SNAPSHOT OF RESEARCH 2019-2020

Together we deliver exceptional health outcomes
through globally recognised discovery and translation

Metro North Health

Queensland Government

Artwork by Elaine Chambers-Hegarty

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METRO NORTH BOARD CHAIR AND ACTING CHIEF EXECUTIVE

The role of health and medical research has never been more in the public mind than during the COVID-19 pandemic. Across Metro North, despite pausing research during the height of our pandemic response, we have continued to see significant innovation and research outputs.

The work reflected in the Research Snapshot is a sample of the many research projects happening across our health service. Metro North researchers are curious and engaged, seeking answers to health challenges their patients experience.

Through our Research Strategy, we're working to reduce the time for translation from the lab bench to the patient bedside to deliver faster, more personalised healthcare. Our grants and fellowships provide support for development and research, and the Graduate Certificate in Health Service Innovation we've developed with QUT and AUSHI gives researchers and decision makers the tools for knowledge translation.

Together, we're working to turn healthcare challenges into innovative solutions to improve outcomes and experiences of the healthcare we deliver to Queenslanders.

Jim McGowan AM
Chair, Metro North Hospital and Health Board

Jackie Hanson
Acting Chief Executive

AWARDED $829,390 IN COLLABORATIVE RESEARCH GRANT SEED FUNDING WITH UQ, QUT, QIMRB AND GRIFFITH

OVER $12M IN HOSPITAL FOUNDATION GRANTS AWARDED

59 SYSTEMATIC REVIEWS PUBLISHED IN 2019

FIVE NURSING RESEARCH INTERN SCHOLARSHIPS AWARDED

EIGHT RESEARCH COORDINATOR GRANTS AWARDED

OVER 1100 PUBLICATIONS IN 2019

2019 PUBLICATIONS: ACT – 24, NSW – 208, NT – 10, QLD – 1100, SA – 90, VIC – 181,WA – 73

METRO NORTH EXECUTIVE DIRECTOR, CLINICAL SERVICES

As 2019 ended, our community entered a new era where the value of health research has become even more apparent. As the COVID-19 Pandemic developed, researchers got to work, ramping up their activities and their resolve to find answers to fundamental and applied health questions.

The need for research was critical: research into tests to diagnose coronavirus, research into vaccine development, the establishment and evaluation of new and virtual models of care, the use of novel technologies to fabricate personal protective equipment, and studies to evaluate the repurposing of medications to support unwell patients. The need for partnerships to do this research was equally critical – partnerships between health services, universities, research institutes, consumer groups, governments and private industry.

Metro North Health continues to contribute to critical state, national and international research efforts. The Metro North Research Strategy represents a visible and sustained commitment to research, our researchers, and our patients in Metro North. Through the strategy, we continue to enable our patients, people, systems, infrastructure, and partners to engage with and deliver high quality research that delivers knowledge, health, social and economic impact. At the core is our commitment to enabling patient centred research, contributing to the development of a vibrant research culture, developing integrated research information, and enhancing sustainable research capacity through infrastructure and partnerships.

The Metro North Research Excellence Awards and Snapshot of Research publicly acknowledge and celebrate our researchers and their excellent research each year. These celebrations recognise the diverse array of research underway across Metro North and reach beyond our health service and out to our academic partners and the wider community.

A cornerstone of the strategy has been the conceptualisation and implementation of the Metro North Research Grants, designed to enable high quality research and engage our people with a research active culture to develop, attract and retain high calibre research expertise. We have appointed 10 Clinician Research Fellows and eight Research Coordinators who are working collaboratively across the HHS and with our academic partners on programs aligned to the Metro North Research Strategy.

The Clinician Research Fellowships have cemented our commitment to early career and emerging clinician researchers. The inaugural Metro North Research Coordinator Grants demonstrate Metro North's respect for our people who enable research, the essential and highly skilled research coordinators who are working across the HHS to build research capacity within clinical departments.

The Collaborative Research Grants proudly recognise the value of collaboration and actively enable our early career researchers to undertake projects of clinical relevance and benefit to our patients and the Metro North community, all done alongside our key academic partners and leveraging their expertise and advanced infrastructure. Across two rounds in 2019 and 2020 we have awarded 17 Collaborative Research Grants with our academic partners University of Queensland, Queensland University of Technology, QIMR Berghofer, and Griffith University.

Finally, I'm very pleased to announce that Professor Daniel Chambers has commenced as the Metro North Executive Director Research. Dan is a thoracic transplant physician and translational clinician researcher. In 2020 he was named one of Australia's top researchers in all fields and number one in the field of transplantation based on number of citations. His research focusses on the mechanisms and treatments for lung fibrosis, silicosis, transplant rejection and post-transplant complications. He runs one of the world's largest clinical trials programs in lung fibrosis. He directs the International Society's Lung Transplant Registry, the first Australian to be appointed to that role, which remains the most significant source of evidence for the practice of lung transplantation globally. His research is supported by over $20 million in competitive grant funding.

We hope you enjoy reading this Snapshot of Research.

Dr Elizabeth Whiting
Executive Director Clinical Services

IMPROVING OUTCOMES FOR DIABETIC KETO-ACIDOSIS

A randomised fluid therapy trial being led by Caboolture Hospital's Intensive Care Unit (ICU) is looking to uncover better treatment options for patients with diabetic keto-acidosis (DKA).

DKA is a common acute complication of diabetes (both Type 1 and Type 2) which is becoming increasingly common in Australia. Patients with DKA are regularly admitted to hospital with some progressing to the ICU. Most of the increase in DKA admissions are happening in rural, regional and outer metropolitan hospitals, such as Caboolture.

The four cornerstones of therapy for DKA are treating the trigger (such as urine infection or missing some insulin doses), intravenous fluids, insulin and electrolytes.

The Caboolture Hospital Sodium Chloride Or Plasmalyte Evaluation for Diabetic Keto-Acidosis (SCOPE-DKA) trial is aimed at determining which type of fluid is best for treating DKA patients.

It is testing the two most commonly used fluids - sodium chloride 0.9 per cent solution and Plasmalyte (148) to gather information that would allow Caboolture Hospital to conduct a larger, definitive trial in the future.

This could include rapidly reversing the condition and shortening or preventing ICU admissions - all helping DKA patients get home faster.

SCOPE-DKA started recruitment in September 2019 with the pilot trial due for completion in September 2020. Caboolture Hospital is the lead site with 65 patients recruited.

This is the first randomised control trial led by the Caboolture Hospital ICU. Caboolture Hospital Staff Specialist Dr Mahesh Ramanan and Princess Alexandra Hospital Staff Specialist Professor Bala Venkatesh are chief investigators.

"While we are starting with fluids as the first intervention to be tested, there is potential for other therapies such as insulin regimes to be tested with the same methodology as SCOPE-DKA in the future," Dr Ramanan said.

"The big picture goal is to improve the management of DKA and provide well-researched evidence that can inform the development of guidelines and protocols for DKA.

"We want patients to get out of hospital faster and bounce back to their normal lives sooner after DKA."

Once recruitment finishes, the chief investigators will analyse the results to determine whether a definitive trial is feasible. Their goal is to test a variety of already existing treatments to work out whether what is already available could be used more effectively.

"The evidence gathered from the SCOPE-DKA project will be used to inform DKA protocols and guidelines," Dr Ramanan said.

Six other Queensland hospital ICUs are recruiting patients for the trial – Sunshine Coast University Hospital, Rockhampton Base Hospital, Hervey Bay Hospital, Mackay Base Hospital, Queen Elizabeth II (QE2) Hospital and Ipswich Hospital.

Associate investigators are Acting Professor Dr Peter Kruger, ICU Staff Specialist at the Princess Alexandra Hospital, and Professor Laurent Billot from The George Institute for Global Health Statistics Division.

CABOOLTURE AND KILCOY RESEARCH DEVELOPMENT UNIT

Since its inception in 2014, the Research Development Unit (RDU) at Caboolture and Kilcoy Hospitals has grown research capacity through sourcing research support, sharing research training opportunities, and providing individualised advice to clinicians on research governance, design, evaluation and dissemination.

In 2019 Metro North, in partnership with The Common Good, provided dedicated funding to grow the RDU, which now comprises seven part time staff with diverse research expertise in diagnostic, therapeutic and health service research:

Research Director Associate Professor Chris Carty

Chris in an experienced medical researcher and research leader with a passion for disruptive technologies in surgical and allied health disciplines. In addition to his Research Director role at Caboolture and Kilcoy Hospitals, Chris is a Queensland Advancing Clinical Research Fellow and Manager of Orthopaedic Research at Queensland Children's Hospital.

Research Coordinator Dr Kelsey Pateman

Kelsey is an oral health therapist with experience in qualitative research methods and implementation science. She also works as the COVID-19 research coordinator for Royal Brisbane and Women's Hospital.

Senior Research Fellow Dr Louise Purtell

Louise is a lab-based scientist and health service researcher with expertise in chronic diseases. She is coordinating research capacity building in infectious diseases at Caboolture Hospital.

Research Support Officers Julia Affleck and Kylie Annetts

Julia and Kylie currently supply research coordination support to the Emergency Department and Intensive Care Unit at Caboolture Hospital.

Women's Children's and Family Service Line Research Coordinator Dr Thuy Frakking

Thuy is an experienced speech pathologist and health service researcher with expertise in paediatric dysphagia. Thuy also works clinically as a speech pathologist at Gold Coast University Hospital.

Emergency, Kilcoy and Woodford Service Line Research Coordinator Stacey Watts

Stacey is an experienced ICU nurse who is coordinating research projects and building research capacity in the Emergency Department, Kilcoy Hospital and Woodford Corrections Health Service Line.

The 2019-2020 financial year has seen a 25% increase in peer-reviewed research outputs and over $600,000 in research funding for Caboolture and Kilcoy staff, along with increased participation in high quality international trials and registries.

The RDU has an emerging relationship with the University of the Sunshine Coast (USC) via the Links4Health collaborative where the 'Research in Healthcare' program is co-led by the RDU Research Director and a conjoint USC Senior Research Fellow Dr Alison Craswell. Alison joins the team as a nursing and multidisciplinary clinical projects researcher, leading collaborative nursing projects between Caboolture Hospital and USC.

The RDU has a vision to develop a dynamic research-active culture informed by the needs of Caboolture-Kilcoy families, nurturing the next generation of clinical researchers and advocating for research to be core pillar of healthcare.

Caboolture Hospital and Kilcoy Hospital Research Director Associate Professor Chris Carty

SILICOSIS RESEARCH

In a world first, researchers from The Prince Charles Hospital (TPCH) and The University of Queensland (UQ) have developed techniques to measure silica in the lungs of workers with silicosis. Their work has led to a groundbreaking new treatment called "whole lung lavage" for workers with the deadly disease.

Silicosis affects mainly stonemasons who inhale toxic silica dust while cutting engineered stone products like kitchen benchtops. The silica dust settles in their lungs and stops their lungs from working. There has been a major epidemic of silicosis in Australia and around the world due to dry-cutting engineered stone benchtops. In Queensland, hundreds of workers have contracted silicosis.

TPCH's Head of Lung Transplant and Lung Fibrosis Research Professor Dan Chambers said that until now there has been no treatment for the insidious disease.

"Silicosis affects mainly young people, some as young as 25. These are young men, many with young families. It was absolutely critical that we help them, and fast. We knew we were racing against time," Prof Chambers said.

In order to work out whether whole lung lavage might be effective, the researchers built on an existing diagnostic technique to allow clinicians to measure the level of silica in a person's lung, a vital point in understanding the severity of damage to a person's lungs caused by the disease and possible treatment options.

TPCH Lung Researcher Dr Simon Apte said silica crystals released during the cutting process are very fine, so they can be drawn into the deepest and most delicate part of the lung, the alveoli.

"Normally the alveoli are kept clean by specialised immune cells called macrophages. For example, when bacteria enter the lung, macrophages rapidly consume and kill the bacteria, like little Pacmen," Dr Apte said.

"However in people with silicosis, the macrophages consume the silica crystals but can't break them down, because they are essentially small rocks. The immune system instead goes into overdrive, causing lung inflammation and eventually, scarring.

"To compound the problem, freshly cut silica also generates free radicals which result in oxidative stress on the lungs which can result in severe damage to the cells. Oxidative stress causes the lung cells to turn a dirty brown; this is the same process which turns avocados brown.

"Therefore, constant intense exposure to these silica crystals, can be extremely detrimental to the person's lung function and the crystals and products of the oxidative damage can be impossible for patient's body to eliminate without intervention."

To measure the silica, Prof Chambers and Dr Apte have developed a scientific technique to break open the person's affected lung cells and extract the crystal, allowing them to calculate a person's 'crystal load' or the number of individual silica particles in a single cell.

Prof Chambers said that being able to calculate the number of crystals gives clinicians a clearer picture about the potential level of injury to the lung tissue, and the potential to remove the silica and the damaged cells.

Armed with this information, clinicians, led by Prof Chambers have been able to wash out the damaging crystal and cells using whole lung lavage.

"This treatment, if successful, could mean a cure for these young men – we are hopeful this innovation will save many lives," Prof Chambers said.

The Prince Charles Hospital Foundation is supporting the research through a Fellowship grant for Dr Apte and a research grant.

Professor Dan Chambers (right) and Dr Simon Apte (top left) are part of team who have developed ground breaking techniques that could lead to a potential cure for many silicosis sufferers.

Nurse Practitioners David Bishop and Sharyn Plath, with Nursing Director Mary Wheeldon (centre)

NURSE PRACTITIONER STUDY AIMS TO HIGHLIGHT IMPROVEMENTS IN AFTER-HOURS CARE

A unique study is assessing the benefits of implementing an after-hours nurse practitioner service in Metro North's residential aged care and subacute settings. The study is led by two Redcliffe Hospital nurse practitioners and the Community and Oral Health Nursing Director for Service Development.

A pilot project called Eyes On Hands On in 2019 was funded by Metro North's SEED program and demonstrated significant benefits to patients, residents and the broader healthcare service.

The new study is being delivered by Redcliffe Hospital emergency department nurse practitioners Sharyn Plath, David Bishop and Mary Ann Wright, and Community and Oral Health Nursing Director – Service Improvement Mary Wheeldon.

Mary Wheeldon said each year around 300 patient transfers occur after hours from Community and Oral Health residential and subacute facilities to Metro North emergency departments.

"For our bedded services the medical coverage after hours is primarily limited to phone advice and there are no onsite medical staff located within services to treat patients," Mary said.

"This can cause delays in accessing treatments for symptom relief, emergency care or end-of-life care, and could have an adverse health effect on the patient or resident.

"Unnecessary transfers also have a significant financial and labour burden on our facilities, emergency departments and the Queensland Ambulance Service."

The new study will evaluate the effectiveness of acute care nurse practitioners covering the after-hours acute care needs of a vulnerable, frail and elderly cohort of patients in a subacute and aged care setting in Metro North.

Mary said the study would cover the two Metro North aged care facilities, Gannet House and Cooinda House, and community-based transitional and rehabilitation services including Zillmere Residential Transition Care, Brighton Rehabilitation, Interim Care and the Brighton Brain Injury Service.

The study will analyse a mix of quantitative data around occasions of service, with qualitative methods including patient and staff interviews and surveys with the study expected to be competed in the second half of 2020.

NEW IMAGING TECHNIQUE TO IDENTIFY HEART DISEASE EARLY

A ground-breaking research project could potentially change how patients are diagnosed with heart disease and prevent long term impacts.

Cardiac sonographer, Natalie Edwards is investigating the role of myocardial imaging in the early identification of cardiac disease.

The Prince Charles Hospital cardiac sonographer Natalie Edwards is investigating the role of myocardial work imaging, a novel non-invasive cardiac ultrasound technique that analyses the contraction patterns of the heart muscle to identify the early presence of cardiac disease.

Ms Edwards said that early detection of significant coronary artery disease is important in preventing a heart attack and subsequent permanent damage to the heart.

"Traditionally, invasive coronary angiography is the most accurate diagnostic test to determine and treat patients with undiagnosed coronary artery disease," Ms Edwards said.

"While this method provides accuracy in diagnosis, it can mean a greater physical impact to the patient and a long recovery time."

Non-invasive detection of patients with significant coronary artery disease remains a challenge despite widespread use of imaging and exercise to detect underlying blockages of that would otherwise remain undetected.

Myocardial work imaging uses new ultrasound technology that enables sonographers to view and analyse the motion of heart muscle with greater clarity.

"By using the new technology, we can see whether there is reduced blood flow and oxygen to certain regions of the heart muscle which indicates that the heart is becoming less efficient in its capacity to pump," Ms Edwards said.

"By having a more accurate view of the person's heart tissue, and how it functions, we can potentially identify a person with early stage heart disease which allows us to intervene early with appropriate treatment plans to potentially help prevent more severe and permanent damage to the heart in the longer term."

Ms Edwards's research was awarded the internationally prestigious Brian Haluska Sonographer Research Award at the American Society of Echocardiography's 30th Annual Scientific Session in 2019.

Her research is supported by a PhD scholarship through The Common Good, and a grant from The Prince Charles Hospital Foundation.

4F PROJECT STREAMLINES PATIENT CARE

A research project investigating the assessment and treatment of conditions which share common neurological symptoms is improving the way patients are managed during their hospital stay.

Focusing on the four clinical conditions of seizure (fits), syncope (faints), falls and funny turns (transient ischemic attack or TIA), the 4F project aimed to develop and establish standard clinical guidelines that allow patients access to safe, timely and appropriate care, and avoid unnecessary hospital admissions.

Project lead Jodie Huntley-Forde said the four conditions (the 4Fs) overlap and are often confused which results in a 'one-size-fits-all' approach to management.

"These conditions are a group of largely traumatic events that force patients to present to the emergency department, but often resolve by the time of presentation. This leads to significant difficulty with a diagnosis," Jodie said.

Until now, Queensland Health has no standard management approach to these conditions, except TIA, and there is a high hospital admission rate despite a lack of evidence that this improves health outcomes.

Metro North Executive Director Medicine Stream and Project Sponsor Associate Professor Jeffrey Rowland said evidence shows that these diagnostic groups are often low risk and can be safely managed as an outpatient with appropriate investigation and follow-up.

"There are some patients who are deemed high risk upon medical review and are at risk of subsequent events, and these patients should be admitted and receive appropriate and safe inpatient overnight care," Assoc Prof Rowland said.

Data sourced during the study showed that on average 4F patients spent up to five hours in the emergency department and had at least four clinical tests during their presentation.

Just under 65 per cent of 4F presentations result in admission to an inpatient or short stay unit. Of those admitted to an inpatient unit, 20 per cent stay for less than 24 hours.

"The 4F project promotes the concept that patients presenting to the ED after experiencing one of the 4Fs should receive a streamlined, fast track evaluation and treatment pathway," Jodie said.

Through extensive consultation with stakeholders across The Prince Charles, Royal Brisbane and Women's, Caboolture and Redcliffe Hospitals, the 4F Project developed a suite of evidence-based clinical pathways designed to identify suitable patients that can be discharged from the emergency department and directed toward ambulatory follow up care.

The focus of the pathways was on minimising the duration of hospital care by providing faster assessments, earlier tests and rapid access to outpatient treatments.

"Having a clear treatment pathway for these four conditions, will ensure patients receive the right care in the right place at the right time," Jodie said.

"The guidelines support clinicians to avoid hospital admission when it is safe for the patient.

"The science behind the way we manage these conditions has not changed because of the pathway; it just about streamlining the processes around it."

To date, the seizure and falls pathways have been implemented at two Metro North sites. This has resulted in reducing the amount of time patients spend in the emergency department (on average 30 minutes), fewer patients requiring admission to hospital (4% reduction), and most importantly reducing wait times for some tests or specialist reviews.


Face Shield
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COVID-19 PROJECTS APPROVED

Metro North researchers are currently undertaking more than 60 projects aimed at improving care for patients during the COVID-19 pandemic, including leading two large international collaborations to understand and treat the disease.

The Australasian COVID-19 Trial (ASCOT)

Metro North Consultant Infectious Diseases Physician at the Royal Brisbane and Women's Hospital and UQ Centre for Clinical Research Director, Professor David Paterson, alongside Dr Andrew Redmond from The Royal Brisbane and Women's Hospital and Dr Andrew Burke and Dr Alex Chaudhuri from The Prince Charles Hospital, are part of the Australasian COVID-19 Trial (ASCOT) being led by the Doherty Institute in Melbourne.

The ASCOT trial will use an adaptive design to search for an effective treatment for COVID-19, and will recruit patients hospitalised with COVID-19 who do not yet require intensive care support, with the aim of preventing deterioration to the point of needing a ventilator.

Major fundraising for the trial led by the RBWH Foundation was pivotal in enabling the trial to extend recruitment to Queensland hospitals. Patients admitted to participating Queensland hospitals after testing positive for the disease can be involved in the ASCOT study, being led by the Doherty Institute in Melbourne. The planned next steps include the use of convalescent plasma obtained from people who have recovered from COVID-19 in collaboration with Australian Red Cross LifeBlood.

COVID-19 Critical Care Consortium

A Queensland-based research team is leading a global clinical study to identify more effective treatments for the most critically ill COVID-19 patients.

"This study is the first of its kind in the world. With the help of our partners at the University of Queensland and The Queensland University of Technology, we are using data modelling, and will ultimately employ machine learning and AI, to look for patterns that might show us what treatments are most effective for COVID-19 patients in intensive care.

COVID Critical founder Professor John Fraser is a pre-eminent specialist at the Prince Charles Hospital and Director of ICU at Brisbane's St Andrews Hospital.

With almost 400 hospitals and research facilities participating in 52 countries, the COVID-19 Critical Care Consortium (COVID Critical) is building a world-leading database of information about COVID-19 patients in intensive care.

As the database grows, so does the potential for ground breaking science that might ultimately change the course of COVID-19 and save the lives of critically ill COVID-19 patients.

The COVID Critical Consortium is working with IBM to design a dashboard that will present these insights to clinicians quickly to inform them when treating their own patients.

The project will also track the long-term progress of discharged patients, empowering governments and healthcare providers to budget and plan more effectively for future outbreaks and ongoing health issues caused by the virus.

The COVID-19 Critical Care Consortium study is led by researchers at the Critical Care Research Group, based at The Prince Charles Hospital. And supported by The Prince Charles Hospital Foundation, The Wesley Medical Research, Queensland Health and International Severe Acute Respiratory and emerging Infection Consortium.

METRO NORTH NURSING AND MIDWIFERY RESEARCH

Chief Nursing and Midwifery Officer Adjunct Associate Professor Alanna Geary

It is with great pleasure lead Nursing and Midwifery in Metro North. Nursing and midwifery research has been a slowly evolving program of work and while there have been excellent nursing and midwifery research outcomes for some of the individual directorates and individuals, the past couple of years have provided an opportunity to look more broadly at the research agenda and work towards a collaborative body of research for the hospital and health service.

The past couple of years has highlighted how much as a profession and as the biggest hospital and health service in the country we need to continue to nurture our research program, the individuals who are passionate about nursing and midwifery research and in addition ensure that we too as valued members of the interdisciplinary team can contribute to the body of evidence as a vital link in the broader health research agenda.

There has been significant research undertaken by nurses and midwives in the past few years. Some of this has been undertaken independently by outstanding researchers, but much more of the nursing and midwifery research has been collaborative, involving large teams, many of which are interdisciplinary. To every researcher working in the nursing and midwifery space I congratulate you on outstanding outcomes and many publications. While conference presentation may be limited at present, I trust that in ensuing years the research undertaken today, will take centre stage on the world stage for many years to come. To the nurses and midwives who support research as well as leading it I also thank you very much. It is with perseverance and dedication that we can continue our pathway and ensure that Metro North is able to provide contemporary, evidence based care, founded on the research that we ourselves have undertaken.

In 2020 we launched the Nursing and Midwifery research internships and five very talented nursing and midwifery staff have commenced their research journeys, working collaboratively with experienced nursing and midwifery research leaders. This program is very much in its infancy however shows great promise and it is envisaged that this will develop and grow the next generation of high degree students and nursing and midwifery researchers.

Finally, in 2019 we launched the Professor Joan Webster Research Award, with Professor Paul Fulbrook announced as the first recipient at the 2020 Research Excellence Awards. Joan will herself be involved in the judging and awarding of what is hoped to become a very prestigious award to acknowledge individuals who aspire to emulate the work of a most amazing nurse, midwife, colleague, friend and researcher.

I look forward to the next few years of nursing and midwifery research in Metro North. What has been has been wonderful, what we still have to achieve will be outstanding.

METRO NORTH-QUT NURSING RESEARCH INTERN SCHOLARSHIPS

A new program of Metro North-QUT Nursing Research Intern Scholarships is building collaborative partnerships between clinicians with great ideas for practice development and experienced nurse researchers.

These intern scholarships will enable nurses and midwives to undertake research under the guidance and direction of QUT nursing researchers. They aim to support the career and professional development for those who have never undertaken research or have been involved previously in research but never had the opportunity to actively pursue it.

The first round of scholarships beginning in July 2020 have been awarded to 5 clinical nurses across RBWH, TPCH and Redcliffe Hospital – providing each intern with backfill for one day per week to lead a research project over 12 months and undertake supervised practice in research methodology, posing the question, literature review and some initial outcomes.

The program will support the development of a community of emerging nurse researchers, strengthen our Metro North QUT partnerships and promote higher degree research pathways. We look forward to sharing the journey over the next year.

Name	Facility/stream	Proposal	Mentors
Jane Wickins	TPCH Surgical	Reducing catheter-associated urinary tract infections in the acute care setting.	Dr Christina Parker Prof Clint Douglas
Renee McMillian	Redcliffe Rehabilitation	Improving continence management in the rehabilitation unit.	Dr Amanda Fox Assoc Prof Carol Windsor
Joanne Vincent	TPCH Heart and Lung	Evaluating discharge with home AIRVO/high-flow nasal therapy for COPD patients.	Dr Sandra Johnston Prof Fiona Coyer
Jill Davis	RBWH Medical Imaging	Evaluating outcomes of endovascular clot retrieval service for stroke.	Dr Nicole Marsh Prof Sam Keogh
Imelda Chua	TPCH Surgical	Preventing cancellations or delayed surgery with pre-anaesthetic nurse case management.	Dr Judy Munday Prof Jed Duff

EMPOWERING NURSES THROUGH RESEARCH

The Evidence-based Nursing CORE assessment (ENCORE) trial is a multi-site cluster randomised controlled trial to test the effectiveness on patient, clinical staff and economic outcomes of reformed patient assessment practices in acute care hospitals. It aims to evaluate the impact of the ENCORE intervention on patient and staff outcomes and establish a benefit-to-cost ratio of the ENCORE intervention.

The ENCORE trial is a health service intervention transforming nursing assessment in acute hospitals by using two approaches. The first is surveillance, using a novel Core Plus specialty-specific assessment model with a ward re-design that supports this model and enhances multidisciplinary team communication. The second is intervention implementation, which uses structural support at ward-level to embed the service intervention with systems change strategies that enhance existing organisational routines and procedures.

The ENCORE trial is funded by the National Health and Medical Research Council in partnership with Metro North and St Vincent's Health Australia (NSW).

How do we develop hospital ward cultures where teams are proactively engaged to keep patients safe and nursing core assessment is visible and valued? The ENCORE trial team, including nursing staff from over 20 acute medical and surgical wards in Metro North, are generating solutions and answers to this very question.

CONJOINT PROFESSOR ROLE SET TO ENABLE NURSING AND MIDWIFERY RESEARCH TO FLOURISH IN METRO NORTH

In this newly established conjoint role, Professor Clint Douglas seeks to enable nursing practice development and health services implementation research to flourish in Metro North. He brings a commitment to ensure that nursing research is closely tied to the needs of practice—enabling a bottom-up approach to supporting quality and innovation. He is interested in the messy and complex process of practice change at the hospital ward or microsystems level, where healthcare is both provided and experienced. Conjoint professorial appointments at the health service level will ensure nursing research leadership and skilled facilitation for developing person-centred, safe and effective workplaces with frontline teams.

Prof Clint Douglas

As a clinical academic, Prof Douglas's research focus is at the intersection of practice development, health services research and patient safety. With a clinical background in acute care nursing, he leads a research program to optimise the influence of nursing to keep patients safe: prevention of patient deterioration in general wards, the impact of hospital nurse staffing on patient outcomes, and evaluation of innovative nurse-led services.

Prof Douglas has a successful track-record of building collaborative academic partnerships with clinicians, hospital executives and policy makers to design and execute complex and rigorous health services research—reflected in his appointment as Conjoint Professor and Nursing Chair with Metro North Health and QUT.

Within QUT's Centre for Healthcare Transformation, Prof Douglas is known for leading large-scale acute hospital research on systems change and patient safety. He is currently Chief Investigator A on an NHMRC-funded multi-site cluster-randomised trial transforming nursing assessment in medical-surgical wards in Metro North. Over the past 5 years, this research has successfully engaged multidisciplinary hospital teams to develop ward cultures that enable proactive nursing surveillance to keep patients safe. He is also a chief investigator on the landmark RN4CAST Australia study investigating the effects of a minimum nurse-to-patient ratio policy on patient safety and health service outcomes in Queensland hospitals.

GENE RESEARCH TO REVOLUTIONISE LUNG DISEASE OUTCOMES

World first genomic research at The Prince Charles Hospital (TPCH) could revolutionise outcomes for patients suffering from a severe and often fatal lung disease.

Researchers from TPCH and The University of Queensland are leading an Australian multi-centre trial investigating how the use of androgens, a common male sex hormone, could reverse a genetic mutation in some individuals with Idiopathic Pulmonary Fibrosis (IPF), improving their future health outcomes. The trial is funded by the Medical Research Future Fund.

Principal Investigator Prof Dan Chambers said that IPF is a condition which causes severe scarring in the lung tissue and progressive breathlessness.

"People diagnosed with IPF have a poor prognosis, with the majority either dying of the disease or requiring a lung transplant to survive," Prof Chambers said.

"Genetic evidence suggests that 25 per cent of people with IPF have shortened telomeres which can significantly impact on their disease progression."

Telomeres are distinctive structures found at the end of chromosomes and consist of the same DNA sequence repeated over and over again.

They protect the ends of a person's chromosomes by forming a cap, much like the plastic tip on a shoelace. When telomeres are shortened, this can impact on a person's cell function and disease process.

"We know that IPF patients with abnormal telomeres experience much more severe symptoms than those patients with normal telomeres including earlier disease onset and a more aggressive clinical course," Prof Chambers said.

Applying previous research findings which show the success of using androgens to treat certain genetic blood disorders, the team is now investigating whether this hormone can improve treatment for people suffering from IPF.

"Past studies show that androgens can help stabilise and even rebuild telomeres, which may subsequently help fight disease and slow the disease process," Prof Chambers said.

"Our goal is to test whether androgens can help increase the length of telomeres in a person with IPF.

"If we can show that androgens work in treating patients with IPF with shortened telomeres, this could potentially transform their prognosis.

"It means that when a patient is diagnosed with IPF, we could treat them earlier, reverse the disease, and ultimately improve their quality and length of life."

2020 COLLABORATIVE RESEARCH GRANTS

In partnership with The University of Queensland, Queensland University of Technology, QIMR Berghofer and Griffith University, Metro North awarded 10 Collaborative Research Grants in 2020.

RESEARCH STRATEGY THEMES (FUNDED)	DIAGNOSTICS	THERAPEUTICS	HEALTH SERVICES
OVERALL	9	8	10
ROUND 1	3	5	5
ROUND 2	6	3	5

METRO NORTH AND THE UNIVERSITY OF QUEENSLAND

Pharmacokinetics of tranexamic acid in adult patients undergoing elective primary hip replacement: an in-vivo study.

THERAPEUTICS

Patients undergoing total hip replacement surgery are at increased risk of major blood loss and may require a blood transfusion. This risk is reduced by the administration of intravenous tranexamic acid, which acts by preventing the breakdown of blood clots.

Even though the intravenous tranexamic acid is known to reduce blood loss, there is no evidence if the dose currently administered is adequate to prevent the breakdown of the clots.

This study proposes investigating the blood level of tranexamic acid and the extent of clot-breakdown after its administration, with the aim to establish the most suitable dose for this drug.

Investigative Team

- Dr Usha Gurunathan, The Prince Charles Hospital
- Dr Suzanne Parker, The University of Queensland
- Prof Ross Crawford, The Prince Charles Hospital

METRO NORTH AND THE UNIVERSITY OF QUEENSLAND (CONTINUED)

Measuring outcomes and value in rehabilitation: Developing a minimum data set for implementation into practice in STARS.

HEALTH SERVICES

Investigative Team

There is increasing focus on measuring the value of health services, however routinely collected datasets currently focus on process, efficiency, and cost, rather than effectiveness, experience, and value.

This project brings together researchers, consumers, and clinicians as co-creators in the development of a single dataset, comprising global outcomes and patient reported outcome and experience measures, for a heterogeneous rehabilitation population.

This dataset and an associated implementation strategy will be ready for immediate translation to practice in Metro North rehabilitation services, including the Surgical, Treatment and Rehabilitation Service (STARS).

- Dr Adrienne Young, Royal Brisbane and Women's Hospital
- Dr Sarah Wallace, The University of Queensland
- A/Prof Maria Hennessy, Jamieson Trauma Institute
- A/Prof Merrilyn Banks, Royal Brisbane and Women's Hospital

Advancing knowledge in cardiac surgery-associated organ complications: Confronting the dark side of cell-free mitochondrial DNA.

DIAGNOSTICS

Investigative Team

The most common surgical solution for cardiovascular disease is a type of cardiac operation, the cardiopulmonary bypass. However, frequent postoperative organ dysfunction impedes patient outcomes. The causes of such dysfunction remain a poorly understood phenomenon.

Increased levels of the biomarker circulating cell free mitochondrial DMA (cf-mtDNA) has been linked to organ damage in other illnesses, and minimising cf-mtDNA could be key to optimising post-cardiac surgery patient outcomes.

This proposal aims to profile cf-mtDNA release triggers and levels during/post-surgery, and its influence on patient's cardiac surgery outcomes into diagnostic and therapeutic tools.

- Dr Rishendran Naidoo, The Prince Charles Hospital
- Dr Katrina Ki, The University of Queensland
- Dr Charles McDonald, The Prince Charles Hospital
- Dr Jacky Suen, The University of Queensland
- Dr Jacky Suen, UQ

METRO NORTH AND QUEENSLAND UNIVERSITY OF TECHNOLOGY

Aerosol survival of respiratory viruses in ambient relative humidity.

THERAPEUTICS, DIAGNOSTICS, HEALTH SERVICES

Investigative Team

Influenza transmission is known to occur via droplets. In order to improve our understanding of influenza transmission, this project aims to investigate transmission from infected patients when producing aerosols, i.e. when coughing and breathing.

The length of time viruses remain infectious will be measured as well as the effectiveness of ambient relative humidity and safe levels of ultraviolet C radiation (UVC) in reducing the transmission. This proof of concept project will provide the initial scientific data to support understanding of the benefits of humidity control and UVC in clinical settings to ultimately inform infection control practices.

- Dr George Tay, The Prince Charles Hospital
- Dr Graham Johnson, Queensland University of Technology
- Mr Sadegh Niazi, Queensland University of Technology

METRO NORTH AND QUEENSLAND UNIVERSITY OF TECHNOLOGY (CONTINUED)

Diagnostic Sensitivity of Plasma Endothelin-1 for Cerebral Vasospasm after Subarachnoid Haemorrhage.

DIAGNOSTICS

Investigative Team

The biomarker Endothelin-1 (ET1) has been examined as able to identify patients at risk of stroke due to cerebral vasospasm. The robustness of these findings provides the rationale to this research project, which is focused on determining the diagnostic value of biomarker ET1 to identify patients at risk of stroke due to cerebral vasospasm prior to symptoms.

Establishing the diagnostic sensitivity and specificity of prediction can lead to the translation of early identification and treatment to improve outcomes for patients.

The findings of this research will enlighten new knowledge into the early detection and treatment for patients developing stroke.

- Dr Judith Bellapart, Royal Brisbane and Women's Hospital
- Prof Kevin Laupland, Queensland University of Technology
- Dr Fatima Nasrallah, The University of Queensland

Developing a pragmatic predictive and screening process for Post-ICU Syndrome.

DIAGNOSTICS, HEALTH SERVICES

Investigative Team

Up to 80 per cent of intensive care unit (ICU) survivors experience ongoing physical, cognitive, and psychological impairments, collectively known as Post-ICU Syndrome.

The long term personal and economic costs of Post-ICU Syndrome are immense. Some risk factors are known, but a non-standardised approach to prediction and screening hinders diagnosis and interventions.

The aim of this project is to utilise data from 300 patients to develop and test prediction and screening tools to improve diagnosis and interventions of these patients.

- Assoc Prof Dylan Flaws, Royal Brisbane and Women's Hospital
- Prof Vivienne Tippett, Queensland University of Technology

METRO NORTH AND QIMR BERGHOFER

Improving cognitive functioning in early psychosis: A modelling approach using Transcranial Magnetic Stimulation.

THERAPEUTICS

Investigative Team

Cognitive problems are a frequent cause of severe disability in young adults who develop psychosis. Unfortunately, these problems are difficult to manage with available treatments.

This project aims to provide initial evidence supporting the use of advanced computational modelling to orient targeted brain stimulation to restore cognitive functions in people with psychosis. The project is expected to demonstrate the benefits of combining mathematical modelling with brain stimulation to normalise the activity of brain networks underpinning cognitive deficits in psychosis.

- Dr Bjorn Burgher, Metro North Mental Health
- Dr Luca Cocchi, QIMR Berghofer

Integration of machine learning in breast cancer prognosis by profiling the tumour microenvironment.

THERAPEUTICS, DIAGNOSTICS

Investigative Team

- Dr Po-Ling Inglis, Royal Brisbane and Women's Hospital
- Dr Olga Kondrashova, QIMR Berghofer
- Dr Nicola Waddell, QIMR Berghofer
- Prof Sunil Lakhani, Pathology Qld

This project will explore the integration of machine learning into clinical practice as a decision support tool.

Prior to treatment, breast cancer patients will have molecular profiling of their tumour cells and tumour microenvironment analysed using advanced machine learning.

Establishing this platform of newly diagnosed patients will allow integration of research results into clinical practice, through incorporating clinically relevant biomarkers already validated in previous research and by identifying novel biomarkers.

This project will integrate machine learning into clinical research, and subsequently clinical practice, aiming to improve breast cancer patient care.

Medication Administration Evaluation and Feedback Tool: A Pilot Stepped Wedge Cluster Randomised.

HEALTH SERVICES

Investigative Team

- Mrs Karen Davies, Royal Brisbane and Women's Hospital
- Dr Karen Hay, QIMR Berghofer
- A/Prof Karen Whitfield, Royal Brisbane and Women's Hospital
- Mrs Karen Chippindall, Redcliffe Hospital

Safe medication practice is pivotal to quality modern healthcare. Despite significant investment in education and strategies, medication errors still persist.

The Medication Administration Evaluation and Feedback Tool (MAEFT) is a new and recently validated tool that may help optimise nursing administration practice.

The aim of the study is to evaluate the impact of this contemporary intervention in optimising medication administration and reducing error, and to test the feasibility of investigating the long-term potential for significantly reducing preventable patient harm.

METRO NORTH AND GRIFFITH UNIVERSITY

Improving Outcomes of Videoconference Psychotherapy for Patients with Chronic Spinal Pain: The Impact of Illness Beliefs.

HEALTH SERVICES

Investigative Team

- Mr Scott Ruddell, Royal Brisbane and Women's Hospital
- Dr Bonnie Clough, Griffith University
- Dr Angela White, Royal Brisbane and Women's Hospital
- Prof Tamara Ownsworth, Griffith University

Chronic spinal pain is associated with significant psychological distress and may exacerbate the underlying medical condition. Psychological treatment has been shown to improve mental and physical health outcomes for people with chronic spinal pain.

Videoconference psychotherapy (VCP) is an innovative digital healthcare service provided by Metro North as part of the Spinal Physiotherapy Screening Clinic Telehealth Service. However, it remains unclear how factors such as illness beliefs, engagement and therapeutic alliance impact VCP treatment outcomes.

The aim of the current study is to better understand the impact of these factors on patient outcomes and directly utilise the findings to improve clinical practice.

2020 METRO NORTH CLINICIAN RESEARCH FELLOWS

PEOPLE

DR SUSAN DE JERSEY

"IMPROVING NUTRITION RELATED ANTENATAL CARE TO OPTIMISE FUTURE HEALTH OUTCOMES FOR MOTHERS AND THEIR OFFSPRING"

My clinical work directly informs my research and vice versa, with the aim of ensuring women are provided with evidence-based health care advice and services to prevent complications and conditions during and following pregnancy.

IMPLEMENTATION

HEALTH SERVICES

ASSOCIATE PROFESSOR JAYESH DHANANI

"INHALE FOR COMFORT AND ANALGESIA – INNOVATION IN PROVIDING ANALGESIA AND SEDATION USING NEBULISATION"

This fellowship will provide me opportunities to broaden the field of research and clinical application of aerosol therapy, to not only other formulations but also in numerous clinical disciplines. The results of my research program will lead to an effective, painless, non-invasive mode of analgesia and sedation delivery which can be used to help patients in diverse settings, such as emergency medicine, prehospital trauma and palliative care.

TRANSLATION THERAPEUTICS

DR HENRY MARSHALL

"CO-RIQUIRE (COMORBIDITY, RISK, QUIT, REACH) – ADDRESSING LUNG CANCER SCREENING KNOWLEDGE GAPS"

By doing this research I am able to have a voice that I would not have otherwise; the opportunity to present medical research supporting lung cancer screening and the opportunity to contribute to filling the knowledge gaps.

IMPLEMENTATION DIAGNOSTICS

ASSOCIATE PROFESSOR KIRAN SHEKAR

"THE NO TUBE PROJECT: INTEGRATING NON-INVASIVE AIRWAY BASED RESPIRATORY SUPPORT, NITRIC OXIDE GAS INHALATION AND EXTRACORPOREAL RESPIRATORY SUPPORT TO REDUCE THE BURDEN OF INVASIVE MECHANICAL VENTILATION IN INTENSIVE CARE UNITS"

This program of research will not only utilise and develop therapies that help prevent Invasive Mechanical Ventilation but will also utilise cutting edge molecular diagnostics to help provide personalised, precision medicine.

TRANSLATION THERAPEUTICS

DR MATTHEW ROBERTS

"BEYOND THE SCALPEL: SURGEON-LED MULTIDISCIPLINARY UROLOGICAL CARE WITH INNOVATIVE PRECISION DIAGNOSTICS AND THERAPEUTICS"

This fellowship is crucial for me to advance my professional development in my clinical practice areas while also establishing myself as a new investigator in urological research.

2021 METRO NORTH CLINICIAN RESEARCH FELLOWS

DISCOVERY

THERAPEUTICS

ASSOCIATE PROFESSOR VICTORIA ELEY

DEMONSTRATING THE EFFECT OF PRE-DELIVERY ANTIBIOTICS ON THE NEONATAL INTESTINAL MICROBIOME AND IMMUNE SYSTEM

My overarching vision is to optimise clinical outcomes for mother and child following caesarean section. 100, 000 women have elective caesarean sections every year in Australia and all of these women will receive antibiotic therapy. Antibiotics are known to affect the intestinal microbiome and are thought to be linked to many chronic diseases, including allergic disease. However, the short and long-term effects of antibiotics on mother and baby are not yet known.

IMPACT

HEALTH SERVICES

DR NATASHA ROBERTS

ADDRESSING UNMET NEEDS IN PROSTATE CANCER CARE

My overall aim is to assist Metro North develop the best clinical multi-disciplinary, tertiary and primary care for its prostate cancer patients. My approach will be to establish a research program that addresses the unmet needs of prostate cancer patients and is synergistic with my duties as a Prostate Cancer Specialist Nurse.

IMPACT

HEALTH SERVICES

ASSOCIATE PROFESSOR DYLAN FLAWS

GREATER RECOVERY AFTER CRITICAL CARE (GRACE)

This fellowship will follow the patient as they leave ICU by applying a patient driven, multidisciplinary approach to physical, cognitive and psychological recovery. This fellowship will utilise my pre-existing skills in predictive modelling to develop a pragmatic tool to identify in hospital patients at risk of Post Intensive Care Syndrome, allowing discharge planning and prevention.

TRANSLATION

DIAGNOSTICS

DR THUY FRAKKING

STANDARDISATION OF SWALLOWING SOUNDS TO PROVIDE BETTER ACCESS TO SAFER, MORE ACCURATE AND IMPROVED RELIABILITY FOR THE DETECTION OF SWALLOWING DISORDERS IN NEONATES AND CHILDREN

My proposed research is closely aligned with my Speech Pathology clinician duties in the field of swallowing disorders in neonates and children. As a direct result, I will have the opportunity to clinically supervise, teach and inspire current and future speech pathology graduates in the area of swallowing disorders.

IMPLEMENTATION

DIAGNOSTICS

ASSOCIATE PROFESSOR LATA VADLAMUDI

DEVELOPING A QUEENSLAND NEURO-GENOMICS SERVICE TO UNDERPIN THE ERA OF PRECISION-BASED MEDICINE

The drive for my research comes from my inability to answer common clinical questions in the epilepsy clinic, and hence my Fellowship is synergistic with my day to day practice. This Fellowship closely integrates with my daily clinician duties and in fact, will improve my clinical practice by being able to answer clinical questions better and provide more personalised care to my patients.

CLINICIAN RESEARCH FELLOWS

ASSOCIATE PROFESSOR JAYESH DHANANI – DISCOVERY

Royal Brisbane and Women's Hospital Intensive Care Unit Staff Specialist Associate Professor Jayesh Dhanani is leading an emerging field of drug delivery for pain and discomfort relief in pre-hospital emergency, post-operative, emergency medicine, military and palliative care patients.

A Metro North Clinician Research Fellowship is enabling Assoc Prof Dhanani to investigate alternatives to administering medication via a non-invasive method focusing on nebulisation.

"Up to 60 per cent of patients can suffer from nausea and vomiting, constipation, over-sedation and other side-effects directly related to the use of an intravenous method of drug administration," Dr Dhanani.

"We're looking into nebulisation which is commonly used to treat asthma-like conditions.

It allows the patient to breathe-in the medication rather than have it administered using a cannula into their veins.

"Without being connected to a drip, patients are more mobile and autonomous during their hospital stay. This also helps to prevent delirium and other complications in hospitalised patients too."

So far, the research is demonstrating that a nebulised route can be more effective to manage patient pain and discomfort.

"Data at this stage tells us that when we use a nebulised route, the lung acts as a depot and slowly leaks the drugs into the bloodstream," Dr Dhanani said.

"What we're doing now is trying to find the correct dosage. We need to ensure that the nebulised drug particles are the right size to be inhaled, and at the right dosage to actually perform as a sedative or painkiller."

With dedicated time and resources for his research thanks to the fellowship, Dr Dhanani has been able to make great progress in the last few months and is looking forward to soon beginning clinical trials.

Lead author on the paper, "Fundamentals of aerosol therapy in critical care" published in 2016 in *Critical Care* has been cited 41 times and has a field weighted citation impact of 1.58.

PROFESSOR KIRAN SHEKAR – INNOVATION

The Prince Charles Hospital Intensive Care Staff Specialist Associate Professor Kiran Shekar has a special interest in researching and developing cost-effective, viable alternatives to invasive mechanical ventilation in intensive care units around the world.

His research not only involves high end complex therapies such as extracorporeal life support but also development of innovative, low-cost intensive care solutions for resource limited settings.

When the COVID-19 pandemic hit, intensive care services globally were in high demand kicking off Assoc Prof Shekar's Budget ICU Project, one aspect of his wider research. Prof Shekar is supported by Professor Cameron Brown and the expert team at Queensland University of Technology.

"Just like everyone else in the world, my priorities shifted in a big way when COVID-19 began spreading across borders. My re-shaped priorities forced me to jump two steps ahead in my research and building budget ICU infrastructure became my main focus. Science and technology have the ability to help everyone, everywhere," Assoc Prof Shekar said.

The Fellowship is critical in allowing Dr Shekar to pursue clinician researcher pathways.

"Research is a 24 hour a day, seven days a week job; it's always on your mind. Having the Fellowship means I can bring a lot more balance to my life, otherwise something has to give, like spending time with my family," he said.

"I'm very grateful to be part of the Fellowship during the pandemic, we all have to think differently and it's humbling to be part of a program that fosters a culture of great research and encourages pioneering ways to improve healthcare."

Assoc Prof Shekar's research will mean that one day, developing countries will be able to locally source and create their own ventilators, improving the access and quality of ICUs around the world.

His recent publication (March 2020) as senior author in *Lancet Respiratory Medicine* on expert consensus recommendations for planning and provision of extracorporeal life support during COVID-19 pandemic has already been cited over 120 times with a field weighted impact of 28.

DR MATTHEW ROBERTS – DISCOVERY

Senior Medical Officer Dr Matthew Roberts from Royal Brisbane and Women's Hospital and Redcliffe Hospital is conducting a wide scope of research into prostate cancer, including the diagnosis, treatment, and mental health of patients.

Dr Roberts's research will allow him to dive deeper into the way we diagnose prostate cancer and how to improve the lives of those who live with it.

"Many men will develop cancer that never seriously affects them. However in Australia, 80 per cent of 80-year-old men probably have prostate cancer and about 100,000 are living with it. This volume of cancer sadly ends the lives of more men than breast cancer does for women," Dr Roberts said.

"Early detection is the best way to prevent serious complications from the cancer, so we want early and accurate testing. The current PSA blood test is roughly 60 per cent accurate, and we're looking at better ways to use prostate-specific membrane antigen (PSMA) positron emission tomography (PET) scans for diagnosis.

"My research will discover if this scan can give us nearly 100 per cent accuracy, which will save men having to undergo a biopsy procedure which in many cases can cause infection and discomfort for the patient."

As a clinician, Dr Roberts is passionate about connecting patients with research that will make a real difference to their healthcare journey and outcomes.

"It's been incredible to have time I can dedicate solely to research. Collaborating with others is crucial to making this project progress and getting the time to do this outside of clinical hours has been fantastic."

His paper in *European Urology* "Gallium-68 Prostate-specific Membrane Antigen Positron Emission Tomography in Advanced Prostate Cancer—Updated Diagnostic Utility, Sensitivity, Specificity, and Distribution of Prostate-specific Membrane Antigen-avid Lesions: A Systematic Review and Meta-analysis", has been cited over 100 times in under 2 years with a field weighted citation impact score of 103.48, and central to international clinical guidelines.

DR HENRY MARSHALL – THERAPEUTICS

Lung cancer is Australia's biggest cancer killer, but despite its prevalence it carries significant stigma. For the past decade, Dr Henry Marshall has been hunting for early signs of lung cancer to reduce the disease's high mortality.

Early lung cancer identification is critical to treatment and survival, with the majority of lung cancers detected late, due to social and socioeconomic barriers. Identifying and reducing these barriers is one a key focus for Dr Marshall's Clinical Research Fellowship program.

"There's a stigma around smoking. It's linked with lower socioeconomic status, living rural, ethnicity. People who are harder to reach and find," Dr Marshall said.

A report in August into lung cancer screening in Australia found there are many unknowns which complicate implementation of screening programs. Unlike other cancers, a lung cancer screening can't be narrowed by sex or age.

"How do we do that in the community? We don't collect standardised data on smoking," Dr Marshall said.

Dr Marshall's research is leveraging the International Lung Screening Trial (ILST) led by TPCH's Professor Kwun Fong. The trial has screened 4000 participants across Australia, Canada, Spain and Hong Kong.

"We're looking at the continuum of screening and the barriers to screening. We know the people in clinic are different to the people who volunteer for screening. We need to know what are the barriers preventing early lung cancer screening," he said.

A REPORT IN AUGUST INTO LUNG CANCER SCREENING IN AUSTRALIA FOUND THERE ARE MANY UNKNOWNS WHICH COMPLICATE IMPLEMENTATION OF SCREENING PROGRAMS. UNLIKE OTHER CANCERS, A LUNG CANCER SCREENING CAN'T BE NARROWED BY SEX OR AGE.

To do that, Dr Marshall will partner with researchers at the University of Sydney to undertake qualitative research with smokers in Queensland and New South Wales who did and didn't attend a lung screen after contacting the ILST.

Another project as part of the Clinical Research Fellowship is to use CT scans take for the lung cancer screening program for signs of comorbidity.

"We know that in 95 per cent of the people we screen we won't find lung cancer," Dr Marshall said.

"Unlike breast, bowel and cervical cancer screening programs, we're looking at other parts of the body. A CT scan of the chest captures the thyroid, adrenals, lungs, etc. It's possible we could add value to the lung cancer screening program by looking for other prevalent illness."

The Prince Charles Hospital is leading the project, with 600 of the 1000 Australian participants. The project is a partnership with Royal Melbourne Hospital and St Vincent's Hospital in Sydney.

Dr Marshall's fellowship research also includes using the My Quit Buddy app to help people quit smoking, and looking at a blood biomarker to predict lung cancer risk.

"CT scans are good but there are some risks and issues. A blood biomarker wouldn't be a substitute but it could help move people up or down the risk categorisation, so we know if we should move faster on the nodule from the scan," Dr Marshall said.

Dr Marshall's other research interests include working with UQ Psychology department and the CSIRO Australian eHealth Research Centre to develop a chatbot to help people quit. He received a five-year NHMRC emerging leader fellowship grant for the project which will be done in partnership with research higher degree student Holly Bendotti.

DR SUSAN DE JERSEY – PEOPLE

Royal Brisbane and Women's Hospital dietitian Dr Susan de Jersey is evaluating and scaling effective interventions to improve health outcomes for pregnant women, their unborn children and family.

The research will examine a range of influences on nutrition in antenatal care and from this, determine the appropriate support required to assist the gain and maintenance of healthy weight during pregnancy.

"It's been identified that healthcare providers are missing key opportunities to support women and their families when they're in contact with health systems to improve

nutrition and healthy weight gain in this period of time," Susan said.

"In recent years we've seen a larger portion of women diagnosed with gestational obesity due to improved screening, so we now have to determine how we can support this increased number of women. We're now starting to understand that what happens in the womb affects not only the growth and development of the child, but that childs' future children- it's intergenerational."

Susan's research has shown that plotting three or more weights with a monitoring tool during pregnancy is associated with a reduction in excess weight, which has a positive health impact on the baby, mother and family.

"At RBWH, we've introduced a pregnancy monitoring tool to support health care providers in having a conversation with women about weight. Plotting weight on the chart to see where a woman is tracking based on her gestation allows early identification of unsafe weight gain, whether it's too quickly or not quickly enough, so we can then provide appropriate care."

The fellowship allows Susan to further her research in a larger capacity while working as a clinician to deliver the appropriate work required to support women.

"If we can demonstrate that monitoring weight during pregnancy is of benefit, we can spread it further than RBWH. This monitoring is something that can be expanded throughout Queensland, Australia and even internationally. The pregnancy weight gain charts can be built into electronic medical records so we can offer it widely and reduce obesity that's perpetuating during the perinatal period."

Susan aims for her research in future to contribute to standardising education, information and ultimately care given by health care providers to mothers and families during an impactful period.

"The research will ultimately aim for women to be seen by the right clinician at the right time with the right level of intervention based on her risk, and this in future will hopefully be standard care," she said.

"This means health providers won't over intervene on those who don't need to be seen intensively, but ensure high-risk women are offered appropriate support."

IDENTIFYING THE CAUSES OF ORTHOPAEDIC INFECTIONS

Not long ago, Mark Vickers was a combat medic serving with the Royal Australian Army in Afghanistan.

Today he's a junior house officer at Redcliffe Hospital, supervising junior researchers and researching infection-causing organisms in orthopaedic patients.

Dr Vickers is completing Masters-level research focused on infection in orthopaedic surgery patients and the impacts of seasonality and climate in tropical and subtropical parts of Australia.

"Infection following orthopaedic surgery occurs at a rate of about two per cent. It can lead to an increased hospital stay, repeat surgery, readmission and prolonged antibiotic use," Dr Vickers said.

The research set out to describe the relevant epidemiological features of bacteria which were cultured from post-operative orthopaedic patients in tropical and subtropical regions of Australia.

"We focused on describing the species involved, the rates of multi-drug resistance, the antimicrobial sensitivity profile and the impact of environment and season," Dr Vickers said.

"I had expected that the research would demonstrate increased infection rates in the summer. Instead, we found variability in the profile of pathogens between regions, supporting the notion that first-line antibiotic selection should be tailored to a regional bacterial profile known as an antibiogram.

"At the present time, antibiotic prophylaxis recommendations are essentially the same across Australia. We demonstrated higher rates of Gram-negative organisms in the tropics as well as increased multi-drug resistance, particularly of *Staphyloccoccus aureus, Pseudomonas* and *Acinetobacter species*."

Dr Vickers hopes the research will guide antibiotic choice in orthopaedic patients treated throughout tropical and subtropical regions of Australia, reducing the morbidity and costs currently associated with post-operative wound infections.

The research was conducted in collaboration with six public hospitals in Metro North, Townsville, Darwin, Cairns and Mackay. More than 16,000 patients were involved in the study, with records audited across seven years.

PUBLICATIONS BY
METRO NORTH RESEARCHERS

2019 TOTAL PUBLICATIONS

1,128

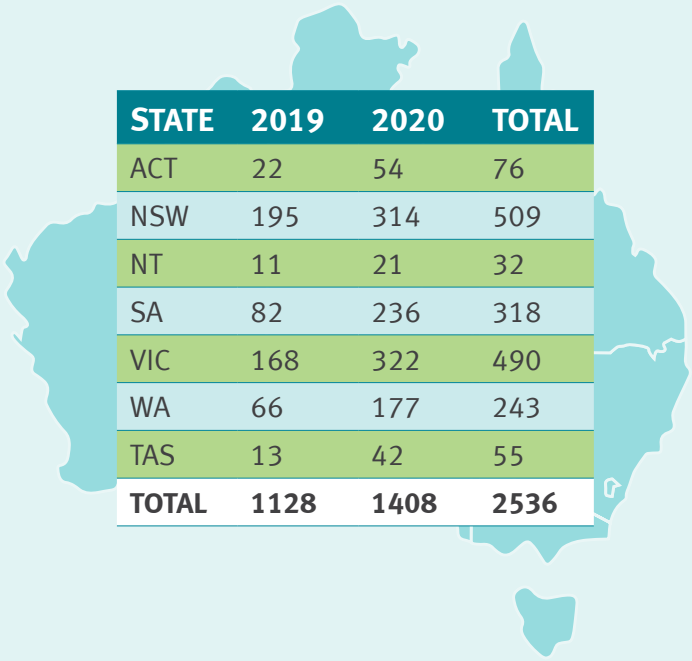
2020 TOTAL PUBLICATIONS

1,408

TOTAL PUBLICATIONS ACROSS 2019-2020

2,536

PUBLICATIONS FROM METRO NORTH RESEARCH COLLABORATIONS BY STATE



STATE	2019	2020	TOTAL
ACT	22	54	76
NSW	195	314	509
NT	11	21	32
SA	82	236	318
VIC	168	322	490
WA	66	177	243
TAS	13	42	55
TOTAL	**1128**	**1408**	**2536**

2019 RESEARCH COORDINATOR GRANTS

People

These strategic capacity building grants were awarded to co-fund Research Coordinators to work collaboratively within clinical departments for two years to build research capacity and culture. These grants also aim to support the career and professional development opportunities for our highly valued research coordinators.

By embedding highly-skilled research coordinators within departments to collaboratively build research capacity, the purpose is to provide a uniquely sustainable approach to research development in Metro North.

RESEARCH COORDINATOR	FACILITY AND DEPARTMENT	APPLICANT
Kimberley Ryan	RBWH Gastroenterology and Hepatology	Dr Mark Appleyard
Thuy Frakking	Caboolture Hospital Women, Children & Family Services	Dr John Waugh
Fiona Davidson/Karyn Healy	Metro North Mental Health Queensland Forensic Mental Health Service	A/Prof Ed Heffernan
Stacey Watts	Caboolture Hospital Emergency Department	Dr Sean Clark
Natalie Gerns	Redcliffe Hospital Surgical Services	Dr Denise MacGregor
Danielle Herbert/Aleksandra Edmundson	RBWH General Surgery/Burns Unit/Trauma Services	Dr Jason Brown
Deanne August	RBWH Neonatology – Grantley Stable Neonatal Unit	Prof Mark Davies
Andrew Claus	RBWH Professor Tess Cramond Multidisciplinary Pain Centre	A/Prof Paul Gray

INVESTIGATING NASAL HIGH FLOW THERAPY IN CHILDREN WITH RESPIRATORY DISEASE – PARIS II TRIAL

Across Metro North many children present to emergency departments with respiratory illnesses such as pneumonia, asthma, bronchitis, which often result in significant stress and worry for children and their caregivers.

Having paediatric centres across Metro North Hospital and Health Service and dedicated clinician researcher leads has given local facilities and families the opportunity to join an international study led by Associate Professor Andreas Schibler at the Queensland Children's Hospital (QCH).

The study is looking at whether high flow oxygen helps children improve quicker and require less time in hospital.

Paediatricians Dr Sue Hobbins at The Prince Charles Hospital, Dr John Waugh at Caboolture Hospital and Dr Simon Grew at Redcliffe Hospital were already involved in the initial PARIS-I trial which demonstrated that use of high flow oxygen in infants with respiratory illness was effective in helping to stabilise their condition locally without the need for more specialised care or transfer to QCH.

Caboolture Hospital lead paediatrician Dr John Waugh said clinicians often anecdotally reported benefits of high flow oxygen for children, however evidence to support this new therapy was lacking.

"Involvement in the PARIS-II trial presented as a great opportunity for our facilities to contribute to the evidence base for this new therapy," Dr Waugh said.

"I'm proud to be a partner site in this international trial as it simultaneously builds on Metro North's research capabilities in the area of paediatrics.

"Being involved in an international clinical trial has helped the paediatrics team build research capability locally through improved understanding of research design, recruitment and randomisation processes."

Recruitment for the PARIS-II trial is now completed with data analyses currently underway.

The results of this study will impact on how clinicians care for children with common respiratory illnesses across all Metro North facilities with a view for improved local management of children presenting to ED with respiratory illnesses – reducing the burden of stress to families.

MOBILISING POSITIVE PATIENT OUTCOMES THROUGH PHYSIO-LED RESEARCH

Royal Brisbane and Women's Hospital is stretching the notion of physiotherapy practice with its commitment to making research a routine part of the clinical role.

Despite the pressures of a busy hospital department, the Physiotherapy Department redirected two full-time clinical positions to have a dedicated focus on harnessing research opportunities and developing the research skills of all clinicians. Since appointing Dr Peter Window, Dr Michelle Cottrell and Dr Julie Adsett to share the research-based roles, the department has seen a significant boost in staff engagement and interest in research to advance patient outcomes.

"The key priority for us was to shift the culture so that clinicians would start to see research as a core part of clinical practice. Our goal has been to make research 'business as usual' and give our clinicians the support and time required to make that a reality," Peter said.

The team's commitment to fostering opportunities for all clinicians to learn the fundamental research skills shows in the growing number of hours now invested in research and quality improvement and staff applying for research grants.

"In 2018, we were spending just over 400 hours on research per month, now we are averaging 657 hours per month as a department. We now have 20 physiotherapists leading research and quality improvement projects, which has increased from six in 2015," Michelle said.

"What stood out to us most was the jump in grant applications from our younger clinicians. In 2018, five staff applied for the internal research grant round, all of who were senior clinicians with significant research experience. This year, we had 12 applicants and only one of those applicants was a senior clinician."

The team believe the department's strong engagement in research stems from clinicians investigating problems or challenges which relate directly to their clinical roles.

"Our physiotherapists have been encouraged to choose projects which have a translatable impact on their clinical care. It is about solving the problems they are presented with on a daily basis," Peter said.

"Being part of the solution to the challenges they encounter is incredibly empowering, and I think that's why we are seeing such a great response."

The department's efforts to build a culture of research have been instrumental in supporting numerous grant applications, preparations for two clinical trials and 22 publications co-authored by physio researchers. It has also led to the inaugural Internal Research Symposium where clinicians were given the stage to present their findings to their peers and receive feedback and recognition.

"Beyond the strides our clinicians have made toward improving patient outcomes, it has been great to see our physiotherapists grow in confidence and receive the recognition they deserve," Julie said.

"We're proud to see how far the department has come in such a short space of time. It's helped remove some of the barriers to research and inspired our clinicians by creating an environment where research is accessible to everyone."

Physiotherapists Dr Michelle Cottrell, Dr Peter Window and Dr Julie Adsett

PERIPHERAL INTRAVENOUS CATHETER MANAGEMENT IN CHILDBIRTH (PICMIC): AN OBSERVATIONAL STUDY

Peripheral Intravenous Catheter (PIVC) insertion is common practice for pregnant women delivering in hospital, but there is little evidence as to where to access and what size catheter clinicians should use.

Thanks to collaborative links with the University of the Sunshine Coast (USC) School of Nursing, Midwifery and Paramedicine, Caboolture Hospital's maternity services have been provided a unique opportunity to contribute to statewide data to increase evidence-based care around PIVC management, aimed towards reducing pain and the risk of complications for birthing mothers.

For a small but steadily increasing number of women, the intrapartum period (labour and birth) is the most vulnerable time during the perinatal period.

USC Senior Research Fellow and Caboolture Hospital Visiting Nursing Research Fellow Dr Alison Craswell said the PIVC had been associated with considerable pain on insertion, discomfort during treatment and complications on removal, including extravasation injuries and bloodstream infections.

"The majority of birthing women in Australia have at least one PIVC inserted due to rising rates of medical intervention, such as epidural analgesia, labour induction and caesarean birth," Dr Craswell said.

"In addition, many women have PIVC access for the administration of medications and fluids during labour.

"Despite PIVC insertion during the perinatal period arguably being the most common intervention performed during labour and birth, it has rarely been the focus of research or quality improvement."

Caboolture Hospital's Women, Children and Families service line has a strong research culture with a dedicated Research Coordinator and USC Senior Research Fellow on staff, who are driving research education and an evidence-based practice culture.

The study aims to produce baseline data, explore and describe current practices relating to PIVC insertion and management in the childbearing population to determine what sort of changes, if any, are required.

Caboolture Hospital Maternity Clinical Midwife Consultant Catherine Alexander, USC Senior Research Fellow and Caboolture Hospital Visiting Nursing Research Fellow Dr Alison Craswell, Caboolture Hospital Nursing and Midwifery Director Anne Clayton and Maternity Registered Nurse Jane Pencheon-Youngs.

Principal investigator USC Associate Professor Leanne Kearney expects that results arising from the study would be used to leverage funding for a larger trial, representing the next step in researching PIVC use in birthing women.

Associate Professor Kearney said she was excited to have executive and clinician support from two Metro North facilities.

"This encompassing approach is providing invaluable insight into clinical practices across tertiary and community facilities, with the Sunshine Coast University Hospital also contributing data."

The team plans to release the results of the study in peer-reviewed journals and future national and international midwifery conferences.

TACKLING OPIOID PRESCRIBING IN QUEENSLAND

Royal Brisbane and Women's Hospital (RBWH) is leading the way in reducing opioid prescribing in Queensland, following the development of a new toolkit for clinicians which is now being rolled out across the state.

The 'Opioid Prescribing Toolkit' (OPT) has changed prescribing culture from the ground up by equipping clinicians with the knowledge of their own prescribing patterns and facilitating the discussion on how to optimise prescription opioids in the overall pain management strategy.

Piloted in the RBWH Emergency and Trauma Centre, the OPT has resulted in a 21 per cent relative reduction in total oxycodone prescriptions and improvements in clinical handover on discharge. Across Metro North as a whole, the OPT has led to a significant decrease in opioid prescribing on discharge.

The OPT is now being used to facilitate the establishment of opioid stewardship programs across Queensland Health hospitals as part of the Queensland Opioid Stewardship Program (QOSP).

RBWH Quality Use of Medicines Pharmacist, Champika Pattullo said the success of the toolkit is extremely promising.

"In Metro North, based on previous prescribing rates and those following the use of OPT, we estimate 37,000 fewer tablets are being prescribed over 12 months" she said.

"In addition to being implemented across five hospitals and health services outside the Metro North region, QOSP is also influencing opioid stewardship strategies at a national level.

"We hope to establish a patient-centred opioid stewardship program in Queensland hospitals which is underpinned by a holistic approach to pain management.

As always, positive patient experience is the first and foremost priority with any new medical program.

"The results of our recent patient experience survey have shown that patients didn't have a negative experience as a consequence of opioid stewardship at Royal Brisbane and Women's Hospital," Ms Pattullo said.

"Participants reported a high level of satisfaction with their pain care in the Emergency and Trauma Centre, alongside a reduction in pain.

"Patients also stated that they felt actively involved in decisions about their pain care, which is promising to hear."

"We are excited for the future of opioid stewardship in Australia."

Royal Brisbane and Women's Hospital Quality Use of Medicines Pharmacist, Champika Pattullo

RBWH patient Ian working with RBWH Occupational Therapy Team Leader Amber Jones and his Occupational Therapist in Goondiwindi, Sarah Prior

ALLIED HEALTH TAKES TELEHEALTH TO NEW HEIGHTS

Multidisciplinary telehealth care is changing the way patients receive allied health services at Royal Brisbane and Women's Hospital (RBWH).

With the onset of the COVID-19 pandemic, allied health professions have drawn upon expertise from their telehealth research to develop new and expand existing models of care to enable patients to easily access their care.

RBWH Occupational Therapy Team Leader Amber Jones is investigating the benefits of telehealth for burns patients as part of her research higher degree.

"Outpatient data revealed that one third of burns patients didn't return to the hospital for the follow up care they required. Patients have reported a number of reasons for this, including travel distance and the associated costs," she said.

"Following significant consultation with staff and patients, we commenced the Occupational Therapy and Physiotherapy TeleBurns service in early 2019. The service delivers outpatient burns care to patients throughout Queensland and northern New South Wales who received acute burns care at RBWH.

"Feedback regarding the TeleBurns service from patients and clinicians has been overwhelmingly positive, with one patient describing it as absolutely necessary for rural patients."

"This new model is ensuring patients get the healthcare they need, regardless of their life circumstances."

In the first 12 months since commencing the TeleBurns service, more than 262 appointments have been conducted saving over 260,000km of patient travel.

Telehealth research led by allied health clinicians at RBWH has seen new models of care developed that have enabled telehealth services to progress from single discipline appointments to complex, multidisciplinary care and collaboration between teams.

RBWH Deputy Director of Physiotherapy Perry Judd said the positive research culture within Allied Health is creating change across the board.

"Many of our staff have taken the knowledge they've gained in PhD and local research studies and embedded it into routine clinical services," he said.

"Staff are seeing the great healthcare impacts, which is encouraging more research. It's a real snowball effect.

"Many of the telehealth models developed by RBWH Allied Health have been adopted by other Queensland Health facilities and beyond.

"It's extremely rewarding to be a part of this change."

RBWH Foundation

The year 2020 is one that will undoubtedly remain etched in global memories for generations to come. Facing an international pandemic has tested every level of our community in ways we could not imagine.

But the resounding theme, which became clearly apparent over the past year, is the trust and faith placed in medical and clinician-led research during major health crises.

Royal Brisbane and Women's Hospital (RBWH) Foundation's role, since it was established in 1985, has been to engage with donors, the corporate sector, Government and the general public to garner support and raise funds for groundbreaking medical and clinician research, education and patient care.

Research has always been one of RBWH Foundation's key priorities. We believe the outcomes of research can be far-reaching, benefiting not only the individual patient and their families, but potentially the health system and community at large.

It was with immense pride that RBWH Foundation was able to rapidly activate our donor and corporate relationships to establish the Coronavirus Action Fund in March 2020. This international campaign raised almost $5.8 million and ensured RBWH's best and brightest minds were sufficiently resourced to participate in global COVID-19 research.

"RBWH FOUNDATION AND ITS SUPPORTERS UNDERSTAND THAT FUNDING IS AN ONGOING ISSUE FOR RESEARCHERS"

IN 2019 RBWH FOUNDATION

DISTRIBUTED
$3,472,072

HOSPITAL PROGRAMS
$754,607

EDUCATION AND TRAINING
$63,539

MEDICAL EQUIPMENT
$65,675

PATIENT CARE
$62,460

RESEARCH
$2,525,792

POST-DOCTORAL FELLOWSHIPS
$150,000

PROJECT GRANTS
$702,848

'DIAMOND' CANCER CARE GRANTS
$192,360

MELANOMA RESEARCH
$235,000

RESEARCH SALARIES | $920,659
RESEARCH SUPPORT | $307,975
AWARD SPONSORSHIP | $16,950

Through the Coronavirus Action Fund, RBWH plays a major role in the Australasian COVID-19 Trial (ASCOT ADAPT) with our Infectious Diseases experts included on the Trial Steering Committee, the enrolment of patients and RBWH Pharmacy Department selected as the Australian-New Zealand medication distribution centre.

The Coronavirus Action Fund has also supported significant clinician-led research projects within RBWH assessing national and local changes to the delivery of patient care during COVID-19 restrictions, development of a new low-fast rapid COVID-19 test and research into mental health challenges faced by health care workers during the pandemic.

These investments were part of a record distribution for RBWH Foundation of $9,312,091 in 2019-2020, despite major challenges faced by event cancellation due to COVID-19 restrictions and lockdowns.

The 2019-2020 financial year marked a major turning point for RBWH Foundation with a $5 million contribution to the Herston Biofabrication Institute, the largest investment in Foundation history. Biofabrication is a new frontier in medical and clinician-led research and symbolises RBWH Foundation's mission to support healthcare innovation at all levels.

Clinician-led research remains a high priority for RBWH Foundation, and this year we were delighted to support 31 Clinician Research Grants, 10 Medical and Allied Health Fellowships and 15 Funded Research Positions. Research can take years of commitment and dedication, and RBWH Foundation is proud to foster an environment that has enabled first-time grant recipients to become leaders in their areas of expertise.

RBWH Foundation funded research has not only changed health practice internationally, but also enables our patients to be involved in the latest therapies and diagnostics and provides access to the newest medicines and best models of care.

The past twelve months have also seen significant investment in new medical equipment including mammographic units and simulation mannequins for nurse training.

Our hospital and patient care programs are a point of pride and delivered a range of services including support for young people and Aboriginal and Torres Strait Islander patients facing mental health issues, patient lounge renovations, the Stairwell Project which provides live music to patients and visitors, and therapy dogs.

DONATIONS:
$6MILLION+

PRE-COVID FOUNDATION DONORS
500

POST-COVID FOUNDATION DONORS
5000

SPECIAL COVID-19 GRANTS DISTRIBUTED
13

RBWH Foundation remains indebted to the incredible RBWH staff for support of our inaugural Royal Giving Day in November 2019, the generosity of donors, corporate sponsors and the individuals who honour the Foundation with Gifts in Wills.

With this incredible level of philanthropic support, RBWH Foundation can continue to provide the level of support which has assisted RBWH remain one of the Top 100 Hospitals in the World (Newsweek).

"RBWH IS AUSTRALIA'S LARGEST HOSPITAL AND HAS RECENTLY BEEN INCLUDED IN NEWSWEEK'S TOP 100 HOSPITALS IN THE WORLD. THE RBWH TEAM ARE PREPARED TO COORDINATE THE COVID-19 TREATMENT TRIALS ACROSS THE STATE."

– RBWH CONSULTANT INFECTIOUS DISEASES PHYSICIAN PROFESSOR DAVID PATERSON

THE PRINCE CHARLES HOSPITAL FOUNDATION

THE COMMON GOOD
AN INITIATIVE OF THE PRINCE CHARLES HOSPITAL FOUNDATION

What if we could all come together to fix the health problems that will impact nearly all of us? The Prince Charles Hospital Foundation, through the campaign of The Common Good, is doing just that.

The Common Good is a movement of people who care about the long-term health of themselves, their family and their community. It includes the patients, the medical, nursing and allied health teams, the scientists and engineers, the community and corporate donors, and all those who advocate for research.

Through their support, The Prince Charles Hospital Foundation is committed to providing sustainable funding for medical innovation and discoveries that will make a difference.

The Common Good is the platform that brings people together and funds the time of researchers, and with more time, the more discoveries are possible. Every hour is $44 and every hour is critical in the chain of research. Donors can choose the area they wish to support and are notified when their research time is being used.

TPCH Foundation continues to fund its operational costs through social enterprises, with café operations at The Prince Charles Hospital and the Kedron Emergency Services Complex. In 2019, it expanded its café operations to include the café at Caboolture Hospital.

This has allowed The Common Good to support research and innovation at Caboolture Hospital in the areas of children's health, emergency medicine and for the frail and elderly patients.

Between January 2019 and June 2020, TPCH Foundation distributed over $8 million dollars in research funding, exceeding previous yearly funding allocations. This included over $3.5 million dollars in competitive peer-reviewed grants for individuals through New Investigator Grants, Emerging Researcher Grants, PhD Scholarships and Fellowships and for projects through Team and Innovation Grants. Together this has provided 75,000 hours of research time across the key areas of heart disease, lung disease, dementia, arthritis, gut disease and innovations that support hospital care. TPCH Foundation also provided funding for key pieces of equipment, the most notable being a $2 million orthopaedic robot, the first of its kind in a Queensland Public Hospital.

BETWEEN JANUARY 2019 AND JUNE 2020, TPCH FOUNDATION DISTRIBUTED OVER $8 MILLION DOLLARS IN RESEARCH FUNDING

DURING 2019 TPCH FOUNDATION PROUDLY AWARDED THE 200TH NEW INVESTIGATOR GRANT.

During 2019 TPCH Foundation proudly awarded the 200th New Investigator Grant. Since the grant scheme began in 2010, over $2 million dollars has been awarded to over 200 first-time researchers. The scheme was designed to support those wishing to explore research, those who have an idea to improve clinical care, those looking at ways to better understand disease and those who have an idea that may lead to better treatments. Through mentoring and support, New Investigators embark of their own research project and can begin their research journey. A survey of past recipients showed that most are still involved in research in some form, 30 PhDs have been awarded, five have been awarded NHMRC funding and five TPCH Foundation Research Fellowship holders started their research with a New Investigator Grant. TPCH Foundation is extremely proud of the grant scheme and as one past recipient stated "Your efforts have launched the career of dozens of researchers (myself included). You are making a huge difference not only to the patients who benefit from the research you fund, but to the researchers who you support."

In 2019 TPCH Foundation also launched The Common Good Alumni. The Alumni are researchers who have

competed their grant and/or significantly contributed to TPCH Foundation research projects. Research isn't easy and The Alumni is a way of recognising the hard work of researchers whose work has had a lasting impact, whether it has led to improved patient outcomes or increased our understanding of biological pathways enabling earlier detection and new treatments. It also provides a chance for researchers to stay connected and to build collaborations. Alumni members are awarded a pin and members are welcomed as part of Charlies Week each October.

There have been many highlights from the research funded by The Common Good, such as PhD Scholarship holder Dr Vainess Mbuzi being awarded her PhD, the conclusion of a randomised placebo-controlled clinical trial of hookworm in coeliac disease, the further identification of mechanisms leading to arrhythmias and novel compounds to treat heart failure and the implementation of sensory modulation into inpatient mental health units. Besides the annual grants program, TPCH Foundation has a strong relationship with many new and established research groups across TPCH campus, supporting their research efforts and collaborating to raise funds and attract further grants.

At the beginning of 2020, nobody had heard of a disease called COVID-19. Now we all have, and it has slowed or haltered many research projects happening at, or in conjunction with, TPCH. In the face of this global pandemic The Common Good is funding three COVID-19 projects ranging from an international intensive care study, through to a locally based adaptive patient study to test treatments and an immune study to understand why some people are more at risk of this virus.

COVID-19 has shown the importance of medical research and has also highlighted how research is a symbol of hope. As Chief Executive Michael Hornby said "Beyond COVID-19 we are tackling the chronic health conditions which are affecting far more people, every day. They don't get the attention of a pandemic, but they are impacting the lives in just the same way; restricting freedom, affecting families, preventing people from working and spending too much time in hospital". The ongoing support of medical research is now more critical than ever.

The Common Good connects over 8,000 donors and corporate sponsors with researchers, and together investigates ways for people to recover faster, live healthier and enjoy quality time for longer. To find out more, visit thecommongood.org.au.

THE COMMON GOOD CONNECTS OVER 8,000 DONORS AND CORPORATE SPONSORS WITH RESEARCHERS, AND TOGETHER INVESTIGATES WAYS FOR PEOPLE TO RECOVER FASTER, LIVE HEALTHIER AND ENJOY QUALITY TIME FOR LONGER. TO FIND OUT MORE, VISIT THECOMMONGOOD.ORG.AU.

TPCH FOUNDATION 2019 GRANT ROUNDS (FUNDING AWARDED)

PEOPLE SUPPORT: SCHOLARSHIPS, FELLOWSHIPS, NEW INVESTIGATORS, EMERGING RESEARCHERS –

$1,446,000 | 35 AWARDED

PROJECT SUPPORT: TEAM GRANTS AND INNOVATION GRANTS –

$1,850,000 | 17 AWARDED

EQUIPMENT –

$200,000 | 13 AWARDED

TPCH FOUNDATION SUPPORT BY KEY AREA

HEART DISEASE – **$1,820,000**

LUNG DISEASE – **$1,350,000**

HOSPITAL CARE – **$2,230,000**

DEMENTIA – **$100,000**

ORTHOPAEDIC & ARTHRITIS – **$2,500,000**

GUT DISEASE – **$100,000**

Study researchers Dr Elizabeth Ahern, Dr Harry Gasper, Dr Darshit Thaker, Hermione Wheatley, and Natasha Roberts, with members of the North Lakes Cancer Care Service.

SUPPORTING OLDER PATIENTS WITH CANCER DURING COVID-19

Royal Brisbane and Women's Hospital (RBWH) researchers have conducted a study into the psychosocial stressors and coping strategies of older patients with cancer during the COVID-19 pandemic, with the aim of identifying how to best support patients and their carers during an emergency and recovery from a disaster.

The study, led by Dr Darshit Thaker, was performed at the North Lakes outreach clinic which provides a geriatric oncology service offering individualised, multidisciplinary support for older patients with cancer.

Through surveys of older patients with cancer treated at North Lakes and their carers, the research revealed that patients are significantly more optimistic than expected about the pandemic and are comfortable using telehealth services.

RBWH oncologist Dr Elizabeth Ahern said that the team were pleasantly surprised by the results.

"Anecdotally, elderly patients often say their motivations for starting cancer treatment is to be able to have more time with family and friends," Dr Ahern said.

"So, when COVID-19 hit we were worried about possible distress among some of our patients at the idea of facing a prolonged period in lockdown with cancer, without being able to have those meaningful social interactions.

"This made us concerned about how our geriatric oncology population would cope."

Contrary to these concerns, the results uncovered mostly a good news story centred around the North Lakes Geriatric Oncology Service.

"It is a very unique service based at North Lakes and they do an excellent job in holistically supporting older cancer patients with multidisciplinary care," said Dr Ahern.

"What we've found is most patients using the North Lakes service during this time are not only surviving but thriving.

"Our geriatric oncology population are certainly quite resilient in the face of uncertainty. What we are seeing is that our elderly patients are able to draw on deep wells of strength from lived experience."

RBWH oncologist Dr Harry Gasper said comfort and a high level of satisfaction with telehealth was another unexpected theme uncovered by the research.

"As clinicians, we often think that a patient can only be satisfied if they meet with us face-to-face. Additionally, we can sometimes assume that older people might struggle with technology," Dr Gasper said.

"But this research challenged that idea in that some of the participants welcomed telehealth appointments as they provided a break from travelling to appointments and waiting in crowded waiting rooms.

"Using technology-based solutions is certainly something we can bring forward in our care of older patients with cancer. It gives them time back in their day while being in the comfort of their own home.

"Older patients with cancer and their carers are more technology savvy than we had estimated."

The research team have submitted their findings to local and international cancer conferences and research journals and anticipate the findings will help in planning care for older patients with cancer and their carers during future disasters.

HBI General Manager Mathilde Desselle and Dr Jason Brown.

HBI LEADING BURNS RESEARCH INTO NEW SKIN REPLACEMENT

Herston Biofabrication Institute's (HBI) clinicians, engineers and academics have joined forces for burns research, working to engineer a better biologic skin replacement.

While skin is already routinely grown in a culture lab across Metro North, the work of the HBI burns research team will see the creation of a stronger skin replacement with ample patient benefits.

Dr Jason Brown and his burns research team at HBI are working on this new type of skin – promising more infection resistant qualities as well as meaning patients do not need to have skin removed from elsewhere on their bodies.

"We are combining novel tissue scaffolds and skin cell elements to create a new skin replacement," Dr Brown said.

"These cells are combined with other engineered elements to produce a more robust skin replacement which can be applied to wounds to facilitate healing.

"We're looking at how we can make skin quickly and make it more like real skin – the ultimate goal is that we might not have to use skin grafts."

HBI's burns research is set to have positive outcomes for patients like Glen Bennett, who suffered extensive burns to 70 per cent of his body when the truck he was driving caught on fire in a car accident.

Glen spent 35 weeks in Royal Brisbane and Women's Hospital and STARS as part of his treatment, including 24 days in a coma, before finally returning home to his wife and three-year-old son earlier this year.

Treated by Dr Brown, Glen was excited to be able to return to campus to see HBI and hear about the research being done into improving recovery for burns patients.

Some of Glen's cells have even been used as part of the research project, as a way of giving back to Dr Brown's work and helping other burns patients in the future.

In addition, HBI is also looking at ways to 'gameify' rehabilitation for burns patients through distraction therapy.

Using Virtual Reality (VR) technology, HBI is currently trialling the use of VR in clinical settings to distract and assist with pain when undertaking painful dressing changes.

The burns research program is one of several clinical programs run out of HBI, with others including orthopaedics, vascular and endovascular surgery, urology, cancer care, craniofacial and anaesthesia and intensive care.

METRO NORTH RESEARCH EXCELLENCE AWARDS 2019-2020

The 2019 Metro North Research Excellence Awards attracted 73 outstanding submissions and showcased the diverse and far-reaching research projects conducted by individual researchers and teams from across all facilities.

From the lab to the bedside, Metro North researchers are conducting ground-breaking research every day.

RESEARCHER OF THE YEAR 2019

Professor Paul Colditz

Professor Paul Colditz has been a contributor of research since he began his Royal Brisbane and Women's Hospital (RBWH) career as a neonatologist in 1991. Throughout his years working at RBWH, he has overseen the growth of the internationally regarded Perinatal Research Centre as Director whilst maintaining his involvement in the clinical care of babies and their families in the Neonatal Intensive Care Unit and in the clinical assessment of infant neurodevelopment.

His dedication to the improved care of preterm babies is shown through this research, most notably his work on neonatal seizures that has helped define current Queensland Clinical Guidelines on the treatment of neonatal seizures.

200 PUBLISHED PAPERS CITED NEARLY 10,000 TIMES

$60M IN GRANT INCOME

PROF. COLDITZ'S WORK ON **NEONATAL SEIZURES** INFORMED QUEENSLAND CLINICAL GUIDELINES

RISING STAR AWARD 2019

Professor Andrew Mallett

Associate Professor Andrew Mallett is a nephrologist currently leading the national renal genetics consortium. Since establishing the first multidisciplinary renal genetics clinic at Royal Brisbane and Women's Hospital (RBWH) in 2013, Andrew has created an established national network of 17 clinics now running throughout Australia.

His research regularly makes an impact both nationally and internationally and has personally led implantation, evaluation and genomic research efforts to improve the understanding of genetic kidney disease and the care of affected patients and families.

RESEARCH SUPPORT AWARD 2019

Dr Frances Kinnear

Dr Frances Kinnear, an emergency physician at The Prince Charles Hospital (TPCH), has been exceptional in fostering and developing a rich research culture within the Emergency and Children's Services. Her involvement has sought to enhance the research capacity within TPCH, which began with new investigator grants and now includes multi-centre trials of important clinical conundrums and the development of de-novo studies.

DISCOVERY AND INNOVATION AWARD 2019

Cardiology Clinical Research Centre – CATHARSIS

The CATHARSIS program is the world's largest echocardiographic vs angiographic comparison study for the assessment of intracardiac pressures. The multi-stream, multi-discipline team consists of invasive cardiologists, echocardiologists, and allied health practitioners including cardiac sonographers and cardiac research nurses.

Over two years, the team were able to acquire 307 comprehensive echocardiograms on a broad range of patients, in the fasting hours before invasive cardiac catheterisation. This data will be instrumental in contributing to research conducted by the Cardiology Clinical Research Centre (CCRC) and, their CATHARSIS study.

CLINICAL RESEARCH AWARD 2019

The Metro North Early Psychosis Service

The Metro North Early Psychosis Service has become known internationally for developing clinical pathways for the diagnosis and management of patients who are positive for autoimmune mediated psychosis. This has translated to improved outcomes for these patients and the international dissemination of clinical practice developed from research at Metro North Mental Health Service (MNHHS).

Their research has had a far-reaching impact, with the most recent Australian guidelines into the assessment and management of schizophrenia developed in consultation with the Metro North Early Psychosis team.

COMPLEX HEALTH CHALLENGES AWARD 2019

Network for Orthopaedic Fracture Education and Research (NOFEAR) Unit

The Network for Orthopaedic and Fracture Education and Research Unit (NOFEAR) comprises multidisciplinary clinicians involved in the complex care of hip fracture and orthopaedics patients. The unit aims to promote practical clinical research to achieve best outcomes for this frail patient cohort. Providing evidence to support identification and management of issues which may affect morbidity, mortality and functional performance to maximise patent quality of life.

HEALTH SERVICES AND IMPLEMENTATION RESEARCH AWARD 2019

Nursing and Midwifery Research Centre Vascular Access (NMVA) Research Team

The Nursing and Midwifery Research Centre Vascular Access research team aim to improve vascular access outcomes for patients. As a nurse-led team, their research is embedded heavily within daily clinical practice, using pragmatic research methods to identify research questions arising at their bedside. They're able to meet these needs with innovative technologies and care/maintenance strategies to reduce complications and costs.

CHIEF EXECUTIVE'S AWARD 2019

Professor Joan Webster

Professor Joan Webster was the Nursing Director of Research at the Royal Brisbane and Women's Hospital (RBWH) from 1991 until her retirement earlier this year. In that time, Joan not only contributed personally to research but also mentored and guided the research careers of many nurses and midwives in Metro North.

Her practical approach to research and evidence-based practice led to Joan being appointed one of 12 editors to the Cochrane Collaboration Wounds Group, and she was also the author of 15 Cochrane reviews.

Joan is recognised internationally for her work in pressure injury prevention and infection control research and her work has set and changed policy and clinical practice. In the last five years alone, Joan has published more than 70 publications, including two in the Lancet.

In that time, her work has been sited over 3500 times, a demonstration of the impact of her research. Throughout her career Joan has attracted more than $11M in research funding, including seven National Health and Medical Research Council (NHMRC) grants.

RESEARCHER OF THE YEAR 2020

Professor David Paterson

Professor David Paterson is among the most outstanding translation-oriented researchers in the country. His research focuses on the molecular and clinical epidemiology of infections with antibiotic resistant organisms, with the intent of translation of knowledge into optimal prevention and treatment of these infections.

Professor Paterson has consistently been recognised for his research, reflected in an exceptional and consistent capacity for gaining funding over the past 15 years from national and international funding bodies, totalling over $30M from sources such as National Institute of Health (NIH), Centres for Disease Control and Prevention (CDC), Medical Research Future Fund (MRFF) and National Health and Medical Research Council (NHMRC). He has published approximately 477 journal articles, 43 book chapters and 3 books during this time.

He is currently Australia's most cited Infectious Diseases Physician in the field of Microbiology and has been in the ISI Thomson Reuters Highly Cited List annually from 2015 to 2019.

477 JOURNAL ARTICLES PUBLISHED

43 BOOK CHAPTERS PUBLISHED

3 BOOKS PUBLISHED

RISING STAR AWARD 2020

Dr Nicole Marsh

Over the last 10 years, Dr Marsh has made an extraordinary contribution to Nursing and Midwifery Research in her roles at the Nursing and Midwifery Research Centre at the Royal Brisbane and Womens Hospital (RBWH). After commencing her research journey as a Project Manager for National Health and Medical Research Council-funded trials (DRIP and SAVE, both published in one of the highest-ranking journals in the world – *The Lancet*), Dr Marsh has gone on to a prolific research career, attracting over $4 Million in research funding and accomplishing 67 peer-reviewed publications since 2012.

In 2019, Dr Marsh attained her PhD; the same year she was successful in her application to the role of Nursing and Midwifery Director, Research a unique and prestigious role responsible for the support of Nursing and Midwifery Research RBWH-wide. In this time, she has supported and mentored a plethora of nursing, midwifery and interdisciplinary researchers whilst achieving remarkable outcomes.

RESEARCH SUPPORT AWARD 2020

Associate Professor Karen Whitfield

Associate Professor Karen Whitfield is a clinical pharmacist at the Royal Brisbane and Women's Hospital (RBWH) and Associate Professor with the School of Pharmacy at The University of Queensland (UQ). She demonstrates a high level of leadership in the area of pharmacy research. She develops, mentors and inspires individuals on their research journey from undergraduate students to senior pharmacists. She supervises, collaborates and advises on a range of research, from small studies through to multisite studies.

She works across boundaries and collaborates with the multidisciplinary team to impact patient care through evidence-based research. Her students have presented their research undertaken within Metro North locally, nationally and internationally. Her passion and dedication to research is contagious and inspiring, with pharmacists saying, "If you spend too much time with Karen Whitfield, you'll find yourself enrolled in a PhD".

DISCOVERY AND INNOVATION AWARD 2020

The Silicosis Research Program, TPCH

Australia is facing a terrifying epidemic of silicosis in workers exposed during the cutting and polishing of engineered stone benchtops. In Queensland alone almost 200 young men have acquired silicosis, and many are already gravely ill. Queensland has been at the forefront of the fight against this new occupational lung disease threat with an extensive screening program since 2018.

Recognising the gravity of the situation, The Silicosis Research Program team has devoted resources to developing new ways to diagnose, monitor and treat silicosis using a combination of sophisticated laboratory techniques including advanced microscopy, flow cytometry, mass spectrometry, proteomics, metabolomics and scanning electron microscopy. With the support of Metro North, the team's laboratory discoveries have translated into a world first program of whole lung lavage or 'lung washout'. Together, the team has rapidly built on fundamental scientific discoveries to implement a potentially curative treatment program for Queensland's tradies.

CLINICAL RESEARCH AWARD 2020

Practical Implementation Of advaNcEd EchocardiogRaphy (PIONEER) Research Group, Echocardiography Laboratory

The echocardiography research group includes academic cardiologists, cardiac scientists and a cardiology research fellow that was formed to study the clinical implementation of advanced echocardiography. Left ventricular diastolic dysfunction is a powerful predictor of survival following myocardial infarction (MI) and forms an essential component of clinical echocardiography. This research program adopted a comprehensive 'bench to bedside' approach to several unresolved questions regarding diastolic dysfunction following MI.

In a series of seven inter-related original studies, the PIONEER Research Group team examined basic pathophysiological inter-relationships (between infarct size and left ventricular diastolic dysfunction), haemodynamic correlations (between invasively measured left ventricular filling pressures and echocardiographic variables) and the prognostic implications of diastolic dysfunction in 472 consecutive patients following MI. The prognostic value of contemporary diastolic dysfunction guidelines was validated, prognostic data for a novel diastolic parameter (minimal left atrial volume) were presented, and a novel risk score for predicting all-cause mortality was developed and validated.

COMPLEX HEALTH CHALLENGES AWARD 2020

Allied Health Research Collaborative

The Allied Health Research Collaborative represents five researchers and clinicians with a common goal of improving rehabilitation processes through their research. This includes addressing issues using a multidisciplinary approach, across a range of chronic disease patients. These patients are found from the disciplines that fall under Allied Health including dietetics, occupational therapy, podiatry, physiotherapy and speech pathology.

The group focusses more on vulnerable patients, such as those with multiple diseases or the frail and aging, as they are more likely to be at risk of harm or injury whilst in our care. Its vision is to be a nationally recognised research unit delivering outcomes that support healthy and productive lives.

To achieve this, Allied Health Research Collaborative bring together clinicians from Allied Health, Internal Medicine and Nursing to implement an evidence-based practice that improves both in-hospital care and long-term outcomes for patients.

HEALTH SERVICES AND IMPLEMENTATION RESEARCH AWARD 2020

Partners in Prevention: Understanding and enhancing first responses to suicide crisis situations

Queensland Forensic Mental Health Service (QFMHS) have made substantial, globally unique, research contributions to health services that are informing service delivery improvements for individuals who have a suicide related contact with police or paramedics.

Partners in Prevention: Understanding and Enhancing First Responses to Suicide Crisis Situations (PiP), run by QFMHS, was established in 2017 to address knowledge gaps surrounding police and paramedic responses to individuals in suicide crises, informing systems enhancements. PiP includes: a globally unique data linkage study regarding characteristics, pathways and outcomes of individuals who had a suicide related contact with police or paramedics; literature reviews; service mapping; and an examination of police knowledge, skills, attitudes and confidence in responding to suicide crisis situations. Research is supported by consultation with individuals with lived experience of suicide. PiP has shaped the Mental Health Liaison Services delivered in the Police Communications Centre and Queensland Ambulance Service.

PROFESSOR JOAN WEBSTER NURSING AND MIDWIFERY AWARD

Professor Paul Fulbrook

Professor Paul Fulbrook established the Nursing Research and Practice Development Centre (NRPDC) at The Prince Charles Hospital (TPCH) in 2010 as a collaborative research partnership between the nursing services at TPCH and the School of Nursing, Midwifery and Paramedicine of Australian Catholic University.

Through Paul's directorship, the centre has enhanced nursing research capacity through high-quality research studies and publications, successful grant applications, graduation of local nurses from higher-degree research studies and collaboration with researchers across Metro North. Paul's focus on pressure injury (bedsore) prevention research has led to significant international recognition for Metro North research through four research citations in the most current International pressure injury (PI) prevention guidelines and national recognition via awards, specific research acknowledgement in accreditation surveys and citations in national PI prevention guidelines.

CHIEF EXECUTIVE'S AWARD 2020

Dr Susan de Jersey

Dr Susan de Jersey is a Metro North Clinician Research Fellow within the Perinatal Research Centre at the Centre for Clinical Research.

Susan is an Advanced Accredited Practicing Dietitian with a PhD from the Queensland University of Technology, holds a Master of Public Health from the University of Queensland and a Bachelor of Applied Science in Human Movement Studies (QUT).

Susan's research focusses on clinically relevant perinatal health concerns and translation into clinical practice. She has a national reputation as an expert and leader in early life nutrition. Her program of research is focussed on understanding the role of weight and nutrition in improving outcomes for mothers and their offspring in the reproductive years.

Susan is a clinical leader to a team of dietitians working in antenatal care across Metro North and provides care to women and their families within the antenatal clinic at the Royal Brisbane and Women's Hospital. Susan's team work to implement and evaluate routine practice changes to ensure women are provided with evidence informed care.

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