACC: Cardiovascular Imaging; Journal of the American College of Cardiology (JACC); European Heart Journal; European Heart Journal Cardiovascular Imaging; Journal of Cardiovascular Computed Tomography; Internal Medicine Journal; Heart Lung & Circulation; Editorial Board Member, World Journal of Cardiology

PROFESSOR JOHN FRASER
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Guest Editor, Journal of Foot and Ankle Research

PROFESSOR PAUL FULBROOK
is the editor for one peer-reviewed journal, and on the editorial board of another.
Keeping abreast of emergency medicine research in a busy clinical environment can be a tough gig. Which is why having a dedicated non-medical medical researcher on the team is a good idea.

Cue Dr Mike Watson, new research coordinator for The Prince Charles Hospital’s emergency medicine services.

Mike’s research career has been global, from working on Duchenne muscular dystrophy in the UK, to teaching at a medical school in the Caribbean for three years, and chronic kidney disease trials in Brisbane.

Mike decided he wanted something in a similar but more varied field and a year ago started in the Emergency Department.

‘I’m a scientist by trade. I’ve done the science in terms of pre-clinical research,’ he says. ‘But after the Caribbean, I had to decide between going back to academia or something different. I chose something different, hospitals.’

Mike has a science degree and postgraduate training in medical research and physiology, as well as some workplace training and assessment. His role in the ED is to promote the opportunities for research to both staff and patients.

‘You can’t make people do research,’ he says. ‘But create a culture of research and then people start thinking about research and wanting to get involved.’

The department has been successful in a short period of time, being invited to participate in an international multisite study.

Mike’s role is to find the balance between homegrown research projects and collaborating with larger centres around the world.

‘An important part of research is showing our peers we can work with them and produce results,’ he says. ‘I’m focused on building the research culture and infrastructure, and securing grant money.’

One of the challenges is working in an environment where there is a huge number of staff who might all be different each day and balancing the research interests against the reality of a busy department.

Mike tries to keep each study to a discrete patient group so people aren’t being asked to participate in multiple research projects during their short time in Emergency.

‘I’m also trying to get all the staff to the point where getting involved in research is easy and they aren’t scared to enrol someone to a study,’ he says. ‘But it’s an Emergency Department. We might see someone for only two hours and then they go home or move onto another area, so we don’t want to overcomplicate things by overlapping projects.’