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Research is driven not by the agenda of medical institutions but by the passion and dedication of practitioners who are determined nothing less than the best achievable outcome for our patients. The fuel that facilitates our drive in this quest is the funding and support of our funders and beneficiaries.

This report again highlights some of the remarkable efforts of the teams who go above and beyond to find ways to ensure that future patients can be treated better and recover faster from the effects of chronic disease.

It is highly likely that the public would not know that many of our senior medical, nursing, and allied health staff donate their expertise and time to drive research. They would not realise that many of our scientists have only annual appointments, subject to the success of grant applications. Or would they know that less than 10% of research projects will be supported financially.

I am so very proud to work alongside my colleagues who share the commitment to make things better, and not accept defeat.

It is this conviction, this desperate desire to improve the lives of our patients, that not only connects us but also the past year has forged international collaborations which I am confident will result in some amazing health outcomes in the future.

This year we have again seen huge progress in not only improving medical procedures, gained greater knowledge of major disease implications and their treatments and along the way we have launched a number of young research careers. And in doing so, putting The Prince Charles right at the top of both national and international research agendas in a number of fields.

To all of my colleagues, to our collaborators, our partners and funders and to the patients we serve, thank you for coming together for the common good.

Anthony Williams
Executive Director,
The Prince Charles Hospital

The delivery of high quality patient care is fundamentally connected to the ability to conduct excellent research.

At The Prince Charles Hospital (TPCH), we have numerous researchers and research teams who diligently strive and succeed in creating new knowledge that improves and transforms the way we can provide care to our patients.

The level of innovation on this campus is impressive. Researchers dedicate immeasurable amounts of time and effort towards finding solutions to important clinical issues that impact the health of our patients. The benefits of their research are experienced not only by our patients here at TPCH, but have the potential to help people across the world.

The Prince Charles Hospital is committed to fostering an environment that actively supports research as part of its daily business, and there are many people who make research on this campus possible. Firstly and foremost, the staff from across all disciplines and programs who dedicate their time to this area are the hands on drivers of research. TPCH’s Research Council and TPCH’s Research, Ethics and Governance team play essential roles in driving, supporting and facilitating quality research initiatives. Acknowledgement must also be extended to The Prince Charles Hospital Foundation for their ongoing support in funding and promoting research at this hospital.

More broadly, it must be acknowledged that the success of our research efforts is supported by ongoing collaborations and partnerships with our major health providers, universities and academic partners, as well as other prominent health centres throughout Australia and internationally.

I look forward to the future growth of research on this campus, and supporting new projects and activities that will enable improved health outcomes for our patients.

Bernard Curran
Board Chair,
The Prince Charles Hospital Foundation

It is a privilege to be the Chair of a charity which enables the community to support such critical, life changing work at The Prince Charles Hospital.

This year marks the 30th year of The Prince Charles Hospital Foundation. We are proud to be an active partner in the journey of discovery to help tackle heart disease, lung disease, dementia, arthritis and a range of allied health initiatives – all of which serve to detect the disease early, improve treatments and to enable better recovery, in an effort to return the quality of life which is taken away from so many.

The issue for medical research is the lack of financial security to the research teams. Surviving from grant application to grant application is inefficient and lifesaving projects run the risk of being shelved. We are now looking to not only seed projects which will translate to patient outcomes quickly we are also hoping to provide a safety net to sustain research that is showing positive signs.

I would like to acknowledge the support of The Prince Charles Hospital and Metro North Hospital and Health Services who provide us with the opportunity to reach out to the community and corporate Australia to support our inspiring researchers. Most importantly I would like to thank our donors and sponsors.

These are everyday people who respond to our requests, who make such generous donations, funding which fuels the efforts of people who have dedicated their lives to save others.

For every $44 donated we can support another hour of research research that I have seen impact on the lives of patients whom I have met. It’s real and it’s inspiring.

I urge you to join me and become involved for The Common Good.
Research Groups & Feature Stories

Allied Health & Medical Services

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Allied Health Research Collaborative

The Allied Health Research Collaborative aims to drive research excellence in the Allied Health disciplines, in order to create and translate research into routine practice and improved patient outcomes. We want to use research to improve health outcomes for patients through the evaluation of screening programs, best practice interventions, prevention or reduction of long-term disability and maximising life participation.

Broadly speaking, Allied Health Research seeks to “change the lives” of people living within our community. A number of our research streams focus on 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 malnutrition and vestibular dysfunction (i.e. people who are dizzy, or fall), to prevent hospitalisation and increase life participation. Other research streams are focused on early identification and management of foot disease (i.e. 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.

Clinical benefits from the research conducted by members of the Allied Health Research Collaborative include:

• Early identification / screening of health status in order to minimise long-term disability
• Providing patients with best practice treatment programs to facilitate recovery from surgery, including heart and lung transplants
• Ensuring treatment programs and models of care in rehabilitation maximise patient recovery
• Prevention of hospital admissions and re-admissions in a range of clinical groups, including the older patient through best practice treatment and support

Research conducted by the Allied Health Research Collaborative occurs at “the coal-face” of health care. The patients are our research participants and so they are part of the research evidence as it evolves. Our focus is on improving the quality of life for patients so that they can participate in everyday activities to their maximum potential; through either improved preventative programs or early identification of conditions, or maximised rehabilitation.

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.

Our research can ensure 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
International profile of the AHRC continues to grow with a number of researchers presenting at International Conferences including Mr Peter Lazzarini who presented 4 papers at the International Symposium on Diabetic Foot, and A/Prof Petrea Cornwell at the World Federation of Neurorehabilitation Special Interest Group meeting. The growing international profile of our researchers has resulted in an increasing number of international collaborations within Europe and Canada.

GRANTS
In 2015 the Allied Health Research Collaborative received $1.1 million of funding for a variety of research projects. This funding came from several key funding bodies including TPCH Foundation, Wound CRC, Diabetes Australia Research Program, AHRC Research Grant, CAHRIL (MNHHS), TVN (Canada) Cold Coast Hospital Private Practice Trust Fund, Allied Health Professionals Office of Queensland, Office of Health and Medical Research, Stroke Foundation Australia, Griffith University and the Queensland Physiotherapy Rehabilitation Network.

PUBLICATIONS AND PRESENTATIONS
As a group the Allied Health Research Collaborative presented at 73 conferences and seminars in 2015, including both national and international presentations.

Mr Peter Lazzarini was also a guest editor of the Journal of Foot and Ankle Research, specialising in Diabetic Foot conditions, and Associate Professor Petrea Cornwell was the Associate Editor of the Brain Impairment journal.

AWARDS
The group received five awards in 2015. These included the Best Clinical Novel Research Presentation from TPCH for Anna-Lisa Sutt, the Australia Day Award from the Metro North HHS Board for Dr Donna Pinsker.
and Dr. Jack Bell.
Mrs Maureen Peasey was also awarded the Best Poster in COPD Session by the Thoracic Society of Australia, and Dr James Walsh received the Richard Slaughter Best Clinical Research Project Award at the 2015 TPCH Health Discoveries Forum.

RESEARCH STUDENTS
The Allied Health Research Collaborative supervised 19 higher degree and student placements in 2015. This included 11 PhD students, 3 MRes students, 3 MPhil students and 2 Professional Doctorates.

RESEARCH COLLABORATIONS
The group had a number of local collaborating partners in 2015, including Royal Brisbane and Women’s Hospital; Community, Indigenous and Subacute Services; Redcliffe Hospital; Centre for Innovative Psychology Practice, Education and Research, Caboolture Hospital, NOFEAR – Network for Orthopaedic Fracture Education and Research, Critical Care Research Group and the Heart and Lung Institute. State-wide and national collaborations included Metro South, Gold Coast, Sunshine Coast, Townsville, Cairns and Hinterland, Central Queensland, Central West, West Moreton, Wide Bay, Mackay, Darling Downs, North West, South West Hospital and Health Services; Queensland University of Technology, James Cook University, Griffith University, Australian Catholic University, The University of Queensland; Australian Wound Management Association – Qld Branch; Queensland Institute of Medical Research; CSIRO, Institute of Health and Biomedical Innovation, as well as La Trobe University, Monash University, University of Adelaide, Curtin University, University of Melbourne, Wound Clinical Research Centre - University of Western Sydney.
We also had an increased number of international collaborations with the Canadian Malnutrition Task Force (CMTF), The Canadian Frailty Network, University of Cambridge, Canadian Critical Care Practice Group, University of Ottawa, University of British Columbia, Hong Kong Polytechnic University, University of Toronto, and the Netherlands International Working Group on the Diabetic Foot.
Anaesthesia Research Group

RESEARCH HEAD
Dr Usha Gurunathan

The Anaesthesia Research Group at The Prince Charles Hospital aims to improve patient outcomes following surgery, with its involvement in projects pertaining to safety and efficiency of perioperative care. Our key research areas in 2015 included delirium in hip fracture patients, cognitive impairment following surgery and anaesthesia and prevention of thromboembolic complications in obese individuals. We have also looked at blood component therapy, minimising transfusions during surgery, safety of anti-inflammatory drugs and the effectiveness of mindfulness practice in reducing autonomic dysfunction associated with chronic obstructive pulmonary disease. Anaesthesia is a specialty that links medical and surgical fields in the form of perioperative medicine. We plan to encourage multidisciplinary translational research projects in future with our expertise in physiology and pharmacology for improved patient outcomes.

Continual research and quality assurance activities are essential for the improvement of clinical practice. The benefits of our research activities are evident in superior pain relief following surgery, reduced transfusion
risk by optimising iron stores and careful blood component therapy based on point of care tests and efforts to reduce delirium in older patients. Future research will target measures to reduce cognitive decline following anaesthesia in high risk population and smoking cessation in surgical patients.

As patient centred outcomes have been the key areas of our interest, projects on safety and quality of recovery are encouraged. Our projects have been targeting the old and obese population and patients undergoing high risk surgery to try minimise poor outcomes and to provide best possible recovery following surgery. Persisting cognitive deficits and postoperative delirium are examples of our research topics.

HIGHLIGHTS
In 2015, an exciting project on the effect of midazolam on the cognitive recovery following colonoscopy sedation (MIMiCRY) was initiated. This randomised controlled project will follow up 400 patients both short term and long term, following their sedation to assess if there are any residual effects of the midazolam.

For the first time at TPCH, anaesthetic fellow Dr. Lisa Stanton received a novice investigator grant from TPCH Foundation for a feasibility study on using ROTEM test to predict thrombotic complications following joint surgeries. Oral and poster presentations were given in local forums and national meetings on our projects about the temperature changes in elderly patients undergoing hip fracture surgery, association of central obesity with adverse outcomes following non cardiac surgery and delirium incidence in hip fracture patients.

Through collaboration between different hospitals and departments at TPCH, our research group successfully participated in the international multicentre studies RELIEF and METS. In conjunction with cardiac, thoracic surgical and critical care departments at TPCH, discussion about projects on high flow oxygen and blood product use was initiated. A project about postoperative cognitive dysfunction and behavioural interventions to reduce the impact was initiated as a neuropsychology higher degree project.

A sub study of the international multicentre project (BALANCED) on the influence of obesity on the association between depth of anaesthesia and outcomes following major surgery was commenced by Dr. Gurunathan. While the nationwide survey on the research interests among Australian anaesthetists was completed, the research group also supported a quality assurance project by Kit Reynolds, a visiting medical student on the occurrence of delirium in hip fracture patients.

GRANTS
The Anaesthesia Research Group received one New Investigator Grant in 2015 for $10,000, awarded to Lisa Stanton for her research into ROTEM assays to detect postoperative thrombotic complications in hip and knee reconstruction patients.

PUBLICATIONS AND PRESENTATIONS
The group presentation at four conferences and symposiums, including the ASA/NZSA Conference, the ANZ Clinical Trials Network and the 24th Annual RBWH Health Care Symposium. This included poster and oral presentations from Dr Chris Stonell and Dr Usha Gurunathan.

RESEARCH COLLABORATIONS
Collaborations locally, nationally and internationally included CCRG, Thoracic medicine, Cardiology and Haematology departments at TPCH University of Queensland, Princess Alexandra Hospital, QIMR Berghofer, University of Melbourne, Alfred Hospital, University of Western Australia, Fiona Stanley Hospital and St Michael’s Hospital, Toronto.

Emergency Medicine Research Group (EMRG), Emergency & Children’s Services (ECS)

RESEARCH HEAD
Dr Frances Kinnear

The Emergency & Children’s Services (ECS) is a relatively new department that continues to expand exceedingly rapidly, both with respect to number and complexity of presentations. There has been over threefold growth in the last five years to a current level of 80 presentations per annum, making us one of the busiest departments in QLD, now with a separate but co-located paediatric emergency. Until recently development of clinical pathways for patient care & training programs to allow accreditation with relevant colleges for training purposes took precedence. With the formation of the Emergency Medicine Research Group, EMRG, attention to the third pillar of academic excellence, namely research, has however now commenced as per our strategic plan:

- Focus initially on individuals areas of expertise/interest and/or topical healthcare issues
- Develop research capacity with respect to both volume & quality
- Develop a culture where research is part of core business with multidisciplinary involvement at all levels of seniority
We also operate within a fast
complex system providing care
to 200+ patients a day. Through
research we hope to improve
the system itself within which
the medical care is delivered, via
studies such as the following:
electronic pathology result
cross-checking, derivation
quality indicators for the
elderly; registries such as the
Airway Registry and Emergency
Medicine Events Register;
evidence-based translation
studies; improved patient
flow using novel roles such as
NAVIGATOR nurse. Another
developing facet of our research
approach examines the “human”
side of this complex system
both from the perspective of the
patient but also from that of the
staff with respect to resilience
in this burn-out environment.

With increasing recognition
of the potential for medical
harm many of our projects are
also aimed at minimisation of
same. For example the studies
on investigation of pulmonary
embolism and use of lung
ultrasound ultimately aim to
decrease radiation exposure.
Other such studies in the ECS
include early use of high flow
oxygen in paediatric bronchiolitis;
intramuscular sedation of acute
behavioural disturbance and one
developing a more conservative
approach to pneumothorax
treatment.

Aside from harm minimisation,
in one sense all of our studies
are aimed at improving the
quality of care for our patients,
but approached from a variety
of different angles. This includes
increasing awareness of and
compliance with best practise,
including multidisciplinary
cross-polliation. Knowledge
translation is essential to the
research process if it is to change
practise. In addition, silos are an
issue with respect to different
specialties. ED is in a unique
position at the front line of care
delivery as we have interactions
with the full range of inpatient
team, hence we are ideally
positioned to influence this.

Flow-related research may not
seem to benefit the individual
but in fact does via improved
overall function, particularly
in the current climate of bed-
block/emergency department
crowding. This results not
only in enhanced compliance
with government targets with
associated improvement in
hospital reputation and function,
but also increased patient
satisfaction and decreased
complications related to
extended ED stays. Research
into quality and process similarly
reduces negative patient
outcomes. Another way our research
benefits patients is by
investigating novel ways of
doing things throughout the
medical care process from
early detection/preventing
deterioration through to
ways of reducing invasive/potentially
harmful diagnostic or treatment
strategies without reduction in
efficacy or accuracy. Although
the benefit to the patient may
be more intuitive, not all aspects
may be readily appreciated. For
example, anticipated reduced
intubation rates with a novel
method of oxygen delivery
under study in children with
bronchiolitis is clearly desirable.
Less obvious perhaps are the
benefits of avoiding transfer to a
specialist centre with respect to
stress on the whole family.

Similarly better understanding
of the demographics of a
particular presenting complaint
and/or current practice with
respect to investigation for a
particular condition will lead
to improved/novel diagnostic
strategies resulting in improved
risk/benefit profiles. Better
understanding of the patients’
journey from their perspective
can help tailor the way care is
delivered to result in a more
positive experience. Better
understanding of staff resilience
and burn-out factors will
enhance staff functioning and
satisfaction and should help
contribute to staff retention and
positive patient experiences.
These projects ultimately lead
to better patient outcomes and/
or benefits in terms of direct
cost reductions but also indirect
benefits related to longevity,
litigation and reputation.

HIGHLIGHTS
The efforts of the EMRG are just
beginning to result in tangible
outcomes with respect to both
output and reputation. With
projects in all phases of the
research process and many
developing partnerships
this should provide a solid
foundation for future growth
in line with our strategic plan.
Following the initial phases
we are now well positioned to capitalise on the
capacity already built and focus
more on our unique areas of
interest. It is also particularly
gratifying to witness research slowly becoming seen as part of core business within ECS.

Our highlights this particular year included publication of twelve papers in peer reviewed journals, plus various presentations by multidisciplinary team members regarding work done in our department. We also had our Director of EMRG appointed to the current chair of the Queensland Emergency Research Collaborative, and have two nurses currently completing their PhDs in the field of emergency medicine.

For our NHMRC-funded pneumothorax study we have completed more than 80% of the recruitment required. We also had several successful grant applications including the SEED innovation fund, two further QEMRF grants and three TPCH Foundation New Investigator Grants.

GRANTS
In 2015 the EMRG received $126,000 in research funding from a number of funding bodies, including TPCH Foundation, QEMRF and the SEED Innovation. This went to seven different research projects looking into emergency medicine health issues.

PRESENTATIONS AND PUBLICATIONS
The EMRG had 15 different presentations in 2015, including one international presentation. These were made at the Annual Scientific Meeting of the Australian College for Emergency Medicine, the Unlocking Nursing and Midwifery Leadership and Workforce, the 12th Annual Conference for Emergency Nurses, TPCH 7th annual Health Discoveries Research Forum, the Queensland Autumn Symposium, and the International Forum on Quality and Safety in Healthcare held in London.

RESEARCH STUDENTS
We supervised two PhD students in 2015 alongside the Australian Catholic University.

RESEARCH COLLABORATIONS
Within MNHHS we collaborated with several research and healthcare groups, including TPCH Foundation Nursing Research & Practice Development Unit, TPCH Allied Health Research Group, TPCH Cardiology, TPCH General Medicine Research Group, TPCH Critical Care Research Group, TPCH Medical Imaging Program and TPCH Thoracic Medicine Program plus the Royal Brisbane Emergency Medicine Research Group.

We also had several collaborating partners within Queensland, including Queensland Emergency Research Collaborative (QERC), Queensland Emergency Medicine Research Foundation (QEMRF), Pathology Queensland, Queensland Ambulance Services, Princess Alexandra Emergency Medicine Research Group, Ipswich Hospital Emergency Medicine (BLUE), the Australian Catholic University, the Queensland University of Technology and the University of Queensland.

Nationally our research collaborations extended to the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Joseph Epstein Centre for Emergency Medicine Research, VIC Central Clinical School, Monash University, VIC University of Western Australia, WA Centre for Clinical Research in Emergency Medicine, WA Institute for Medical Research, WA Australasian College of Emergency Medicine and PREDICT.

Internal Medicine Services

RESEARCH HEAD
Dr Eamonn Eeles.
Dr Chrys Pulle
Professor Tony Rahman

The Internal Medicine Services Research Committee is comprised of the Internal Medicine and Dementia Research Group (IMDRU), Network for Orthopaedic Fracture Education & Research (NO FEAR), Gastroenterology Research Program. The committee aims to foster a culture of research in practice, build collaboration and partnerships and drive better patient care outcomes.

The Internal Medicine Services Research Committee strives to target numerous health domains for a diverse patient cohort aligned to the programs. Our specific areas of health research include delirium, dementia, stroke (functional outcomes and efficiency of stroke rehabilitation), hip fractures (malnutrition and mortality), frailty in the ageing population, innovative models of care.

The committee provides leadership in the promotion and support of research and strives to foster a research culture to achieve innovative and better patient care. Governance over needs of individual research projects and the sometimes competing demands of clinical activity is provided by our peer group comprising of a
multidisciplinary team of experts. Discoveries, innovations and enhanced models of care have all in turn been inspired, nurtured and translated into practice.

Research undertaken by Internal Medicine research groups continue to assist in the search for a cure, diagnosis, assessment of risk and the opportunity for patients to trial possible new treatments in the area of cognitive decline, dementia, fractured neck of femur, stroke, coeliac disease, hepatic encephalopathy & hepatitis (HSV). For instance, our group developed a new model of care in delirium (Eeles et al), new screening tools that can be applied to everyday practice (Lin et al), explore quality of life in dementia (Gordon et al), optimise day to day care in hospital (Mudge et al), promote early discharge in delirium (Eeles et al) and meet standard of care. IMDRU is currently undertaking new clinical research trials in the area of dementia and has been a lead site for the only disease modifying drug shown to be effective in Alzheimer’s disease. The Gastroenterology research group is developing models of care for HSV and continuing NHMRC research into coeliac disease and Hookworm. Members of the research committee are leaders and organisers for state and national bodies involved in shaping research and care for patients (QBI advisory board/state-wide dementia network, Australasian Delirium Association/ ACGME/ ANZSSG).

HIGHLIGHTS

In 2015, the researchers within Internal Medical Services obtained a BUPA grant for predicting cholinesterase inhibitor response in patients with dementia, and Dr Emily Gordon received an IMS bursary Award for ‘unmet need in persons with dementia and their care partners’. We also secured a UQ Summer scholarship for the development of key performance indicators in the care of patients with delirium. In collaboration with CCRG and COGNUSE, we were awarded an early career research grant for the development of a delirium screening instrument for the critical care setting. We also collaborated with QBI and TPCH sleep group, to investigate the role of basal forebrain in the development of cognitive impairment for persons with sleep apnoea. Our NO FEAR group research into post hip fracture community dwelling patients resulted in the establishment of a physiotherapy review process to optimize functional performance outcomes.

The Gastroenterology research group we successful in receiving NHMRC grant funding as well as being the recipient of Queensland fellowship award for ongoing research into Coeliac Disease and Hookworm.

GRANTS

The Internal Medicine Services Research Committee (including IMDRU, NO FEAR & Gastroenterology research program) received just over $2 million in funding from various granting bodies in 2015. This included funds from The Prince Charles Hospital Foundation, NHMRC, QIMR, BUPA, TVN (Canada), the Allied Health Research Collaborative, IMS Research Committee Bursary, MNHHS and the Health Practitioner Research Scheme 2015.

AWARDS

Our team received two awards for research; this included the MNHHS Australia Day Award given to Dr Jack Bell (as part of NO FEAR) and Ms Vicki Steward, who received the Excellence in Integrated Care Award form MNHHS.

PRESENTATIONS & PUBLICATIONS

NO FEAR gave 3 presentations in 2015 at the Falls Fractures and Pressure Injuries Conference, and the ANZ Society of Geriatric Medicine Annual Conference.

The Internal Medicine Research committee in conjunction with IMDRU had over 24 presentations at national and international forums on a variety of topics. Notable forums included the 9th World Congress of the International Society of Physical and Rehabilitation Medicine, Medical Oncology Group of Australia (MOGA) Annual Scientific Meeting and the AFRM/NZRA Combined Rehabilitation Meeting.

The Gastroenterology research group gave 5 presentations at the Australian Gastroenterology Week (AGW) World Gastroenterology Organisation Meeting.

RESEARCH COLLABORATIONS

Our formal research collaboration partners in 2015 were the CCRG at TPCH, the Queensland Brain Institute (QBI), CSIRO, the University of Queensland (UQ), and the Comprehensive Rehab Platform for the Continuum of Care (Cognuse).
Dr James Walsh is a physiotherapist and clinical consultant for heart and lung transplant suitability at The Prince Charles Hospital. He spends his days helping to assess the physical health of patients and choose the best candidates for organ transplants. It’s a task that can’t be taken lightly – with each decision the potential life of a patient relying on a new set of lungs or a heart.

This research has helped Dr James Walsh and the team to better understand how frailty impacts on transplant outcomes; the award winning study showed that functional performance is the strongest marker of risk for post-transplant outcomes.
The Gastroenterology and Hepatology Research Program specialises in innovation in Gastroenterology, Hepatology and Endoscopy. We aim to pioneer international peer-reviewed translational clinical studies, and develop service and quality improvement strategies.

Our main health issues that we address include coeliac disease, and the role of hookworm in mitigating the devastating effects that gluten has on the lives of patients with coeliac disease. We also investigate Hepatic Encephalopathy, to better understand the social, economic and clinical impact of this disease. We hope to develop early diagnostic testing and treatments to help patients. Our other major focus is Hepatitis C, and examining alternative clinical models of effective service delivery, especially to those in non-Metropolitan areas.

Through our research we hope to provide clinical benefits to people suffering from these illnesses. Specifically, we endeavour to develop a long term cure for coeliac disease, using the favourable immunobiology of Hookworm. We also want to improve patient well-being for those with Hepatic Encephalopathy by finding diagnostic tests for early detection and treatment, and to eradicate HCV by reaching out to vulnerable patient groups and offering new successful treatments.

With our research, successful Hookworm treatment would allow those with coeliac disease to lead a normal life with reduced physical symptoms (such as pain, diarrhoea and vomiting). Additionally, successful detection and treatment of Hepatic Encephalopathy would allow a person who is currently in a variable state of coma to function in society again, to interact with family, work and other normal activities.

HIGHLIGHTS

We successfully secured NHMRC funding and TPCH grants for our research into the impact of Hookworm immunobiology on patients with coeliac disease.

GRANTS

We received three grants totalling $1.25 million in funding, awarded by NHMRC, The Prince Charles Hospital Foundation, QIMR and Metro North.
The Medical Imaging Research Program broadly aims to deliver improvements in diagnostic imaging through evidence-based assessment and development of imaging techniques. Our ultimate goal is to provide safer, faster, more accurate diagnoses of medical conditions.

The Richard Slaughter Centre of Excellence in Cardiovascular MRI operating within the Medical Imaging Department at TPCH provides Australia’s largest Cardiac MRI service. We aim to undertake clinical research to progress the development of MRI as a diagnostic tool for congenital and acquired heart disease. Through a Research Collaboration Agreement with Siemens Healthcare we explore the application of novel MRI technologies to determine new clinical applications help improve image quality, acquisition speed, and diagnostic accuracy to guide clinical management.

The Cardiac Imaging Research Group also aims to improve patient safety through the optimization of acquisition protocols and radiation reduction in patients undergoing cardiac CT.

Cardiovascular imaging is a fast-expanding area of expertise in diagnostic imaging, providing better diagnosis and informing clinical decision-making. The health needs are to provide more robust, accurate, less invasive, more rapid, and patient-friendly, non-invasive imaging techniques for diagnosing disorders of the cardiovascular system.

Clinical benefits that have come about from our research in the past twelve months include: improved utilization of stress-perfusion cardiac MRI (as per the CE-MARC trial, increased accuracy and reduced radiation compared to SPECT nuclear perfusion imaging); application of advanced imaging such as tissue characterization imaging methods to assist with diagnosis of subclinical cardiac diseases; and improved quantitation of residual valve dysfunction after percutaneous valve interventions.

A highlight has been the exercise cardiac MRI program which has made great inroads into the assessment of right ventricular contractile function and early detection of right ventricular maladaptation in patients with pulmonary arterial hypertension. This research will enable clinicians to risk stratify patients and assist them in treatment decision making. Re-assessment of patients after completion of treatment permits evaluation of the effectiveness of treatment and further adjustment of management. Ongoing research is assessing the benefits of exercise training on the quality of life for this patient group.

Many patients travel from remote locations or interstate to access the advanced services of the Richard Slaughter Centre of Excellence in Cardiovascular MRI, which is a luminary site in Australia for the clinical application of advanced cardiac MRI imaging for diagnosing cardiac conditions.

Our cardiac imaging research helps patients through improving the non-invasive diagnosis of coronary artery disease and heart failure (with CT and MRI imaging); reducing radiation exposure to patients (audit and QA activities over the last 4 years, resulting in relevant publications); improving our understanding of right ventricular function with exercise and how exercise training might improve the quality of life and function in patients with pulmonary hypertension.

Continual development of imaging technology is improving the quality and efficacy of MR imaging of the heart. New applications and improvements in image quality help avoid diagnostic dilemmas in complex patients in whom implementation of treatment might otherwise be delayed. Early identification of cardiac dysfunction means that appropriate medical treatment and other therapies could be initiated in patients before the development of overt symptoms and therefore improves their quality of life and prognosis.

HIGHLIGHTS
One of our major highlights was the Exercise MRI Project. 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 ultrafast images of the heart. This ground-breaking technology makes MR 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). During 2015 our research was focused on the effects of exercise on right ventricular contractile function in patients with pulmonary arterial hypertension. This work resulted in three proffered papers at international and national meetings – all of which won awards.

GRANTS
In 2015 we received one grant to the amount of $10,000 from the Australian Institute of Radiography, for our project ‘Factors impacting on patient...’
and operator radiation dose during percutaneous cardiac intervention in the modern era.

AWARDS
Our group received three awards in 2015, including the President’s Award for Best Proffered Paper from the Society for Magnetic Resonance Radiographers and Technologists; Best Abstract: Nurses and Technicians from the European Society of Cardiology; and Best Oral Abstract from the Pulmonary Hypertension Society of Australia and New Zealand.

PRESENTATIONS & PUBLICATIONS
The group made nine presentations nationally and internationally in 2015, including at the EuroPCR forum, the 10th Annual Meeting of the Society for Magnetic Resonance Radiographers and Technologists in Auckland and the Society for Cardiovascular MR Annual Scientific Meeting in Nice, France.

STUDENTS
The group supervised three higher degree students in 2015 from UQ, Griffith University and QUT, including one PhD, one Honours and one Masters student.

RESEARCH COLLABORATIONS
Our local collaborating partners were the Queensland Pulmonary Hypertension Unit, Critical Care Research Group, Cardiology Program and Clinical Cardiac Research Centre, the Department of Physiotherapy, and the Thoracic Program. Across Queensland we worked with Professor Norman Morris (Menzies Health Institute QLD & Griffith University) and the Centre for Advanced Imaging (University of Queensland).

We also had a number of national and international collaborations that included Siemens Healthcare Pty Ltd (Australia), Professor Andre LaGerche (Baker Institute IDI, Melbourne) and Siemens Healthcare GmbH (Germany).
The Nursing Research and Practice Development Centre (NRPDC) aims to undertake research and practice development that is aligned with The Prince Charles Hospital (TPCH) nursing strategy, that impacts on the quality of patient care and improved outcomes. This is achieved by supporting and co-writing research articles for local, national and international conferences and peer-reviewed journal publications. With our research we hope to extend nursing research capacity and capability, and enhance research culture within the hospital and the university. In turn, this will assist clinicians in research activities by providing mentorship and facilitation for research development, data collection, data analysis and dissemination.

The group also aims to provide ethics and governance guidance, as well as support regarding internal and external funding sources and collaborating on research grant applications. We strive to assist clinical staff in obtaining adequate funds to provide time away from their substantive roles to work on research.
projects. We also support nursing staff to undertake higher degrees by research (HDR) studies by providing them with supervision, a research community, office space and facilities to work on their research.

Our current research priority areas, which are established in the NRPDC Strategic Plan 2015 – 2017, and are aligned with nursing priorities that are identified within TPCH Nursing Strategic Plan, are:

- Falls injury prevention
- Pressure injury prevention
- Emergency care
- Cardiothoracic care

NRPDC’s research also aims to improve patient outcomes, such as preventing hospitalised patients developing pressure injuries, reducing the incidence and harm associated with patient falls, and evaluating and improving emergency department (ED) patient experiences by reducing time spent in the ED.

Focus on pressure injuries and falls prevention is a hospital-wide initiative and is linked to the National Safety and Quality Health Service and Quality Health Service accreditation standards. Reducing the impact of these two adverse events will improve patient and hospital outcomes, in terms of pain, extra treatment, increased hospital length of stay, and the financial and personal costs associated with these events.

**HIGHLIGHTS**

We were successful in obtaining several grants and had a range of publications on clinical and research topics including falls, pressure injury, the patient experience, and the emergency department. Additionally, we were very busy presenting research findings at several local and international conferences.

**GRANTS**

The NRPDC received $106,000 of research funding in 2015, for four different nursing practice projects. These came from two funding bodies: The Prince Charles Hospital Foundation and the Queensland Health Seed Grant.

**PRESENTATIONS AND PUBLICATIONS**

The group had 11 national and international presentations on their research in 2015; this included presenting at the World Federation of Societies of Intensive and Critical Care Medicine in South Korea and 9 local and national health care conferences and forums.

**STUDENTS**

The group supervised 7 higher degree and student placements in 2015, including five PhD students, one MPhil and one MRes student, all from the Australian Catholic University.

**RESEARCH COLLABORATIONS**

In 2015 we collaborated with a number of TPCH clinicians and researchers, including Dr Usha Gurunathan, Prof Kwon Fung, Dr Frances Kinneir, Dr Colin Myers, Dr Jeffrey Rowland and Associate Prof Ian Yang.

Our collaborations also extended state-wide and nationally; Dr Emma Bosley, Queensland Ambulance Service; Dr Justin Boyle, CSIRO; Marc Colbeck, Australian Catholic University; Dr Aaron Conway, Queensland University of Technology, Professor Gerard FitzGerald, Queensland University of Technology; Professor Nancy Low Choy, Australian Catholic University; Associate Professor Shawn Somerset, Australian Catholic University; Professor Linda Shields, James Cook University; Associate Professor Kerianne Watt, James Cook University; Professor Nerida White, Australian Catholic University National Associate Professor Liz McInnes, Nursing Research Institute; St Vincent’s Hospital Sydney; Professor David Thompson, Australian Catholic University Melbourne.

**Research Collaborations**

In 2015, the SDC focused on two main areas of sleep research. The first area was the efficacy of cognitive behavioural therapy for insomnia (CBTii) in patients with co-morbid OSA and insomnia.
TPCH sleep clinic patients and community volunteers were recruited for a multi-centre randomized controlled clinical effectiveness trial. This NHMRC funded study was a collaboration between the Adelaide Institute for Sleep Health, the Queensland University of Technology and TPCH.

Both OSA and insomnia represent huge health burdens in Australia with approximately 10% of middle aged men and 5% of middle aged women in the general population having OSA. Up to 40% of OSA patients also suffer from insomnia.

Untreated sleep disorders have a high public health cost due to long term health consequences, reduced quality of life, loss of productivity and the increased risks of motor vehicle and workplace accidents. OSA can be effectively treated but poor treatment compliance is a major clinical problem. Patients with coexisting OSA and Insomnia are known to be half as likely to even try Continuous Positive Airway Pressure (CPAP), the gold standard treatment for OSA and also have been shown to have reduced CPAP adherence.

The second research area of interest for the SDC in 2015 was an audit of the indications and outcomes of Non Invasive Ventilation (NIV) at TPCH over 12 months. All patients commenced on NIV for acute respiratory failure outside of the Intensive Care Unit (ICU) were included. Results including mortality were compared to international published data and were found to be comparable. TPCH results were also benchmarked against two other sites in Australia, The Princess Alexandra Hospital in Brisbane and Sir Charles Gardiner Hospital in Perth. Results were comparable confirming that our practice is in keeping with international and national standards. The results were presented at the annual Australasian Sleep Association Conference and the annual scientific meeting of the Thoracic Society of Australia and New Zealand.

COLLABORATIONS
The Sleep Disorders Centre collaborated with the Queensland University of Technology, the University of Queensland and the Adelaide Institute of Sleep Health.

"Chronic disease remains a massive challenge, and medical research is the key. But brilliant, world-class researchers are working on the smell of an oily rag. Sometimes they can't afford to do it at all. It's shameful, and we can do something about it by joining forces with the researchers themselves. I've seen what can do, I've seen their breakthroughs, and I've seen the passion that drives them. I haven't taken this decision lightly to be an ambassador for the Common Good. I consider this to be an urgent imperative."

- Kerry O'Brien
Ambassador, The Common Good, for The Prince Charles Hospital Foundation

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Research Groups & Feature Stories

Thoracic

- Feature: Associate Professor Dan Chambers & Patient
- Oncology Services Research
- Adult Cystic Fibrosis Research Group
- Core Thoracic Research Group
- Queensland Lung Transplant Service
- University of Queensland Thoracic Research Centre (UQTRC)
A team at The Prince Charles Hospital is leading the way in developing a whole new class of therapeutic products for patients with a range of previously incurable lung diseases, infections and cancers. These new products – the ‘advanced biologics’ – will transform medicine in the coming decade.

The team, led by A/Prof Dan Chambers from the Queensland Lung Transplant Service and the Department of Thoracic Medicine, recently received $1.9 million in NHMRC funding to conduct the world’s largest ever study of an advanced biologic product for lung disease. “The first medicinal products were small molecules, such as penicillin, statins and blood pressure medication. The next

It’s extremely potent, personalised medicine that could see the end of melanoma, leukaemia – and in the case of TPCH patient Matt Meyers – lymphoma.
generation of products, which became available 15-20 years ago, were the biologics; these are antibody molecules which are now used widely to treat cancers and autoimmune diseases. Now we are on the verge of a new revolution in medicine with the introduction into clinical practice of the ‘advanced biologics,’ A/Prof Chambers said.

Using whole cells and even parts of cells (as opposed to molecules) which can be isolated from either the patient or a third party donor, the advanced biologic products are culture-expanded and engineered outside the body and so are more potent and can be designed to be highly specific for the disease being targeted. Much of the early focus of this research has been on the production and clinical testing of T-cell products, such as chimeric antigen receptor (or CAR) T cells, to treat previously incurable cancers such as leukaemia, lymphoma, mesothelioma and melanoma; and viral infections resistant to all known drug treatments.

Together with QIMR-Berghofer and collaborators in the United States, A/Prof Chambers’ team has been conducting a first-in-human study of a T cell product to treat cytomegalovirus infection. These cells are taken from the patient, and grown to large numbers in a lab by exposing the T-cells to part of the virus forcing them to respond and multiply as the normal immune system does. When grown in sufficient numbers the cells are then re-injected into the patient, and work to destroy virus–infected and even cancerous cells.

In the case of CAR T-cell research, trials have successfully cured 95% of cancer patients. It’s extremely potent, personalised medicine that could see the end of melanoma, leukaemia – and in the case of TPCH patient Matt Meyers – lymphoma.

A/Prof Chambers says it is working with patients like Matt that highlights how close the clinical application of this research is. Matt Meyers was born with Cystic Fibrosis, and a few years ago had a successful double lung transplant. While the post-transplant recovery had its hiccups, it was the diagnosis that came four months later that was devastating: Matt had lymphoma from a glandular fever virus he’d contracted.

Already on a strong dose of immunosuppressants, and not responding to conventional chemotherapy, treating the lymphoma proved to be a challenge for A/Prof Chambers and his team. However, A/Prof Chambers was able to source third party T-cells targeting the virus causing the lymphoma from his collaborators at Memorial Sloane Kettering Hospital in New York. A year later and Matt Meyers is a healthy, thriving young adult.

Now, in partnership with QIMR-Berghofer, The University of Queensland, The Prince Charles Hospital Foundation and the Queensland Government, A/Prof Chambers is establishing the Queensland Centre for Advanced Biologics, which will ensure that Queensland and Australia remain at the forefront of these incredible medical advances.
Oncology Services
Research

RESEARCH HEAD
Associate Professor
Brett Hughes

The Oncology Services Research group aims to provide access for all patients with lung cancer and mesothelioma to quality clinical trials, and state of the art therapeutic lung cancer trials. We hope to increase integration and collaboration with other research programs at The Prince Charles Hospital.

Historically people with lung cancer and mesothelioma have had limited treatment options, and we hope to provide other lines of effective therapy for these people. Our research can give these patients access to new therapeutic modalities, including next generation Tyrosine Kinase Inhibitors, Immunotherapy and novel agents.

The Oncology Services Research group can help improve cancer outcomes through research, with newer therapies that are potentially less invasive and very effective in controlling the disease. Investigative treatments are generally well tolerated and effectively improve the participants’ quality of life.

HIGHLIGHTS
We had recruitment for a number of international studies, participating in practice-changing research such as Accalia (Alectinib). The group also produced 9 publications, had 7 presentations at national and international meetings and increased clinical research coordinator staffing.

GRANTS
We received $30,000 in funding from the Royal Brisbane & Women’s Hospital (RBWH) Foundation for our research into ‘Prophylactic nutrition support in high risk patients prior to treatment for head and neck cancer’.

PRESENTATIONS AND PUBLICATIONS
Our group had five international and two national presentations in 2015. This included presenting at ELCC in Switzerland, ASCO in the USA, ESMO in Austria, SNO in the USA and MOGA and COSA in Hobart, Australia.

RESEARCH COLLABORATIONS
Our collaborating partners in 2015 were Professor Kwan Fong (TPCH), Mark Smyth (QIMR), the Cancer Council Queensland, the Australasian Lung Cancer Trials Group (ALTG) and the Canadian Cancer Trials Group.
Adult Cystic Fibrosis Centre

RESEARCH HEAD
Professor Scott Bell
Associate Professor David Reid

The Adult Cystic Fibrosis Centre aims to improve the fundamental understanding of the complications of Cystic Fibrosis (CF) as a multi-system disease. In order to enhance all aspects of care delivered to our patients, our group aim to test and then translate into clinical care novel therapies to correct the basic defect in CF, study the pathophysiology of CF focusing on infection and inflammation of CF airways using laboratory (mouse model) techniques to complement our clinical studies, and to attract and retain (and to attract and retain) members of the CF multidisciplinary team in research and to attract and retain (and to attract and retain) members of the CF multidisciplinary team in research.

methods and principles ensuring future sustainability of the CF research program at TPCH.

Through our research we hope to gain an improved understanding of infection and inflammation of the CF lung, the major cause of mortality and morbidity of cystic fibrosis. The group also want to increase the population of adults with CF who are growing older and a number of emerging complications are now common place. We need to understand how best to diagnose and manage each of these complications and the aetiology of manifestations such as an increased risk of colonic cancer, kidney disease and drug allergy.

Cross-infection is now well established and the group’s research aims to improve understanding of how this occurs and what the implications of such infection are to their patients, as well as understanding the optimal model of care to deliver to our patients including the growing numbers of adults with CF and within the geography of Australia.

The Adult Cystic Fibrosis Centre's research is highly beneficial to the clinical care of adult CF patients. The most common CF gene (F508del) affects 90% of our patients, including 50% who have two ‘copies’ of this gene. Novel therapies for correcting the abnormal CF gene are crucial to enhancing the quality of life of people with CF. The group has been an international leader in participating in early stage and pivotal studies to evaluate the role of new treatments. In 2015, the largest CF trial ever performed was completed and showed promising results (more than a dozen of our patients contributed to the global study).

With increasing survival, more than 50% of the CF population are now adults in Australia. The pursuit of careers is now important and an increasing number of adults with CF are training in health care professions. We have identified for the first time an increased risk of MRSA infection in healthcare workers with CF. This increased risk is likely to be related to exposure in professional life and will contribute to new national guidelines to advise people with CF.

The opening of the purpose commissioned CF ward has allowed examination of the benefits for quality and health outcomes for patients to hospital with CF. Early results confirm improved patient satisfaction.

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Our research programme aims to better understand the causes of lung damage (inflammation and infection) using studies in the laboratory, in parallel with understanding the natural history of the disease using the national CF data registry and a vast local metadata set of microbiological and inflammation cell BioBank. We aim to ask clinically important questions posed by members of our multidisciplinary team which address both the factors which impact on daily quality of life and also how we as a team can improve the care we deliver. We aim to communicate the results of our research in the international literature to allow broader translation. We participate in clinical trials especially to study the safety and benefit of new drugs to correct the basic CF defect and then to support those which are proven effective into the routine care of our patients, as has occurred with ivacaftor in the past two years.

HIGHLIGHTS
In 2015, the Adult Cystic Fibrosis Centre was able to demonstrate social contact of adults with CF attending CF centres for clinical care is an important risk factor for the acquisition of shared strain P. aeruginosa infection (Lancet Respiratory Medicine, ranked 2nd in Respiratory Medicine). Another highlight was the demonstration that dilatation of the pulmonary artery on CT scan of the chest is predictive of pulmonary exacerbations in people with CF, utilising two cohorts, one a discovery cohort from a phase III RCT and a validation cohort from Brisbane (Lancet Respiratory Medicine, ranked 2nd in Respiratory Medicine).

We published the initial report from the international consortium examining >1000 Pseudomonas aeruginosa genomes by reporting the clinical utilization of genomics data of P. aeruginosa, and also a curriculum for training of physicians in adults CF care by a taskforce established by the European Respiratory and CF Societies (European Respiratory Journal, ranked 4th in Respiratory Medicine).

GRANTS
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Centre was awarded over $2 million in grants, including funding from the TPCH Foundation, QIMR, NHMRC and the CF Foundation in the USA.

PUBLICATIONS AND PRESENTATIONS
The group presented at over 13 conferences nationally and internationally, and had a total of 23 publications in high-tier publications. Professor Scott Bell was also the Editor-in-Chief for the Journal of Cystic Fibrosis.

AWARDS
Dr Laura Sherrard received the Shelly Shephard Memorial Scholarship, the best oral presentation prize at the TPCH Health Discoveries forum, and the best oral presentation prize in the clinical stream at the 11th Australasian CF Conference. Rebecca Stockwell received an Advance Qld Top-up Scholarship. Dr Anna Tai received the TSANZ/Vertex Travel Scholarship from the Thoracic Society of Australia, and Michelle Wood was the winner of the best oral section award at the 11th Australasian CF Conference.

RESEARCH STUDENTS
The Adult Cystic Fibrosis Centre supervised four PhD students, two MPhil students and one BSc (hons, first class) student from the University of Queensland in 2015.

RESEARCH COLLABORATIONS
Within MNHHS the Adult Cystic Fibros Centre collaborations included Dr Chris Coutler, Dr Andrew Burke (Infection Prevention and Control, TPCH) and Prof David Paterson (RBWH). Queensland collaborations include Prof Lidia Mowraska (QUT), Dr Luke Knibbs (SPH, UQ), Prof Claire Wainwright and Prof Peter Sly (UQ), A/Prof John Miles (QIMR Berghofer Institute of Medical Research) A/Prof Scott Beatson (UQ), and Dr Colleen Lau (ANU).

We also had significant national collaborations, which included Prof Peter Wark (HMRI, Newcastle), CI A/Prof Rachel Thomson and Prof Claire Wainwright (UQ), A/ Prof Geraint Rogers (SAHMRI), Prof Archie Clements (ANU), Prof Andres Floto (Cambridge University, UK) and all 21 CF centres in Australia as well as all related microbiology and mycobacteriology labs.

Internationally we collaborated with Prof Roger Levesque (Montréal, Canada) and Prof Iain Lamont (Dunedin, New Zealand).
The aim of the Queensland Lung Transplant Service is to improve outcomes of patients with incurable lung disease through innovation and basic, clinical and translational research. We hope to bring clinicians and scientists together so that laboratory findings can be rapidly translated to improved outcomes for patients.

We address several health needs including post-lung transplant outcomes and advanced lung disease such as idiopathic pulmonary fibrosis and pulmonary hypertension.

As our research program is embedded in the clinical program, our research has direct clinical benefits for our patients. The clinical trial program tests new therapies to stop the progression of advanced lung disease, with many patients having positive results.

For idiopathic pulmonary fibrosis and post-lung transplant rejection, our clinical research program is investigating new diagnostic tests, mechanisms and treatments in a diverse range of thoracic diseases with a particular focus on bronchiectasis and COPD.

There are a range of health needs that we address, including a diverse range of respiratory diseases (such as therapies for COPD and Bronchiectasis), Allied Health interventions for COPD and pneumonia (includes nursing, occupational therapy, speech pathology, physiotherapy, psychology departments), and we are also investigating an intervention for Pneumothoraces, and a review of rare lung diseases including alveolar proteinosis and pulmonary AVM's.

Clinically the work of the Core Thoracic Research Group helps to advance knowledge of interventions and mechanisms in a range of lung disease, and they are involved in studies which explore the benefits of various new therapies in a diverse range of lung diseases. We examine the characteristics and outcomes of various lung diseases.

HIGHLIGHTS
In 2015 the group were involved in TSANZ presentations, with many staff members contributing as speakers, chairs and poster mentors.

PUBLICATIONS AND PRESENTATIONS
The Core Thoracic Research Group had four presentations at the 2015 TSANZ based in Perth, on topics of COPD and CF Infections.

RESEARCH COLLABORATIONS
Collaborations with the Core Thoracic Research Group included RBWH Internal Medicine (CHERISH Professor Alison Mudge, Respiratory Nurse Enable Access for COPD to HITH (REACH), and the Multicentre Randomised Control Trial of Intercostal Catheter Intervention in Patients with Large Spontaneous Pneumothoraces.

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trial centre is one of the largest in the world, and we have developed tests which allow for more accurate diagnosis of infection and rejection in lung transplant patients. These laboratory results are directly translated into the clinical management of the patient to save lives.

HIGHLIGHTS
We continue to be recognised as a world leader in our field, and have emerged as the world’s largest centre of stem cell therapies for lung disease. We have completed world first trials of stem cell therapy for chronic lung allograft dysfunction, idiopathic pulmonary fibrosis and pulmonary hypertension.

The Queensland Lung Transplant Service is also the lead-site for a world-first trial of autologous T cell therapy for refractory viral infection, and we established an Australian-first model of ex-vivo lung perfusion.

In 2015, we were one of the top contributors at The International Society of Heart and Lung Transplantation Annual Scientific Meeting. We published 16 original studies during the year and our PhD student Tim Sladden won the School of Medicine 3 minute thesis (3MT) competition for the School of Medicine and was Runner-Up for the Faculty of Medicine and Biomedical Sciences. We also received two NHMRC grants with funding in excess of $2.5 million dollars over 3-5 years.

GRANTS
Our group received $391,000 of funding for three different projects in the 2015 period. This including funding from the Australian Respiratory Council, the University of Queensland Academic Title Holder Research Funder and the Queensland Health (Office of Health and Medical Research).

AWARDS
Our researchers Dr Stephanie Yerkovich and Dr Tim Sladden both received awards in 2015, for the Best Presentation: Thoracic Society of Australia and New Zealand (OLIV Special Interest Group) and 3 Minute Thesis Competition (UQ) respectively.

PRESENTATIONS AND PUBLICATIONS
There were eight national and international presentations, including the Annual Scientific Meetings for the Thoracic Society of Australia and New Zealand, and for the International Society for Heart and Lung Transplantation in Nice, France.

Associate Professor Daniel Chambers was also an Editorial Board Member for the European Respiratory Journal.

STUDENTS
We supervised five students in 2015, including two PhD, one MBBS Honours and two Mphil students.

RESEARCH COLLABORATIONS
In 2015 we had several national collaborating partners, including Norman Morris (Griffith University), Peter Soyer (UQ), Adele Green (QIMR), Rajiv Kanna (QIMR), Nikky Isbel (Dept of Nephrology PAH), Marian Sturm (Cell & Tissue Therapies WA, Royal Perth Hospital), Euan Wallace and Rebecca Lim (Monash).

We also collaborated with Tom Petersen (United Therapeutics, North Carolina), Shaf Keshavjee, Tereza Martinu and Marcello Cypel (Toronto) and Daniel Weiss (University of Vermont).
Innovative health technologies to address the increasing costs of health care, and provide a strong education and training program. We undertake to report on and present our findings in peer-reviewed journals and conferences.

Another focus of the UQTRC is to contribute in high quality training of the next generation of researchers and scientists, including students from high school, undergraduate, postgraduate and junior faculty levels (such as Honours, MPhil and PhD students), in laboratory, clinical and translational research, including guidelines and evidence based medicine.

The priority areas of the UQTRC research include basic science coupled to clinical and translational research for the prevention, early detection, screening, diagnosis, and innovations in treatment for:

- Lung and thoracic cancer including: genomics, epigenomics and biomarkers, personalised treatment, diagnostic health techniques (including Digital Tomosynthesis (DT); Computed Tomography (CT) screening; Volatile Organic Compounds (VOCs) and Bronchoscopy, telerehealth) and liquid biopsies. 
- Mesothelioma, including genomics and biomarkers, and personalised treatment
- Chronic lung and airways disease including: Asthma, COPD, respiratory diseases linked to environment exposure studying genomics and biomarkers of susceptibility and personalised treatments.

Research findings and outcomes are used as evidence to support the development of evidence based clinical pathways, guidelines, diagnostic methods and therapies for use within the daily clinical practice at the Prince Charles Hospital (TPCH), and to support recommendations made across the thoracic medicine field.

Research at the UQTRC focuses on lung cancer, mesothelioma and airborne diseases such as asthma, chronic obstructive pulmonary disease (COPD) and response to air pollution. Our research program focuses on investigating improved methods for:

- Disease prevention (such as lifestyle management & smoking cessation).
- Developing technological innovations in early detection, screening diagnostic techniques using Digital Tomosynthesis, Computed Tomography screening; identifying biomarkers of lung disease from Volatile Organic Compounds, liquid biopsies & innovative Bronchoscopy techniques.
- Involving genomics, epigenomics & biomarkers, to support the discovery of personalised treatments to enable the right test and the right treatment for the right patient at the right time.
- Finding new tests and treatment strategies for lung disease, so we can provide more effective and cost effective health care.

The UQTRC is also developing improved strategies in population-based respiratory health, improving service delivery, and encouraging consumer participation in respiratory medicine and research.

Our research aims to find better ways to diagnose lung cancer & other respiratory diseases, as early as possible. Early diagnosis can often result in a broader range of treatment options, improved prognosis, and overall health outcomes for individual patients. The mortality rate for lung cancer for example, is very high because the time a tumour can be detected on the lung using current technology, the available treatment options are very few. It is vital therefore that the disease is detected very early, a goal we are trying to achieve by researching highly advanced and sensitive screening methods.

Our biomarker research program aims to identify biomarkers in the human genome that may lead to personalised targeted treatments that are better able to combat diseases. Trials of new diagnostic techniques aim to find less invasive, more comfortable diagnostic tests for patients, such as investigating if we can replace expensive procedures or surgery with a simple blood test.

Our research is embedded into clinical programs, ensuring our research questions are highly relevant. We can also rapidly translate what we find in the laboratory into improved outcomes for patients. Bringing consumers, clinicians and scientists together benefits everyone, invigorates our clinical program, and ensures that
Queenslanders will always have access to world-class care.

HIGHLIGHTS
We have received two large grants this year; a five year NHMRC project grant of $3,032,884 to conduct an international lung cancer screening trial using Low Dose Computed Tomography (LDCT), now called the International Lung Screen Trial (ILST); and an equipment and infrastructure grant for $1 million through the Australian Cancer Research Foundation (ACRF) to establish the ACRF Centre for Lung Cancer Early Detection at TPCH. This Centre also received co-funding from the UQ of $250,000.

We have been fortunate enough to have contributed several clinical and research peer reviewed publications in respiratory medicine and sciences, specifically relating to lung cancer, mesothelioma, COPD, asthma, air pollution and other conditions.

The group was in collaboration with national and international partners for the ILST (including a consortium from Canada, USA, Sydney, Melbourne and Perth), a similar range of partners for the establishment of the ACRF Centre and an ongoing participation in The Cancer Genome Atlas Study with the NIH. The data included massively parallel sequencing molecular profiling of lung cancers. Collaborations are ongoing for COPD, asthma and air pollution research.

Other highlights were the additional new research grants from competitive schemes including one TPCH Foundation project grant and four equipment grants. We also supervised PhD, MPhil and Honours (MBBS & BSc) students, and our staff and students continue to deliver presentations at national and international meetings.

The Lung Tissue Biobank at TPCH continues to collect fresh frozen lung cancer resections (over 1500), blood samples (over 800) and bronchoscopy samples (over 240) from patients for us to better understand the clinical role of state-of-the-art navigation bronchoscopy systems for the evaluation of lung lesions.

GRANTS
In 2015 we received $170,000 in research funding from a number of granting agencies including TPCH Foundation, NHMRC, ACRF, UQ and the Australian Respiratory Council (Harry Windsor Grant).

AWARDS
Professor Ian Yang received the Ann Woolcock Research award from the Asian Pacific Society of Respirology.

Fong was privileged to speak at the Thoracic Society of Australia and New Zealand Annual Scientific Meeting, the Indonesian National Cancer Center, Lung Health Patient Education Day, World Conference on Lung Cancer, Asian Pacific Society of Respirology Congress, and the Brisbane Cancer Conference.

Yang spoke at the Thoracic Society of Australia and New Zealand Annual Scientific Meeting, the Lung Foundation Australia Forum, the Improvement Foundation Webinar on COPD, the Novartis Respiratory Symposium, the Asian Pacific Society of Respirology session at the American Thoracic Society International Conference, the Asian Pacific Region Conference (for the International Union Against Tuberculosis and Lung Disease) and the Asian Pacific Society of Respirology Congress.

STUDENTS
The UQTRC supervised fifteen higher degree students in 2015, from the University of Queensland and the Australian Catholic University. This included 8 PhD students, three MPhil students and four Honours students.

RESEARCH COLLABORATIONS
We had a number of collaborating partners locally and state-wide, including Asthma Research Centre (Royal Children’s Hospital), RBWH, Queensland Institute of Medical Research Berghofer, International Air Quality Laboratory, QUT, Lung & Allergy Research Centre UQ & Princess Alexandra Hospital, Australian Centre for Ecogenomics, UQ, Mater Medical Research Institute, UQ Diamantina Institute. Nationally our formal collaborating partners included Fiona Stanley Hospital and Sir Charles Gairdner Hospital, Perth, John Hunter Hospital, Children’s Cancer Institute Australia; Lung Foundation Australia; Royal Adelaide Hospital; University of Melbourne; Royal Melbourne Hospital, and St Vincent’s Hospital, Sydney; and CSIRO, Canberra.

We also had several international collaborations that included Brock Uni, Canada; University of British Columbia; British Columbia Cancer Agency (BCCA); University of Hong Kong; Asthma Genetics Laboratory, University of Southampton, UK; University of Texas Southwestern Medical Centre; Howard Hughes Medical Institute; The Cancer Genome Atlas Project (NIH NCI USA).
Research Groups & Feature Stories

Cardiology

- Adult Congenital Heart Unit
- Cardiology Clinical Research Centre
- Advanced Heart Failure and Cardiac Transplantation Unit
- InVitro Human Heart Research Group
- Going Global: Mending Broken Hearts, From Africa to Australia to the World, Professor Darren Walters
- Critical Care Research Group
- Innovative Cardiovascular Engineering and Technology Laboratory (ICETLAB)
- Cardiothoracic Surgery Research Unit (CTSRU)
- Feature: Award Winner Dr Shaun Gregory
Adult Congenital Heart Unit

RESEARCH HEAD
Associate Professor Dorothy Radford

In the Adult Congenital Heart Unit we aim to gain new knowledge to provide the best possible care for our unique group of patients, who are survivors of multiple heart operations in childhood. These patients often have problems which will impact on their lives in the long term. These include heart rhythm disturbances, the need for further surgery, a failing heart muscle and difficulty carrying a pregnancy. Our research looks at appropriate medical therapy and interventions to achieve the best heart function possible. The patients' psychological health and coping mechanisms are also given high priority.

Our research with the Australian and New Zealand cooperative Fontan Registry, has shown better long term survival in complex congenital heart patients than originally expected, and has highlighted the best type of surgery to achieve this survival. We have also analysed the relevant medical therapies to prevent and treat complications.

Another project, the READY psychological program (Resilience for Adults Everyday), has given patients practical techniques for coping with problems in their lives. Our young adults were enthusiastic about learning and using these systems. This research has helped to improve the quality of life of young Adult Congenital Heart patients at TPCH.

HIGHLIGHTS
Aspects of the Fontan cooperative study have been presented and published internationally. Also the Fontan group has been able to host an annual patient day to inform, involve and help those with such complex heart problems.

GRANTS
The Adult Congenital Heart Unit in conjunction with the Fontan Registry was awarded over $1.2 million over 5 years to support research into the most complex congenital heart conditions.

PUBLICATIONS AND PRESENTATIONS
Associate Professor Dorothy Radford presented at the Port Douglas Heart meeting, speaking on the topic of Genetics of Adult Congenital Heart Disease. She also lectured at the Convention Centre on Rheumatic Heart Disease in Pregnancy.

A variety of publications from our unit and with our cooperatives are listed in this report.

RESEARCH STUDENTS
The Adult Congenital Heart Unit supervised one PhD student from the University of Queensland.

RESEARCH COLLABORATIONS
The Adult Congenital Heart Unit works locally within MNHHS, and the team includes Theresa Malpas, Dr Vishva Wijsekera, Dr Mugur Nicolae, Dr Chris Whight and Dr Dorothy Radford.

Further collaborations locally and nationally were with the University of Queensland, the Paediatric and Adult Congenital Heart Services in Melbourne, Sydney, Perth and Adelaide as well as the Congenital Heart Service in Auckland (NZ).
Cardiology Clinical Research Centre

RESEARCH HEAD
Professor Darren Walters

Cardiology Clinical Research Centre aims to coordinate and conduct clinical trials and investigator initiated research whilst upholding the principles of the Declaration of Helsinki in accordance with the guidelines for International Conference of Harmonisation and Good Clinical Practice. The Centre also complies with the International Organisation for Standardisation (ISO) 14155 for Medical Device Trials.

The Centre is engaged in various phases of multi-centred, international and national clinical trials including investigator initiated studies that investigate the treatment, management and follow up care of patients with a range of chronic and acute cardiac conditions and diseases. The clinical trials undertaken at this centre include retrospective/prospective observational, randomised, controlled, un-blinded and double blinded studies. The centre is also involved in comparative medication/device studies and Registries. The Centre also provides support to investigators in obtaining necessary regulatory approval as a Single Site or a Lead Site in Multicentre Research.

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All patients within the Cardiology Program are considered potential participants for current research being undertaken by the Research Centre. Current studies include treatment and prevention of aortic stenosis, mitral regurgitation, uncontrolled hypertension, acute coronary syndrome, heart failure and conduction disturbances. The Centre also undertakes studies on Diagnostic Medical and Cardiac Catheter Imaging modalities such as Intravascular Ultrasound, Optical Coherence Tomography and Magnetic Resonance Imaging (MRI) and software applications. In addition, various Registries on Transcatheter Aortic Valve Implantation (TAVI) and Acute Coronary Syndrome (ACS) are also being maintained.

Majority of the research that is undertaken in the centre are clinical trials on new structural cases devices and procedures such as the Transcatheter Aortic Valve Implantation (TAVI). Patients who are at high risk for open heart surgery to treat severe aortic stenosis can have this minimally invasive procedure through the groin instead of having their sternum cut open. This means a lower risk procedure and a decreased hospital stay for the patients; 2 to 3 days as opposed to 5 to 7 days. We have a multidisciplinary heart team approach towards patient selection, procedural planning, and device implantation that has been refined and optimized such that clinical outcomes are generally predictable and reproducible.

Another device being trialled is the Inter-atrial Shunt Device (IASD). Around 30 to 50 percent of patients diagnosed with diastolic heart failure pass away within three years of diagnosis. The Inter-atrial Shunt Device (IASD) potentially will provide the first effective treatment option for patients with this type of heart failure which accounts for half of the heart failure cases seen in hospital. The patient will have a 1-2 night hospital stay and quick recovery, instead of the prolonged hospital stay currently experienced by patients in heart failure. The procedure will have a positive impact on readmission rates for heart failure patients.

HIGHLIGHTS
The research conducted at TPCH has contributed to the worldwide bank of knowledge and rapid evolution of technology Transcatheter Aortic Valve Implantation (TAVI), Percutaneous Mitral Valve Replacement and Interatrial Septal Device (IASD) Trials.

TAVI is fast becoming the new standard of care to treat patients with severe aortic stenosis. Early generation TAVI valves were not able to be repositioned or retrieved. Clinical outcomes for the various valves have recently been published with promising results in terms of paravalvular regurgitation and accurate valve positioning.

Open-heart surgery remains the gold standard for the treatment of severe mitral valve disease. The modern challenge facing surgeon is to provide a safe intervention for the rising population of high-risk patients presenting for either primary or redo surgery, this has led to the development of novel percutaneous approaches to the mitral valve. Transapical Transcatheter mitral valve replacement may provide an alternative strategy to deal with the increasing rise of high-risk patients presenting for primary and reoperative mitral valve surgery. Our initial experience with this approach has demonstrated its early feasibility in select patients.

Until now, there has been no substantial treatment for patients with diastolic heart failure. The heart becomes "stiff" and normal filling of the heart is impaired. Around 15,000 new cases of heart failure with preserved ejection fraction are diagnosed in Australia each year. Patients suffer from breathlessness, fatigue, and swelling of the abdomen and ankles. Medication has a limited effectiveness and often leaves patients with persistent symptoms and poor quality of life. The IASD procedure is minimally invasive procedure that takes around one hour. The device is implanted by a cardiologist into the person’s inter-atrial septum, the fibrous wall between the left and right top chambers of the heart, using a cather delivery system inserted through a vein in the leg. The procedure will improve patient health outcomes, decrease heart failure hospitalization rates, and reduce the overall cost burden of managing heart failure patients.

GRANTS
The Cardiology Clinical Research Centre had $675,000 in funding in 2015, with a large portion of this funding being commercially sponsored clinical trials for new cardiology treatments. There was also a collaborative research grant from the Investigator Initiated Registry for our CONCORDANCE project.

RESEARCH COLLABORATIONS
Formal national collaborations for our group include Northern Health, Concord Hospital, SAHMRI and George Institute. We also had a number of international collaborations including Abbott Vascular, Edwards Lifesciences, Medtronic, St. Jude Medical, REVA Medical, Imperial College London, Bayer Healthcare, Janssen-Cilag, AMGEN, Global Genomics, ECRI/Cardiolysis, Biosense Webster, Glaxo SmithKline, Sanofi-Aventis, Boehringer Ingelheim, Corvia, REVA Medical, Tendyne and Boston Scientific.
The InVitro Human Heart Research Group aims to identify novel drug targets for heart disease. We are carrying out drug discovery to identify new targets of medicines for patients with heart disease.

Unacceptably, 30-50% of heart failure patients will die of sudden cardiac death caused by a ventricular arrhythmia. Heart failure remains one of the most common causes of hospital admission and General Practitioner consultation in people aged 70 and older. Whilst research has resulted in the implementation of medicines which increased survival outcomes and reduced morbidity of patients with heart failure, heart failure still remains progressive and has a poor prognosis. The absolute mortality rate is approximately 50% within 5 years of diagnosis. Therefore it is imperative that research continues to identify new targets for medicines that will provide better survival outcomes.

Research carried out by the InVitro Human Heart Research Group directly addresses heart disease by identifying new targets for medicines. The outcomes of research will be expected to benefit patients by reducing the burden of
heart failure and arrhythmias associated with heart failure. The program carries out basic, fundamental research, offering hope for the emergence of novel medicines. The research program questions current paradigms of clinical treatment which are current best evidence based practice, but do not reverse heart disease.

The research program carried out by the InVitro Human Heart Research Group is expected to contribute knowledge which will lead to better outcomes for patients with heart disease. Basic research to identify new, novel drug targets offer the only real hope to patients with heart disease. Approximately 30-50% of patients with heart failure will die of sudden death, presumably a fatal arrhythmia. Medicines to reduce the incidence of sudden death will ultimately lead to a better quality of life.

HIGHLIGHTS
The InVitro Human Heart Laboratory was joined by Miss Weilan Mo from China in August 2015 who commenced a PhD. She was awarded a New Investigator grant from The Prince Charles Hospital Foundation to commence studies on the role that phosphodiesterases have in controlling arrhythmias in the human heart. The laboratory received crucial grants to continue important work on the identification of novel targets for treatment of heart disease. Research findings were presented to the British Pharmacological Society for the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists Award, Australia Chinese Association for Biomedical Sciences (Invited), The Australian Physiological Society and The Australian Society of Biophysicists.

GRANTS
We received $27,000 of funding from The Prince Charles Hospital Foundation in 2015 for research into various drugs that affect arrhythmias in the heart; this included an equipment grant for an Oroboros Oxygraph to assist with studies.

AWARDS
Associate Professor Peter Molenaar received two awards in 2015; the Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT) Prize Lecture and the ASCEPT Achievement Award.

PRESENTATIONS & PUBLICATIONS
Associate Professor Peter Molenaar made presentations at the British Pharmacology Society in London, the 5th Australia-Chinese Biomedical Research Conference, the Australian Physiological Society and the Australian Society of Biophysicists in 2015. At all four conferences he presented his work on Beta-blocker control of human ventricular arrhythmias in patients with heart failure through phosphodiesterases.

He was also the Associate Editor for the Pharmacology & Therapeutics Journal, and the Editor for the Naunyn-Schmiedeberg’s Archives of Pharmacology.

STUDENTS
Miss Weilan Mo commenced her PhD with the InVitro Human Heart Research Group in 2015, supported by QUT and supervised by Associate Professor Peter Molenaar.

RESEARCH COLLABORATIONS
We collaborated closely with the Heart Surgery Program, the Heart Failure Program, Dr Haris Haqqani, Professor John Fraser, the CCRG, Professor Walter Thomas, Dr Simon Foster and the University of Queensland. Our national collaborations in 2015 included A/Prof Derek Laver (Newcastle University), A/Prof Nikki Beard (Canberra University) and Professor Dianne Fatkin (Victor Chang Research Institute). Internationally we worked with Professor Alberto Kaumann from the University of Murcia in Spain.
Organ donation rates in Australia continue to be an issue. The waiting list never seems to reduce. The problem however is not only that there are many people who have not registered to be organ donors, or that perhaps their loved one’s don’t allow the donation to take place possibly due to the distressed state they are in.

The other major problem—and one that the public probably don’t understand—is that not all donors’ organs are able to be used, for a variety of reasons. One critical issue is the fact that donated organs only have a limited time to get from the donor to a recipient. In such a large country, the tyranny of distance can be the barrier.

One can only imagine the anxiety of the patients who so desperately need help. Equally it is an absolute travesty that someone who wishes to give the greatest gift of life cannot leave such a legacy because of time and distance.

The Critical Care Research Group received international attention this year, including front page of our national newspaper The Australian, when they shared their ambition to allow heart transplants to occur over longer periods of time, potentially beyond 12 hours, and to increase the availability of donated hearts by an estimated 20%.

The research project working with technology originating from Europe has the potential to maintain the heart for longer periods, and recondition the organ prior to transplant. Through collaboration across Australia, Asia, America and Europe the team is working on developing this technology, while also supporting research into artificial devices to keep dying hearts alive, stem cell therapy to regrow hearts and also to convalesce hearts that require time to recover in patients.

This project is supported through the community by The Alfred Foundation and The Prince Charles Hospital Foundation. This is not just about saving lives and improving the quality of life but significantly it allows generous organ donors to have their wishes fulfilled.
From Africa to Australia to the World

Discovery May Change World Health Organisation Standards

For over 10 years in Kenya studies were undertaken to help justify why children suffering from infection and shock (a life-threatening complication of infection leaving the pulse very weak and thready and limbs cold to touch) should be treated with bolus fluid (a large dose of fluid infused rapidly), which is routine practice in hospitals in the western world. Until then this was considered an essential saving lives treatment – but had never been tested in clinical trials worldwide.

Professor Kathryn Maitland of the Imperial College of London, based in Kenya through support of the Medical Research Council, UK undertook the FEAST trial in 3200 children across 6 hospitals across East Africa anticipating that fluid bolus therapy would save the lives of children critically-ill with sepsis.

The study however proved the opposite. Compared to children who did not receive fluid bolus therapy children receiving fluid bolus therapy had an increased risk of death in the first two days of admission. As anticipated fluid boluses therapy rapidly reversed the shock but what was not anticipated was that the children health deteriorated quickly – slipping into lethal septic shock (meaning that all vital organs (brain, heart and lungs) were not receiving enough blood flow to sustain life).

This finding in Africa poses a challenge for the World Health Organisation’s (WHO) current protocols –and shock treatment protocols worldwide but needed further studies to provide important new evidence to validate the mechanisms underpinning these unintended consequences of fluid bolus therapy. This is where The Prince Charles Hospital and the Critical Care Research Group (CCRG) comes in.

Prof John Fraser is spearheading an international collaboration of world leaders in the field of sepsis to test and model this condition through ovine (sheep) testing. Dr Nchafatso Obonyo from Prof Maitland’s Kenyan based team has relocated to this hospital to investigate new mechanisms that will point to better treatments and outcomes, and it is hoped that this could inform new WHO guidelines to save the lives of millions of children.

It is mind-boggling to think that this study could change the world – very soon.
Heart disease – our patients help us beat it, for the common good

“We believe we have an obligation not just to treat the patient in front of us but to use that experience every day to develop new and better ways to save the lives of the patients who have life-threatening heart disease. By doing this we have the capacity to improve therapies for hundreds of thousands of people around the world.”

This is the motivation for Professor Darren Walters and his team at The Prince Charles Hospital who have gained international recognition for their work in finding creative solutions to complex cardiac conditions including valvular heart disease, coronary artery disease, congestive cardiac failure and congenital heart conditions in adult.

Over the past decade the team has fundamentally changed how aortic stenosis, the most common valvular disorders, is being managed globally. A major open heart procedure is for many, now a procedure performed though a small catheter in the groin, much like a coronary stent.

In the past year Professor Walters has been at the forefront of the first-in-man studies to develop a new percutaneous mitral valve implantation which received national recognition in mainstream media. Trialled on 12 patients it is expected that this innovation could become the preferred method for heart valve replacement, reducing the need for open heart surgery, something that impacts on around 11,000 Australians annually.

“Our team is recognised as experts in complex cardiac surgery and intervention due to the volume and complexity of patients we treat. When this is combined with our translational research experience we are able to integrate new technologies at the earliest stages of development. This means improved patient outcomes by helping to shape new therapies. This continues to reduce the risks of treating common cardiac problems with more effective and less invasive treatments. Most importantly the quality of life of patients is improved.”

Through the collaborations into the US and across Europe the team at The Prince Charles Hospital is not only at the cutting edge of new technology they are leading the way, and this is only possible through the determination and passion of the staff who are on a relentless quest to continually lift the bar.

The impacts globally are also reflected through the extensive education and training into Australia, New Zealand and in countries in our region such as India, the heart disease capital of the world. A number of live satellite broadcasts into India of patient procedures is helping to improve the capacity and capabilities into a nation which has an estimated 45 million people who have heart disease.
Critical Care Research Group

RESEARCH HEAD
Professor John Fraser

The Critical Care Research Group (CCRG) is a multidisciplinary research program that aims to translate learned knowledge about critical illness into new or improved treatment modalities. To enhance the quality and significance of our research, we strive to become a nationally and internationally recognised research centre, and facilitate inter-departmental collaboration between all specialties involved in acute care medicine.

We aim to educate and inform health professionals of the results of our research through publications in peer reviewed medical and professional journals, by presenting our work at professional meetings and conferences, and through the development of high quality in-house education tools (including high-end simulation, animal models and video productions). Through this work, we will achieve better outcome in patients with acute illness – whether medical or surgical in origin.

The CCRG research addresses the diverse healthcare needs of critically ill patients; these patients are entirely dependent on the advanced understanding of relevant technologies and diseases, and how we can apply
this knowledge clinically. We can only achieve advanced understanding and improvement with input from a silo free, multidisciplinary team.

Our group is seen as one of the world leading critical care research groups with collaborations throughout Queensland, across Australia and in almost every continent of the world. While our work is predominantly based in Australia, our results are far reaching and benefit even the poorest of poor in developing nations. We translate ideas into research and back to clinical practice which results in improved outcomes for critically ill patients across the world.

The CCRG is a world leader in the field of biomedical engineering and critical care research, and the clinical benefits of the research undertaken by the group are varied and wide-reaching. We are committed to finding world-first, innovative solutions that will lead to healthier living, improved quality of life and less hospitalisation. Our group mirrors the large multidisciplinary team clinical team who cares for the sickest of the sick.

The CCRG team is comprised of clinicians, scientists, engineers, nurses, allied health professionals and statisticians, who are all committed to bridging the gap between bench and bedside. Our extensive, worldwide collaborations mean that patients at The Prince Charles Hospital (TPCH) have access to the best and brightest researchers, cutting edge clinical research, and evidence based findings from around the world. Current CCRG research priorities include cardiovascular and respiratory disease, sepsis, blood transfusion and improving function and practice of mechanical assist devices (MADs). These priorities are highly relevant to intensive care practice and our group continues to see clinical benefits in each of these areas.

The primary focus of the CCRG is to bring tomorrow’s healthcare to patients today. While there have been substantial advances in conventional medicine this progress has not yet been mirrored in the most critically ill cohort. Morbidity and mortality rates in critically ill patients are still unacceptably high and this group of patients have more severe disease and need significantly better, longer term treatments. Through cutting-edge research we aim to develop and deliver world-class healthcare to these patients, reduce the healthcare burden of cardiovascular and respiratory disease, improve the outcomes and increase the life expectancy of patients with critical illness and end stage cardiothoracic disease.

HIGHLIGHTS

After 12 years operating under the Adult Intensive Care Services banner, the CCRG was established as its own organisational unit within The Prince Charles Hospital (TPCH). The establishment of the CCRG supports the alignment of research practices across TPCH, and will enable the growth and development of research across the facility and across Metro North Hospital and Health Service District (MNHHS).

The CCRG Centre for Research Excellence in Advanced Cardio-respiratory Therapies Improving OrgaN Support (CRE ACTIONS) continued to evolve in a multi-national collaborative with new collaborations across Taiwan, Singapore, Japan, Malaysia, Germany, France and Sweden. These collaborations are attracting the best and brightest staff and students from around the world to Queensland.

We also published more than fifty peer reviewed journal articles, presented close to thirty lectures and key note presentations across the world, delivered more than thirty abstract presentations at a range of clinical, scientific and engineering conferences and supervised eighteen research higher degree students.

GRANTS

The CCRG received nearly $3.27 million in funding for various research projects in 2015. This included grants awarded by The Prince Charles Hospital Foundation, the Heart Foundation, The Metro North Hospital and Health Service Executive Group, the Queensland Emergency Medicine Research Foundation, and the NHMRC.

AWARDS

CCRG was given two awards in 2015; the MNHHS Staff Excellence Award for the Fostering Innovation Category and the Award for Excellence in Clinical Research at the TPCH Health Discoveries Forum.

Anna-Lisa Sult was awarded the Best Novice Presentation in Clinical & Basic Science Research, and Dr Shaun Gregory was awarded the Best Translational Research Project at the TPCH Health Discoveries Forum. Professor John Fraser was awarded with the title Wesley Medical Research 2015 Uniting Care Health Researcher of the Year.

PRESENTATIONS & PUBLICATIONS

The group gave fifty-nine presentations on topics of critical care research across the world. These forums included the EuroELSO 2015 International Congress, the 23rd Congress of the International Society for Rotary Blood Pumps and the 12th Congress of the World Fed of Society of Intensive and Critical Care Medicine, as well as other notable national and international conferences.

STUDENTS

The group supervised 21 higher degree and student placements in 2015, including 12 PhD students, 7 MPhil students and 2 Masters students from the University of Queensland, Australian National University, the University of NSW and Aachen University in Germany.

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Innovative Cardiovascular Engineering and Technology Laboratory (ICETLAB)

RESEARCH HEAD
Dr Shaun Gregory

Cardiovascular diseases are the leading cause of death in the developed world. The ICETLAB (www.icetlab.com) is the largest cardiovascular engineering research laboratory in Australia and focuses on the diagnosis, surgical intervention and treatment of cardiovascular disease including long-term mechanical circulatory and respiratory support.

The ICETLAB is an innovative group of researchers that aim to combat cardiovascular disease by connecting the engineering department and clinicians. By bridging these two disciplines we’re able to develop novel solutions for diagnosis, surgical intervention and treatment of cardiovascular disease, as well as translate new knowledge about cardiovascular disease into new or improved treatment modalities.

Our team hopes to educate and inform medical, engineering and other health professionals of the results of their research through publication in peer reviewed medical and other professional journals, presentations at professional meetings and conferences, and development of high quality in-house education tools, including high-end simulation models. The group also wants to enhance the quality and significance of our research to become a nationally and internationally recognised research centre.

The ICETLAB focuses on reducing postoperative complications with mechanical circulatory and respiratory support. We’re doing this through:

• Improving the clinical understanding of the operation and control of ventricular assist devices
• Development of a low-cost device to support patients with heart failure in low-income countries
• Characterisation of the operating characteristics when using a left ventricular assist device to support the right ventricle
• Development of new skin-crossing driveline coatings to reduce infection
• Investigating the mechanisms of right heart failure after left ventricular assist device implantation
• Evaluation of flow dynamics in the native circulatory system and the interaction with mechanical circulatory and respiratory support
• Improving our understanding of the blood-device interaction with mechanical circulatory and respiratory support to reduce postoperative complications
• Optimising mechanical circulatory and respiratory support implantation by developing novel devices and techniques for simple, rapid implantation without the need for cardiopulmonary bypass
• Validating clinically available techniques of measuring cardiac output.

HIGHLIGHTS
In 2015 the ICETLAB was awarded 9 grants, totalling over $1.1 million in research funding.

The group had 18 conference and invited presentations, and hosted the 5th annual ICETLAB Symposium, bringing together experts in mechanical circulatory and respiratory support from around Australia and Asia to discuss research progress and future plans.

The group also grew to over 25 researchers in 2015, ranging from undergraduates through to postdoctoral research fellows.

GRANTS
The ICETLAB received $1.1 million in funding for the 2015 period, including grants from TPCH Foundation, and Griffith University.

AWARDS
Dr Shaun Gregory from the ICETLAB was awarded the Best Expert Presentation (Basic/translational research category) at the 2015 Prince Charles Hospital Health Discoveries forum.

PRESENTATIONS AND PUBLICATIONS
Our team had 18 presentations in 2015, including both national and international appearances. These included presentations at the Cook Medical Research Presentation, the Prince Charles Hospital Health Discoveries Forum, the Metro North Nursing Research Seminar, the Queensland University of Technology Biofluids Seminar, the Princess Alexandra Cardiac Research Forum, the Matlab Conference and the Medical Engineering Research Facility Conference all based in Brisbane. There were also six presentations at the International Society for Rotary Blood Pumps in Croatia.

RESEARCH STUDENTS
The ICETLAB supervised 27 higher degree and student placements in 2015, alongside 16, University of Malaya, Griffith University, University of Queensland, Universite De Frenche-Comte, Universitat Regensburg, University of Sydney, Universiti Teknologi Malaysia and the RWTH Aachen. These researchers included three completing their Masters, sixteen completing Honours, four PhD students and four postdoctoral researchers.

RESEARCH COLLABORATIONS
The ICETLAB had many formal collaborating partners locally and internationally, including the Critical Care Research Group.

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The Cardiothoracic Surgery Research Unit (CTSRU) aims to develop a Cardiothoracic Surgery Research Program that supports focused interdisciplinary collaborative research projects. Taking advantage of our service scope, maturity, volume, and high quality outcomes we hope to provide the evidence-based advice necessary to address the more complex cardiothoracic surgical patients and be the expert/leader in cardiothoracic surgical services in Queensland.

We also aim to pilot, develop and implement new technologies that improve important patient outcomes and stimulate change in practice, as well as support, mentor and foster a research culture in all levels of program staff and especially junior clinicians. Our group hope to continue to develop research partnerships with related clinical groups including Critical Care, Cardiology, Transplant and Heart Failure, Thoracic Medicine, Nursing and Allied Health services, and through this develop academic and industry partnerships that stimulate research and mobilise funding opportunities. By developing broader collaborations with cardiothoracic surgery research important institutions.

Queensland Griffith University, Queensland University of Technology (QUT), Nambour Hospital, CSIRO, National UNSW, Alfred Hospital and St Vincent’s Hospital.

They also expanded their international collaborations, which included Applied Medical Engineering at the Helmholtz Institute (Germany), Texas Heart Institute (USA), Ibaraki University (Japan), University of Malay (Malaysia), Shibaura Institute of Technology (Japan), Universita Degli Studi Di Roma La Sapienza (Italy), University of Dammam (Saudi Arabia), University of Franche-Comte (France) and the University of Applied Sciences (Germany).

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**RESEARCH HEAD**
Dr Rishendren Naidoo
across institutions we can consolidate and build TPCH cardiothoracic surgery research reputation.

The group address key health issues such as how to effectively manage more complex or rare and unique cardiac surgical disease aetiologies including aortic pathologies, multiple valve disease, redo valve pathologies, end-stage cardiac failure, adult congenital disease and infective aetiology, and how to effectively manage more high risk patients (including older, frailer, with higher comorbidities such as obesity, diabetes and emergent status). Another major health issue we look at is developing better strategies of detecting lung cancers earlier with improved surgical management outcomes.

Clinically the research is highly relevant, as we are able to identify and understand risks which are likely to compromise patient desired outcomes and improve overall outcomes to patients. Through our research we can improve the ability of clinicians to make evidence-based choices for and with patients, and develop better ways to assist the high risk groups of patients as The Prince Charles Hospital is a referral centre for these patients in Queensland.

The CTSRU takes a multi-disciplinary approach, with interaction with cardiology, thoracic medicine, anaesthesia, critical care and Allied Health that streamlines patient management and facilitates earlier intervention resulting in better outcomes. By identifying and testing new technologies this can lead to less post-operative morbidity in a holistic approach. We aim to develop techniques to include Quality of Life and Patient Reported Outcomes as part of post-operative assessment of procedures and to improve quality of care.

**HIGHLIGHTS**

Achievements for the group in 2015 included the establishment of Registrar Research Studies and Research Unit meetings involving registrars, a significant increase in recruitment to Rapidly Deployed AVR trial and a surgeon training session for Rapid Deployment valves.

We also had great engagement with Red Cross Blood Bank for the Transfusion Modulated Immunomodulation study and with the QUT mathematics department for statistical consulting and growing collaboration with QUT Psychology department to investigate psychosocial outcomes. The CTSRU was able to take on board two medical students for their research studies.

Other highlights included the development of a prototype cardiac surgery psychosocial health app, as well as the development and submission of several research grants applications. We were able to contribute to QH Health & Medical Research Unit Researcher Reference group to streamline Research legislation, and took part in the Anaesthetics Blood Management Analysis and Sternal Instability Analysis for Physiotherapy.

**PUBLICATIONS AND PRESENTATIONS**

The CTSRU presented six abstracts at two different conferences; the Annual Scientific Meeting by the Australia and New Zealand Society of Cardio-Thoracic Surgeons, and the Royal Australian College of Surgeons 84th Annual Scientific Congress.

**RESEARCH STUDENTS**

The CTSRU supervised two MD students in 2015 alongside the University of Queensland.

**RESEARCH COLLABORATIONS**

Research collaborations for the CTSRU included internal collaborations such TPCH Critical Care, Cardiology, Transplant and Heart Failure, Thoracic Medicine, Nursing and Allied Health services. There were also collaborations with the QUT School of Psychology and the CSIRO Australian eHealth Research Centre.

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Measuring the cardiac output of patients is something that is crucial to many facets of clinical care. Until recently, there had been no standardised way of this procedure being carried out, and there were concerns that inaccuracies were arising due to this. A study looking to identify the factors that affected this precision was last year recognised with the prestigious Michael Ray Best Science award at The Prince Charles Hospital Annual Health & Discoveries Forum.

Led by Dr Shaun Gregory from the Innovative Cardiovascular Engineering and Technology Laboratory (ICETLAB), the research project aimed to identify the key factors that could result in incorrect cardiac output results. Using innovative technology, Dr Gregory and the team tested for the biggest influences in the variances of this procedure, and were able to identify the key issue.

This project has led to further training opportunities for the clinicians that work alongside these critically ill patients. The Michael Ray Best Basic Science Award is given to the project that best translates to clinical care and better patient outputs.

Award Winner
Dr Shaun Gregory
Project Title | Chief Investigator | TPHC Investigator | Granting Agency | Total Funding Awarded | Funding received for 2015-16 | Years of Funding | Grant Type
---|---|---|---|---|---|---|---
Giving an adult life after Fontan surgery to those with the most severe congenital heart conditions. | Veas d’Udekem | Dorothy Radford | NHMRC | $1,250,181 | 2013-2016 | Partnership Grant
Airborne transmission of microorganisms among person with cystic fibrosis | Scotte Bell | Scotte Bell | CF Foundation (USA) | $503,008 | 2015-2016 | Project Grant
Airborne transmission of microorganisms in lung disease | Scotte Bell | Scotte Bell | Perpetual Philanthropy | $47,000 | 2015-2016 | Scholarship
Aerosol in chronic lung infection: their extent and how to prevent? | Scotte Bell | Scotte Bell | TPCH Foundation | $95,576 | 2015-2016 | Project Grant
Abnormal lung iron homeostasis in cystic fibrosis | David Reid | David Reid | NHMRC | $629,661 | 2015-2016 | Project Grant
Predicting who is at risk of worsening lung disease in Cystic Fibrosis | Peter War | Scotte Bell | Hunter Medical Research Institute | $20,000 | 2015-2016 | Project Grant
Genomic analysis of two prevalent Pseudomonas aeruginosa strains in patients with cystic fibrosis in Queensland | Scotte Bell | Scotte Bell | UQ-GMRI Berghofer (AID Grant Initiative) | $50,000 | 2015-2016 | Project Grant
Evaluation of the utilization of an allied health assistant within an Adult Cystic Fibrosis Centre: their role and scope of practice and benefits to improved patient related physiotherapy outcomes | Kathleen Hall | Kathleen Hall, Robyn Cobb, Scotte Bell | Health Practitioner Research Scheme, Queensland Health | $68,612 | 2015-2016 | Project Grant
Strategies to limit Pseudomonas aeruginosa acquisition and antimicrobial resistance in patients with CF | Scotte Bell | Scotte Bell | TPCH Foundation | $98,000 | 2015-2016 | Project Grant
The emerging problem of non-tuberculous mycobacteria infection: understanding aetiology, geospatial epidemiology and developing interventions | Scotte Bell | Scotte Bell | NHMRC | $98,736 | 2015-2020 | Project Grant
Innate T lymphocytes as key players and candidate biomarkers during exacerbations of COPD | Daniel Smith | Daniel Smith | QMRI Berghofer Clinician Research Collabora- tion Grant | $40,000 | 2015-2016 | Project Grant
Murine associated invariant T-cell numbers and activation in exacerbations of chronic pulmonary conditions | Abella Murray | David Reid | TPCH Foundation | $8,300 | 2015-2016 | Project Grant
Hypothalamic c.e. vovo perfusion study with neuropeptide substrates | John Fraser | Louise See, How, Wendy Chan, Jason Hayenga, David Platts, Peter Molenaar | TPCH Foundation | $50,000 | 2015-2016 | Project Grant
Hypothalamic e.c. vovo perfusion study with neuropeptide substrates | John Fraser | Louise See, How, Wendy Chan, Jason Hayenga, David Platts, Peter Molenaar | TPCH Foundation | $50,000 | 2015-2016 | Project Grant
New Investigator award to Jason Hayenga, member Dr Wendy Chan

Project Title | Chief Investigator | TPHC Investigator | Granting Agency | Total Funding Awarded | Funding received for 2015-16 | Years of Funding | Grant Type
---|---|---|---|---|---|---|---
Establishing Diabetic Foot Australia (Phase I) | Lazzarini PA | Lazzarini PA | Wound CRC | $334,217 | 2015-2016 | Program Grant
Diabetic Foot Clinical Linkages | Lazzarini PA | Lazzarini PA | Wound CRC | $103,074 | 2015-2016 | Program Grant
Diabetic Quantitative Ultrasound Foot Tissue Scanner | Wearing S | Lazzarini PA | Wound CRC | $134,700 | 2015-2016 | Project Grant
APROC-D: A two part Phase II Open Label Study of Desmopressin for acute Diabetic Charcot Neuropathy | Lau M | Lazzarini PA | Diabetes Australasian Research Program | $58,898 | 2015-2016 | Project Grant
Measuring ICU delirium using a newly developed electronic tool | Wells, H. | Wells, H., Kees, E. | TPCH Foundation | $60,000 | 2015-2016 | Project Grant
Profiler the communication impairment arising from right hemisphere stroke: a preliminary investigation of linguistic, extra-linguistic and neurocognitive correlates | Cornwall, PL., Sturm, D., Hawes, L. | TPCH Foundation | $52,880 | 2015-2016 | Project Grant
Measuring ICU delirium using a newly developed electronic tool | Wells, H. | Wells, H., Kees, E. | TPCH Foundation | $60,000 | 2015-2016 | Project Grant
"The link between osteoarthritis and metabolic syndrome." | Crawford, R | Bell, J. | TPCH Foundation | $549,547 | 2015-2018 | Program Grant
PREDICT study (Predictive equations for estimating resting energy demand in critically ill patients) | Marshall, A | Robbins, E. | Gold Coast Hospital Private Practice Trust Fund | $50,000 | 2014-2015 | Project Grant
Hospital to Home Outreach for Malnourished Elders (HOME) - A Cost Effectiveness Analysis | Demedia, K | Whiteing, E | TPCH Foundation | $9,827 | 2014-2015 | Project Grant
Analysis of long term functional cognitive and economic outcomes of adult ECMO patients: Roll M, Muliny, D, Kuy, S, Walsh J | Roll M | Mullan, D. | AHRC Research Grant | $4,870 | 2015-2016 | Project Grant
A comparison of the effects of manual hyperinflation and ventilator hyperinflation on reducing end-expiratory lung volume after airway suctioning | Limaye, M | Walsh, J. | TPCH Foundation | $9,794 | 2015-2016 | Project Grant

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<tr>
<td>Evaluation of a Quick-Connect System to Reduce Ventricular Assist Device Implantation Time and Complexity</td>
<td>Lisa Obermeier</td>
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<td>$9,779</td>
<td>2015 New Investigator Project Grant</td>
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<td>Improving our understanding of pressure injuries in critical care patients: Tissue perfusion and patient severity of illness</td>
<td>Jake Nowicki</td>
<td>Amanda Corley</td>
<td>TPCH Foundation</td>
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<td>Low Drift Fibre Bragg Grating Pressure Transducer for use with Physiological Controllers</td>
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<td>Quantitative assessment of resuscitated hearts following circulatory death for heart transplantation</td>
<td>Louise See Hoe</td>
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<td>Changes in myocardial function and microcirculation under different resuscitation strategies in a sepsis ovine model</td>
<td>Brook Tang</td>
<td>John Fraser</td>
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<td>Characterisation of neuro-hormonal patterns in a model of ovine cardiac transplantation - Comparison of current vs novel donor heart-ensilage methods</td>
<td>Joseph Heang</td>
<td>Wendy Chan</td>
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<td>Design and validation of a mock circulation loop for particle image velocimetry evaluation of prosthetic heart valves</td>
<td>Arianna Di Nucci</td>
<td>Shaun Gregory</td>
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<td>In-Vitro Optimisation of Infuse Cannula Impact to Improve Blood Compatibility</td>
<td>Stefanie Jentsch</td>
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<td>Functional and morphological changes occurring in the left and right ventricles following chronic left ventricular assist device implantation in an ovine model</td>
<td>Nicola Bartnikowski</td>
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<td>Millipore MAGPX xPONENT 4.2 Analyzer</td>
<td>Kavita Bish</td>
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<td>A Saliva Test To Identify High Risk Heart Failure Patients.</td>
<td>Chambinde Pumpy-aderaea</td>
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<td>Using a bioengineering approach to develop an infection-resistance ventricular assisted device driveline coating</td>
<td>Shaun Gregory</td>
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<td>Reducing pressure injuries to improve patient outcomes and reduce healthcare costs</td>
<td>John Fraser</td>
<td>Amy Sparron</td>
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<td>The Breathe Easy Early Study</td>
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<td>Andreas Schibler</td>
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<td>Abigail Royse</td>
<td>John Fraser</td>
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<td>Ambulance Retrieval Decision Making Framework</td>
<td>Fulbrook P</td>
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<td>Coeliac Disease and Hookworms</td>
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<td>A Fully implantable self-powered extra aortic counterpulsation device for translational development in hypertensive heart failure</td>
<td>McLachlan</td>
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<td>Evaluation of a quick-connect system to reduce ventricular assist device implantation time and complexity</td>
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<td>Erythrocyte responses to mechanical trauma following exposure to oxidative stress</td>
<td>Michael Simmonds</td>
<td>Shaun Gregory, John Fraser</td>
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<td>Efficient wireless power transfer system for ventricular assist devices (VADs)</td>
<td>Mahinda Vithagra-moorsa</td>
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<td>Using a bioengineering approach to develop an infection-resistance ventricular assisted device driveline coating</td>
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<td>Nicole Bartrien, skil</td>
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<td>Low shift flow bragging pressure transducer for use with physiological controllers</td>
<td>Andrew Stephens</td>
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<td>Stephen Jentsch</td>
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<td>Right Hemisphere Strokes Petrea Cornwell Petrea Cornwell (MiSTRENGTH) Guiding Transition Home</td>
<td>Dr Heather Keller</td>
<td>Dr Jack Bell</td>
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<td>Impact of malnutrition on six-month mortality following acute hip fracture</td>
<td>Dr J. Bell</td>
<td>Dr Jack Bell, Dr A. Crouch, Dr C. Palle</td>
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<td>“The link between osteoarthritis and metabolic syndrome?”</td>
<td>Prof Ross Crawford</td>
<td>Prof Ross Crawford</td>
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<td>Improving the recovery outcomes for people with Mild Stroke: Enhancing and Guiding Transition Home (MSTRENGTH)</td>
<td>Petrea Cornwell, Leah Thompson, Andrew Wong, Louise Gaufojon, Angela Maguire, Suzanne Kuys</td>
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<td>Ambulance retrieval: What factors are involved in the decision to transport an emergency patient to hospital.</td>
<td>Fulbrook, P</td>
<td>Kimnuir, F, Jessop, M</td>
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<td>High flow nasal cannula (HFNC) treatment for viral bronchiolitis: a randomised controlled trial to investigate the effect on carbon dioxide (CO2) levels.</td>
<td>Davison, M</td>
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<td>Implementation and evaluation of new method of obturating a urine specimen in non toileted-trained children in the emergency department.</td>
<td>Prodyn, J</td>
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<td>Is waiting time in the emergency department associated with hospital acquired pressure injury.</td>
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<td>Prophylactic nutrition support in high risk patients prior to treatment for head and neck cancer</td>
<td>Tessa Brown</td>
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<td>Disease tolerance and transplant tolerance – two sides of the same coin?</td>
<td>Chambers D</td>
<td>Chambers D, Verkovic S</td>
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<td>Identification of Progression Disease in Idiopathic Pulmonary Fibrosis</td>
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<td>Combining immune monitoring and immunotherapy to tackle cytomegalovirus infections in solid organ transplant patients</td>
<td>Khanna R</td>
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<td>Optimising organ function during ex-vivo lung perfusion – role of the endothelial glycocalyx</td>
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<td>Preempted bacterial bronchiolitis: long term outcomes, systemic and airway predictors of recurrence.</td>
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<td>Cognitive Behavioural Therapy (CBT) for patients with chronic lung disease undergoing pulmonary rehabilitation</td>
<td>Mansur Pumar</td>
<td>Mansur Pumar, James Walsh, Tricia Rolls</td>
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<td>Pulmonary Rehabilitation in Chronic Obstructive Pulmonary Disease: the relationship between anxiety and depression and physiological function</td>
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<td>Protecting the endothelial glycocalyx to improve transplant rates and outcomes</td>
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<td>Conquering the final frontier in lung transplantation - Mesenchymal stromal cell therapy for chronic lung allograft dysfunction</td>
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<td>Fixing broken lungs: Next generation ex-vivo lung perfusion</td>
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<td>Idiopathic Pulmonary Fibrosis – A disease of stem cell dysfunction?</td>
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<td>Tackling Pulmonary Antibody-Mediated Rejection by Targeting Circulating Donor Specific B Cells (IDSB)</td>
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<td>Using the lung microbiome to predict response to continuous antibiotics in COPD</td>
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<td>ABBIOD IV: A Clinical Evaluation of Absorb™ DES, the Everolimus-Eluting Bioresorbable Vascular Scaffold in the Treatment of Subjects with de novo Native Coronary Artery Lesions</td>
<td>Prof Darren Walters</td>
<td>Dr. Niranjan Gaikwad, Dr. Brendan Bell, Dr. Karl Poon, Dr. Dale Munroch</td>
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<td>CAAM-AF: Cardiac Biosynchronisation Therapy (CBT) and AV node ablation trial in AF</td>
<td>Dr Haris Haqqani</td>
<td>DrRussell Derman, Dr. Adam Lee</td>
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<td>CENTERA: Safety and Performance Study of the Edwards CENTERA Self-Expanding Transcatheter Heart Valve</td>
<td>Prof Damen Walters.</td>
<td>Dr. Andrew Clarke, Dr. Niranjan Gaikwad, Dr. Christopher Raffel, Dr, Karl Poon</td>
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<td>$9,150.00 per patient</td>
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<td>CONCORDANCE: Comparative National Registry of Acute Coronary Care Guideline Adherence and Clinical Events</td>
<td>Prof Damen Walters.</td>
<td>Dr. Niranjan Gaikwad, Dr. Matthew Pincus, Dr. Niranjan Gaikwad, Dr. Karl Poon</td>
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<td>ENHANCE: Effectiveness of the Presenix of Right Ventricular Apical Pacing Induced Ventricular Dysynchrony as a Guiding Parameter for Biventricular Pacing in Patients with Bradycardia and Normal Ejection Fraction</td>
<td>Dr. Haris Haqqani</td>
<td>Dr. Russell Derman</td>
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<td>ENLIGHTN II: Endorsement of Randomized, single-arm, long-term follow-up study of patients with uncontrolled Hyper Tension</td>
<td>Prof Damen Walters</td>
<td>Dr. Matthew Pincus, Dr. Niranjan Gaikwad</td>
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<td>EVOLVE: A Prospective Randomised Multicenter Single-blind Non-inferiority Trial to Assess the Safety and Performance of the Evolution Everolimus-Eluting Monorail Coronary Stent System for the Treatment of a De Novo Atherosclerotic Lesion</td>
<td>Prof Damen Walters</td>
<td>Dr. Matthew Pincus, Dr. Niranjan Gaikwad</td>
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<td>EVOLVE 2: A Prospective Multicenter Trial to Assess the Safety and Effectiveness of the SYNERGY™ Everolimus-Eluting Platinum Chromium Coronary Stent System in the Treatment of Atherosclerotic Lesion</td>
<td>Prof Damen Walters</td>
<td>Dr. Christopher Raffel, Dr. Karl Poon, Dr. Matthew Pincus, Dr. Niranjan Gaikwad</td>
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<td>EVOLVE 3: GQA: A Prospective Multicenter Trial to Assess the SYNERGY™ Everolimus-Eluting Platinum Chromium Coronary Stent System in the Treatment of Atherosclerotic Lesion</td>
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<td>Dr. Christopher Raffel, Dr. Karl Poon, Dr. Matthew Pincus, Dr. Niranjan Gaikwad</td>
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<td>FLAIR: Prospective, multi-center, double-blind randomized study to test the safety of deferral of stenting in patients with moderate-to-severe lesions in a clinical population of intermediate stenoses using FR and FFR</td>
<td>Prof Darren Walters</td>
<td>Dr Matthew Pincus, Dr Niranjan Galrikad, Dr Anthony Putrino, Dr Akshay Mishra, Dr Ryan Martin, Dr Brendan Bell, Dr Chris Raffel, Dr Dale Murdoch, Dr Karl Poon</td>
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<td>GLAGOV OPEN-LABEL EXTENSION: A Multicenter, Open-label Extension (OLE) Study to Assess the Long-term Safety and Efficacy of Evolocumab</td>
<td>Prof Darren Walters</td>
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Visit: www.tphcfoundation.org.au
Dr Greame Neilson was the founding Director of Cardiology at The Prince Charles Hospital, performing the first cardiac catheter study at the hospital on the 4th October 1960. His research interests were varied and included Indigenous Health and Rheumatic Fever endocarditis, Q fever and Eisenmenger’s Syndrome and pregnancy. His research resulted in the publication of influential papers in these areas. He was a powerful force in Queensland cardiology and was progressive in dealing with the changing dynamics of modern cardiology.

2015 recipient: Zetao Chen et al. for ‘Osteogenic differentiation of bone marrow MSCs by -tricalcium phosphate stimulating macrophages via BMP2 signalling pathway.’

Dr Michael Ray recently retired from his role at TPCH where he was an active member of the research community, initially working in the Haematology Laboratory and most recently within the Clinical Cardiology Research Group. Working as a laboratory scientist at TPCH for over 30 years, Dr Ray demonstrated a tireless research-minded work ethos that led to many significant findings which improved the lives of patients at this hospital.

2015 recipient: Dr Shaun Gregory (see page 82)

Dr Richard Slaughter retired in November 2011 following 37 years of exemplary service at TPCH where he was known for his contribution to the advancement of cardiothoracic imaging and improved clinical outcomes for cardiovascular and thoracic patients. He had a long-standing interest in congenital heart disease, initially in paediatric diagnostic cardiac imaging and more recently in the adult congenital heart disease population.

2015 recipient: Dr James Walsh (see page 20)
<table>
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<tr>
<th>Name</th>
<th>Higher Degree</th>
<th>Research Project Title</th>
<th>University affiliation</th>
<th>Primary Supervisor</th>
<th>TPCH Supervisor(s) (if different)</th>
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<td>Ms Bronwyn Steele</td>
<td>PhD</td>
<td>A preliminary evaluation of the READY program for adult congenital heart disease patients</td>
<td>University of Queensland</td>
<td>Dr James Kirby</td>
<td>Dr Dethory Radford &amp; Dr Tricia Rolls</td>
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<td>Dr Daniel Smith</td>
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<td>The effect of defective iron handling on immune function and Pseudomonas aeruginosa in the Cyclic Fibrosis lung</td>
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<td>Dr Anna Tai</td>
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<td>Molecular mechanism of carbapenem resistance in Pseudomonas aeruginosa from patients with cyclic fibrosis</td>
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<td>Ms Kay Ramsay</td>
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<td>Phenotypic and genotypic characterisation of Pseudomonas aeruginosa to determine the differences between adaptation, adherence and transmission amongst strains isolated from the environment and patients with cyclic fibrosis</td>
<td>University of Queensland</td>
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<td>Ms Kate Mydanski</td>
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<td>Physical Activity and Inflammatory markers in people with CF post hospitalisation</td>
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<td>Ms Michelle Wood</td>
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<td>Dr Champa Rahunatunga</td>
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<td>Deconstructing the immunopathogenesis of non-tuberculous mycobacterial lung disease</td>
<td>University of Queensland</td>
<td>John Miles</td>
<td>Scott Bell</td>
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<td>Ms Alexta Murray</td>
<td>BSc (honors, first class)</td>
<td>Determining changes in T-lymphocyte profiles during acute exacerbations of Chronic Obstructive Pulmonary Disease (COPD) and Cyclic Fibrosis</td>
<td>University of Queensland</td>
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<td>Ms Peter Lazzarini</td>
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<td>Foot disease in inpatients study</td>
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<td>Reed L</td>
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<td>Ms Malindu Fernando</td>
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<td>Diabetic foot ulcer biomechanical study</td>
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<td>Ms Amsie Davies</td>
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<td>Ms Ronelle Hewerston</td>
<td>PhD</td>
<td>Social participation following right hemisphere stroke: Facilitators and barriers to communication-based participation.</td>
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<td>Ms Anna-Lisa Sull</td>
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<td>Towards improved understanding of the effect of speaking valve on lung volumes and communication in the critically ill.</td>
<td>The University of Queensland</td>
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<td>Ms Bronwyn Steele</td>
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<td>Development of a pump management system for rotary ventricular assist devices to promote myocardial regeneration whilst preventing post-operative complications.</td>
<td>The University of Queensland</td>
<td>Michael Reade</td>
<td>John Fraser</td>
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<td>Mr Eric Wu</td>
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<td>Dr Ryan Hoyes</td>
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<td>Does hyperoosmia in an extracorporeal membrane oxygenation circuit activate platelets and increase thrombotic risks?</td>
<td>The University of Queensland</td>
<td>John Fraser</td>
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<td>Mr Daniel Kilburn</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 Oxiv Model.</td>
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<td>The Implications of brain death in donor lung injury: Investigation and blockade of the endothelin axis.</td>
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<td>Australian Catholic University</td>
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<td>Ms Kanchanima Phonnpruk</td>
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<td>Mr Coreentin LeFort</td>
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<td>Ms Kirsty Garrick</td>
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<td>Ms Maureen Ross</td>
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