

The background of the cover features a photograph of a modern, multi-story hospital building with a mix of brown, grey, and white facades and large glass windows. A green rectangular box in the top right corner contains the organization's name. The bottom of the cover is decorated with three overlapping, wavy bands in shades of green and yellow. The title is prominently displayed at the bottom in a large, bold, green serif font.

**Townsville
Hospital
and Health
Service**

Research Annual Report **2021**



Townsville Hospital and Health Service Research Annual Report 2021
Published by the State of Queensland (Townsville Hospital and Health Service), August 2022

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Grant and funding amounts also include grants received by Townsville Hospital and Health Service staff in collaboration with others and where Townsville Hospital and Health Service may not be the administering institution.

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Foreward from the Health Service Chief Executive

It gives me great pleasure to contribute to the Townsville Institute of Health Research and Innovation's (TIHRI) 2021 annual report.

The strategic vision of the Townsville Hospital and Health Service is 'world-class healthcare for northern Queensland'. Critical to our achievements and success in this endeavour is the work of our researchers, and units like TIHRI, who champion, enable, and support research that underpins continuous improvement and aspires for parity with the best health services in the world.

Scientist and astronomer, the late Carl Sagan once said 'somewhere, something incredible is waiting to be known'. The chances are a researcher will be the one who finds it. In healthcare, research is the foundation of all future treatment and care. Every day, advances are made by researchers in health who are committed to bettering the health and wellbeing of the peoples of the world. And I'm proud that our health service is playing its part. From the novice to the experienced, our researchers are quite literally changing lives.

Our Study, Education, and Research Trust Account (SERTA) grants are fostering original and innovative research right here in our own backyard, optimising our unique location in the tropics and our adjacency to James Cook University. This year, the Townsville Hospital and Health Board approved an increase in the SERTA budget from \$1.2 million to \$1.8 million. Our local population is diverse, rural, Indigenous, and ageing and the SERTA-funded research being undertaken is improving the quality of life of thousands of people in our region.

This year, grants were awarded to researchers to investigate establishing a diabetic muscle stem cell library, Irukandji monitoring and prediction, and improving outcomes for heart failure patients in rural and remote North Queensland. The originality and breadth of the research and the involvement of so many clinical disciplines are proof positive of a strong and robust research culture. This is in no small way attributable to the commitment and passion of TIHRI and its director Professor Andrew Mallett. Professor Mallett and his team have positioned TIHRI as a research facility of renown and helped shaped Townsville University Hospital as an employer of choice for clinicians from across the world. My thanks and congratulations to Professor Mallett and his team on another stellar year.

My very best wishes for another great year of research success.

Professor Kieran Keyes
Health Service Chief Executive
Townsville Hospital and Health Service



Message from the Executive Director Clinical Governance and Director Clinical Research



In 2021 our Hospital and Health Service has realized substantial evolution and progress within the research domain. What has made this even more remarkable has been the stream of unprecedented challenges that would have been reasonably expected to hamper progress. These challenges have however highlighted the critical role that research plays at local, national, and international scale to advance healthcare, clinical innovation and serve the community. Townsville Hospital and Health Service Researchers have risen to this potential, and we recognise first and foremost the individual and collective contributions made.

A major piece of progress was the active evolution of the Townsville HHS SERTA Research Grants scheme. With a concurrent near doubling in the amount of support offered in tandem with a fundamental broadening of opportunities to embrace Capacity Building and Fellowship research funding opportunities, Townsville HHS researchers can access strong local support to further their research development and advancement. This uplift in research investment is also a sign of the strong confidence that Townsville HHS researchers embody and represent research excellence with immense potential to deliver research that generates local, national, and international impact through innovation.

In October 2021 we also celebrated the 10th annual Townsville HHS Research Showcase as the flagship Townsville HHS research event. Whilst embracing new technologies to enable staff to engage with presenters and content, this event marks a turning point as we return to the drawing board to redesign, reinvigorate and renew this event for the emerging research community across the broader Douglas academic campus.

Feedback from Townsville HHS Researchers also drove one of the simplest and yet most fundamental research support innovations: the commencement of the ACQUIRE Panel. This Panel realised an easy to use, efficient and applicant-friendly process for Townsville HHS staff to apply and seek approval for quality assurance and audit activities. As a coordinated assessment process with concurrent registration and approval from clinical and research systems, approvals are being achieved within four weeks with the minimal possible demands upon applicants, ensuring that staff can spend more time focusing on quality, audit and innovation, and less time on bureaucracy and process.

Our partnerships have continued to grow and deepen, reflecting our ambition for impact and research excellence. New opportunities to engage with James Cook University (JCU), the Tropical Australian Academic Health Centre, and our regional partner Hospital and Health Services are revealing pathways and opportunities that we look forward to reporting back upon in the coming years. In addition, there has been growing excitement through 2021 that the Douglas campus will continue to evolve as an academic health campus in the coming years through continued focus on growing research partnerships.

At the closing of 2021 we also learnt of the retirement of Sue Jenkins-Marsh. Sue's contribution to research services and capacity at Townsville HHS over these past few years has been immense. We wish her all the very best for a well-deserved retirement.

We look forward to 2022 as the penultimate year of our current Townsville HHS Research Strategy. This will give us opportunity to reflect, engage and redefine our research vision. Whilst 2021 will no doubt be reflected upon as a standout year for research at Townsville HHS, it should fill all Townsville HHS researchers and staff with excitement that despite this success our best years remain ahead of us.

Ms. Marina Daly
Executive Director Clinical Governance

Professor Andrew Mallett
Director Clinical Research



Message from the Townsville Institute of Health Research & Innovation

2021 saw our staff and researchers become resilient to a world with COVID-19 challenges ever present. I would like to thank the Townsville HHS researchers, coordinators, supervisors and support staff for their perseverance and continued passion to conduct research. My own research in 2021, a qualitative study on clinician researchers' experiences of unfinished research in regional health provided first-hand experience from the other side of the research fence. My findings reveal high risk factors of incomplete research were working in isolation, time constraints and role conflict, precarious funding, and political environments. Whilst protective factors are strong networks, circles of niceness, research leadership and organisational support.

The Townsville Institute of Health Research and Innovation strives to balance such factors through high quality research support and education, which continued to shine throughout the challenges of 2021. Our team delivered exemplar research education, including 12-week and 2-day Research Skills Courses at Townsville HHS and Central West HHS. In addition, the annual Townsville Health Research Showcase event highlighted many of Townsville's brilliant researchers across a diversity of topics and methodologies. Professor Alison Hutchinson inspired us with strategies to translate research evidence into practice and Professor Andrew Mallett provided insights into the journey of research development and forward planning for research at Townsville HHS.

In research ethics and governance, we continue to promote research excellence at local, state, and national forums, supporting researchers to conduct their projects with integrity. A huge thank you to our previous Manager and Research Governance Officer, Sue Jenkins-Marsh, who transitioned to a well-earned retirement in 2021. Sue established Townsville as a leader in Tele-trials, collaborative research, and research excellence. Over the course of Sue's career, she has shaped the research ethics and governance landscape at a national level, helping to standardise Human Research Ethics Committee's and introducing research governance frameworks.

In 2021, consultations began for the National One-Stop-Shop for research approvals, encompassing Therapeutic Goods Administration, Australian and New Zealand Clinical Trials Registry, therapy-specific approvals, Human Research Ethics Committees and Research Governance. This is an exciting step towards standardisation and easier start up and access for high quality and ethical research in Australia. Locally, we also contributed to collaborative working groups within the Tropical Australia Academic Health Centre for early career researchers and developing research capability and capacity. The team and I within the Townsville Institute of Health Research and Innovation are excited for these new directions in 2022 and to continue providing exceptional research services to support high quality research at our health service.

Ms. Sara Hubbard

A/Manager and Research Governance Officer

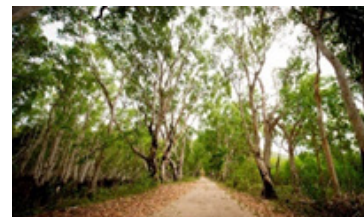


Photo (L-R): Professor Andrew Mallett (Director Clinical Research), Ms Kelly Parker (A/ HREC Coordinator), Ms Leanne Griffiths (Research Governance Administrator), Ms Sara Hubbard (A/Research Manager), Dr Venkat Vangaveti (Research Support Officer)

Health Research and Innovation Activity



16
Research Education
Activities



70
HREC Applications
Reviewed

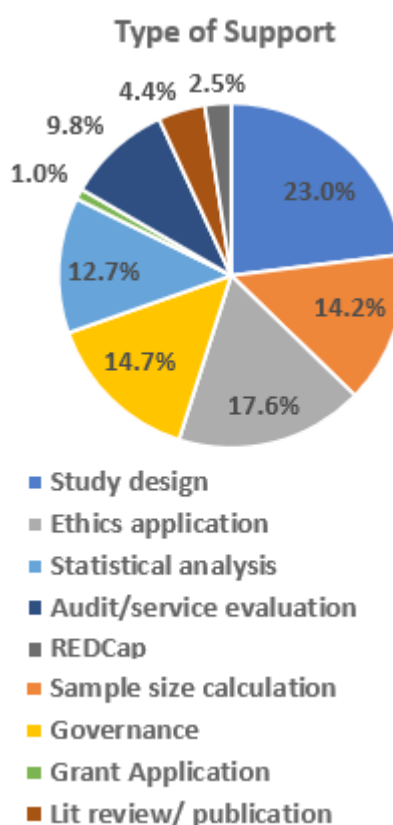
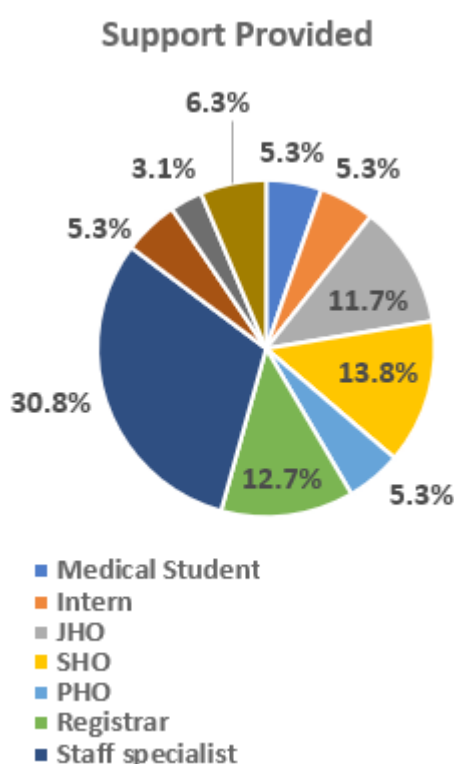


72
RGO Authorised
Studies

Research Support - Dr Venkat Vangaveti

A clinician “donning the research hat” has immense potential to contribute to improved health care and clinical performance. Often clinicians identify fundamental medical needs and gaps in knowledge best addressed by research. However, for a novice clinical researcher, the processes involved in undertaking research can be daunting. Dedicated research support to such novice or even established researchers is pivotal in helping clinicians achieve their research goals.

In 2021, a range of support was provided by the Research Support Unit to medical students, interns, junior doctors, advance trainees, and specialist staff. The support included assistance writing systematic reviews, input towards study design, data management and analysis, and grant and manuscript writing. Our team also provided advice on navigating various pathways involved in obtaining ethics and governance approvals for the research, quality, or clinical audit activity.



Message from the Human Research Ethics Committee Chair



Here at Townsville HHS are fortunate in having a Human Research Ethics Committee (HREC) that is certified at the highest level awarded by the National Health and Medical Research Council. Townsville is becoming increasingly a centre for advanced research, not only in tropical diseases but in all aspects of health care and disease prevention, including public health, allied health, pharmacology, in fact all areas of STEM. As such, we have seen more complex applications for ethical evaluation, with novel designs and new variants of the standard clinical trial format.

The Townsville HHS HREC maintains two rosters of members. We have been fortunate to have continually found experts from all categories of potential members; lay, legal, faith-based, research-active, and clinically trained. We have also called on experts from outside the HREC to provide independent expert opinion on research merit. Central to the Committee's functioning is our Acting Coordinator, Kelly Parker, and our Deputy Chairs, Wendy Smyth and Mary Leech. These integral members have maintained a steady workflow and enduring technical support through a difficult year of COVID-19 re-deployments and emergency measures impacting the work of the HREC.

While 2021 brought new challenges for the Townsville HHS HREC, overcoming these has afforded opportunity for innovation and created greater connections to our fellow committees in Queensland. Our network of ethics committees has worked together to facilitate critical COVID-19 research. We are excited to see the great work our local researchers produce in response to and despite the COVID-19 pandemic.

Dr Hudson Birden

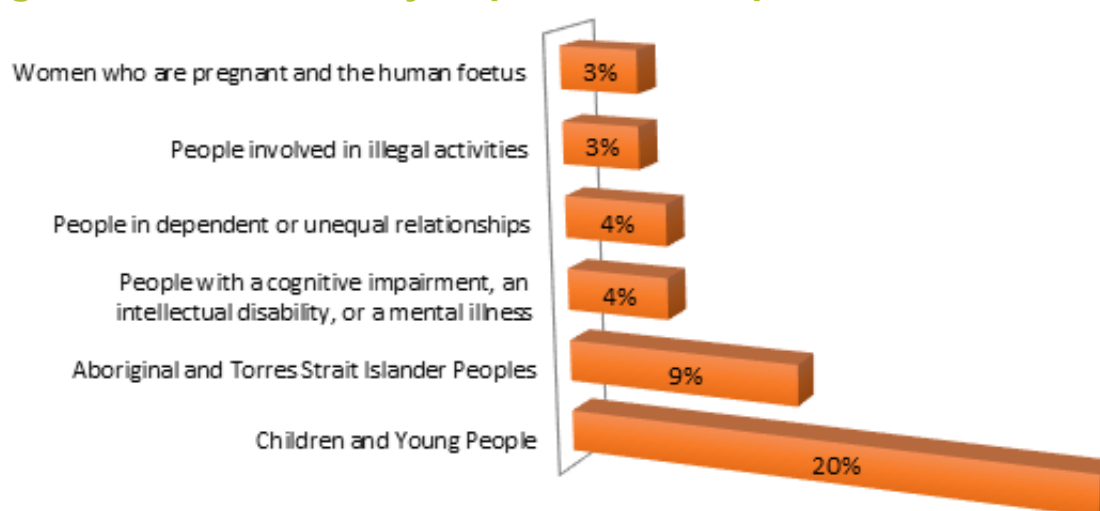
Chair, Human Research Ethics Committee, Townsville Hospital and Health Service (THHS, HREC)

Human Research Ethics Committee

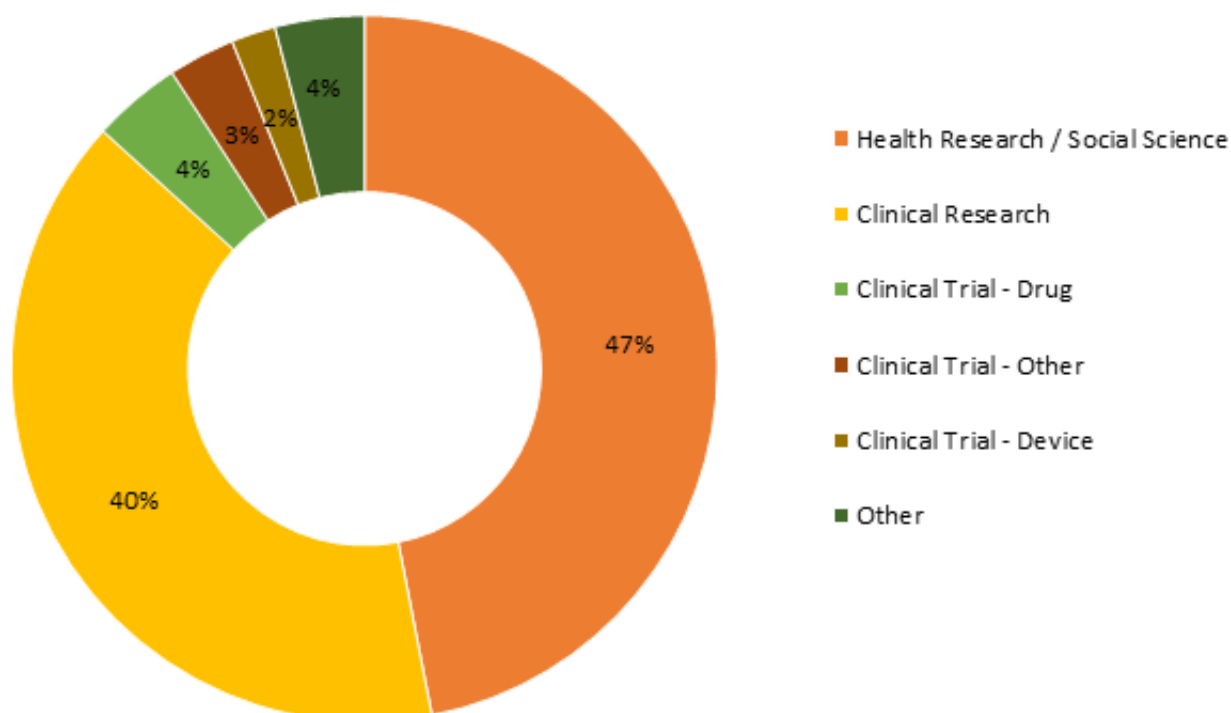
Activity

Applications received in 2021	89
Applications authorised in 2021	70
Applications withdrawn or not authorised in 2020	2
Non-research endorsement requests received	40
Non-research endorsements granted	34

Categories of Research by Population Group



Categories of Research as Reported to National Health and Medical Research Council

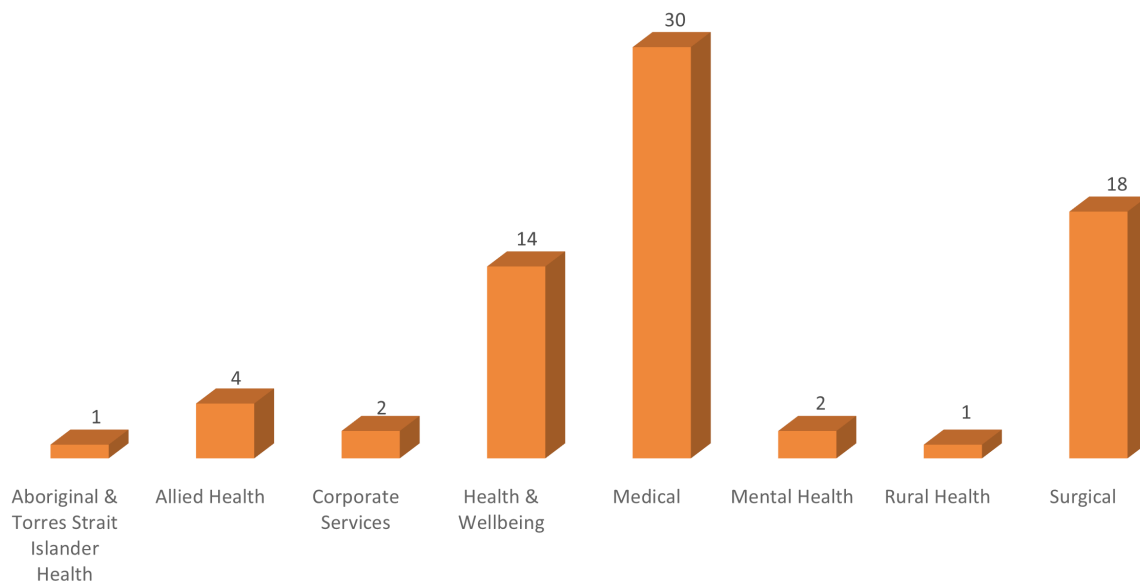


Research Governance Office

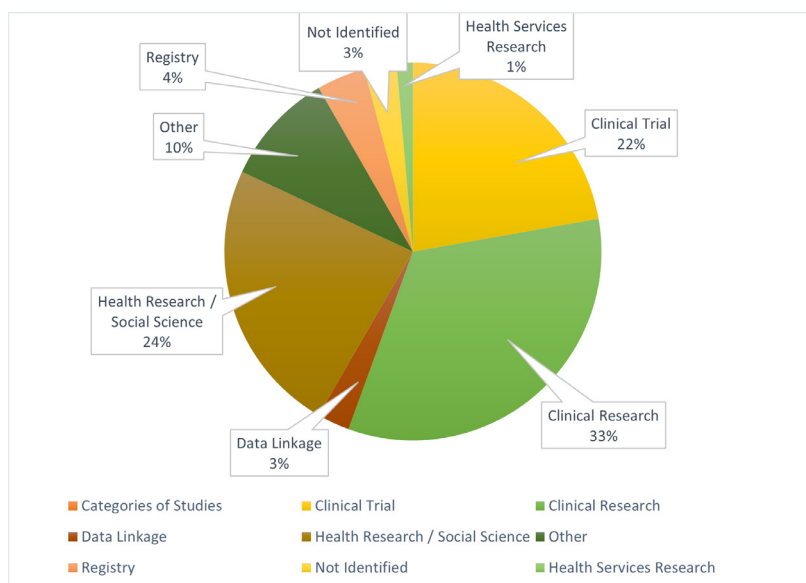
Activity

Applications received in 2021	94
Applications authorised in 2021	72
Applications withdrawn or not authorised in 2020	5

Research Authorised by Service Group



Categories of Studies Authorised in 2021 as Identified by Researcher



Research Development Committee

Through 2021 the Townsville HHS Research Development Committee (RDC) has undergone substantial change and evolution.

With updated and renewed terms of reference, the Committee now meets monthly and has an updated membership which includes many active Townsville HHS researchers across the craft groups of allied health, nursing and midwifery, medicine, and operational/administrative staff.

In many ways, the Committee now functions as a research "council" of sorts and as a direct conduit to communicate to Townsville HHS Executive and Senior Leadership with regards to challenges, opportunities, and perspectives of active researchers across Townsville HHS.

Productive discussions of the Committee support early conceptualisation for the future 2023-2027 Townsville HHS Research Strategy and a richer, more connected multidisciplinary research culture across the organisation.

In 2022, the major focus of the Committee is to further concentrate upon the Research Strategy renewal and to build broad engagement with colleagues, staff, and stakeholders.

Professor Andrew Mallett
Chair

"As a member of the RDC, I am excited to help shape and grow the future of research at THHS. We advocate for and promote excellence in research and are seeking methods to facilitate and accelerate the translation of these research findings into clinical care to improve outcomes."

– Dr Sonya Brennan, Consultant Sonographer

"The RDC encompasses a broad range of researchers from various professional backgrounds. The Committee looks at how research opportunities can be harnessed and what strategies can be developed to overcome barriers to better enable staff to undertake research to drive the health service towards becoming a centre of excellence in translational clinical research. As a novice researcher I am privileged to be a part of this committee and I am dedicated to ensuring a better pathway for future researchers across the Townsville HHS."

– Dr Nathan Engstrom, Cardiac Physiologist

Role

The RDC functions to provide strategic direction and governance regarding the development, conduct and outcomes of research within the Townsville HHS while driving progress towards ensuring our HHS is a regional, national, and international leader for research.

Composition

Chair

Professor Andrew Mallett

Deputy Chairs

Professor Cate Nagle
Dr Tilley Pain

Secretariat

Ms. Kelly Parker

Members

Ms. Angie Nilsson
Dr Hudson Birden
Mrs. Sue Jenkins-Marsh
Ms. Sara Hubbard

Research Active Staff

Dr Jenny Kelly
Dr Sonja Brennan
Dr Nathan Engstrom
Dr Siva Senthuran
Dr Yoga Kandasamy
Dr Wendy Smyth

Appointments to the Research Development Committee are made through an Expression of Interest process.

Townsville Health Research Showcase

The Showcase was privileged for the contributions of our Plenary speakers in 2021.

Professor Alison Hutchinson from Deakin University's School of Nursing and Midwifery, addressed attendees on knowledge translation and implementation science, providing an excellent feature for the event and a very relevant presentation to staff and researchers alike.

Professor Liz Tynan from James Cook University's Graduate Research School presented to attendees on scientific writing which was very well received and enjoyed by attendees.

63
abstracts presented

11
posters presented

2021 Townsville HHS Research Showcase Presentation Winners

Best Oral Research Presentation

Winners of this category were presented with \$500 to contribute towards a conference of their choice. Congratulations again to the winners.

- **Melita Trout** – “Fibrinogen Early in Severe Trauma studY (FEISTY): results from an Australian multi-centre, randomised controlled, pilot trial.”
- **Amy Brown** – “Men’s preferences for image-guidance in prostate radiation therapy: a discrete choice experiment.”
- **Natalee Williamson** – “Outcomes of growth restricted low birth weight preterm neonates at Townsville University Hospital: a retrospective review.”

Best Poster Presentation

- **Michelle McElroy** – “Remote nursing in Australia - What challenges and enablers elicit job satisfaction? An integrative review.”

Special Commendation

- **Tristan Symonds** received a Special Commendation from the Director of Clinical Research, for his body of work across the Showcase



\$5, 231, 483
total external funding

2021 Study Education Research Trust Account (SERTA) Grants

The 2021 funding year was transformative. In February, Townsville HHS Board approved change to the Study Education and Research Trust (SERTA), announcing the growth of the funding program from \$1.2 million in 2020 to \$1.8million in 2021.

Key changes included research study grants reconfigured into funding tiers, capacity-building grants which support team-based research, research-fellowship grants for staff focusing on higher degrees and research-seed fellowships to support novice researchers.

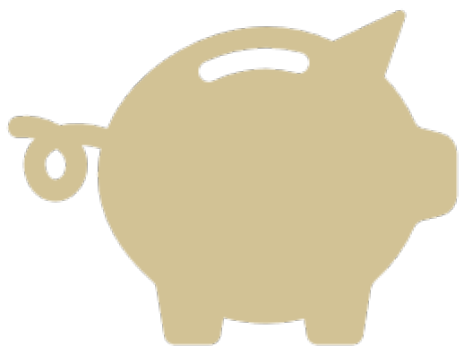
This change also provided greater capacity for staff to use grant money to fund backfill of their substantive position to facilitate staff conduct of research while having support in covering their jobs.

This new structure was proposed to make it easier for staff and reflected a modern and flexible approach to delivering health research.

The SERTA grants, the foundation of research at the Townsville HHS, makes funding more accessible and more targeted to deliver better outcomes for the Townsville Community.

\$1, 424, 409.25
total SERTA funding



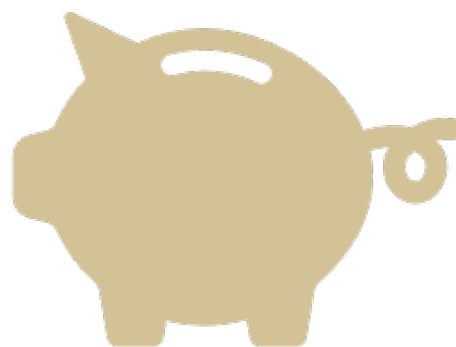


Research Project Grants

Research Project Grants, ranging from \$10, 000 to \$50, 000 are designed to support a research team for a specific time limited project, contributing to the advancement of research at Townsville HHS and delivering improvements for northern Queensland communities.

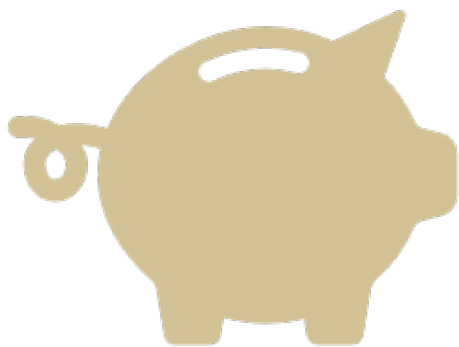
Investigator	Service Group	Grant/Project Title	Awarded (\$)
Bridee Neibling	Medical Service Group	Coaching stroke survivors to persevere with practice	\$44, 587.00
Jonathan Golledge	Surgical Service Group	Metformin for treating peripheral artery disease-related walking impairment (MERIT)	\$50, 000.00
Abhishek Joshi	Medical Service Group	Implementing a survivorship care plan for women with early breast cancer within Townsville University Hospital and Health Service and evaluating its impact on value-based patient-centred outcomes.	\$14, 550.00
Pankaj Saxena	Surgical Service Group	Establishing the North Queensland Diabetic muscle stem cell library	\$50, 000.00
John Boekamp	Corporate Services	Effective PPE waste processing using microwave pyrolysis	\$29, 900.00
Justin Smith	Medical Service Group	Financial Burden of Head and Neck Cancer on Patients and the Healthcare System	\$9, 886.00
Bryce Nicol	Rural Hospital Service Group	Irukandji Monitoring and Prediction	\$42, 700.00
John Baines	Medical Service Group	Monte Carlo simulations to quantify patient in and out of field dosimetry for the Elekta Unity MRL	\$50, 000.00
Pierre-Nicolas Boyer	Medical Service Group	Extracorporeal Shockwave Therapy for Prevention of Recurrence of Diabetic Foot Ulcer: A Pilot Study	\$29, 304.00
Lachlan Quick	Surgical Service Group	Remi-Fent 1	\$7, 674.00

Research Capacity Building Grants



Research Capacity Building Grants, up to \$70, 000 per annum for a maximum of two years per applicant, are intended to support research groups in undertaking research by engaging individual(s) with specific skills sets to support research.

Investigator	Service Group	Grant/Project Title	Awarded (\$)
Vinay Gangathimmaiah	Medical Service Group	Townsville University Hospital Emergency Medicine Research Program	\$132, 854.00
Siva Senthuran	Surgical Service Group	Critical Care Research	\$133, 889.00
Tilley Pain	Corporate Services – Allied Health	Building research leaders in allied health	\$125, 992.00
Usman Malabu	Medical Service Group	Extended Extracorporeal Shockwave and Electromagnetic Stimulation Therapies for Effective Treatment and Prevention of Diabetic Foot Ulcers	\$140, 000.00



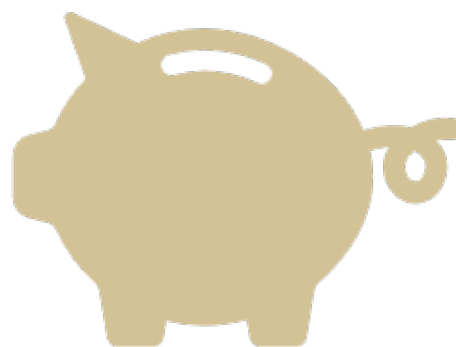
Research Seed Fellowship Grants

Research Seed Fellowship Grants awarded up to \$70, 000 each, support staff to undertake research linked to their practice, ensuring guaranteed research time.

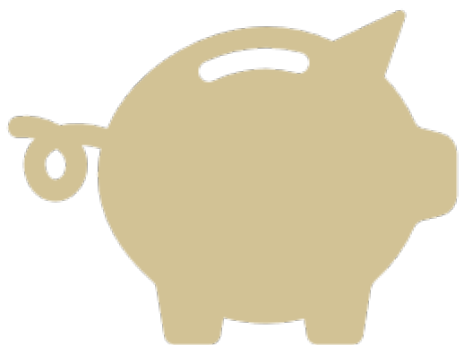
Investigator	Service Group	Grant/Project Title	Awarded (\$)
Liane Barnes	Medical Service Group	Heart or Lungs? Can Quality spirometry improve clinical outcomes in TUH acute care cardiac patients	\$22, 787.00
Justin Smith	Medical Service Group	Financial Burden of Head and Neck Cancer on Patients and the Healthcare System	\$42, 087.00
Krystel Land	Corporate Services – Allied Health	Diagnostic accuracy of Emergency Department Physiotherapist-performed HINTS exam in patients with acute vestibular syndrome: A prospective observational study	\$61, 863.38
Anya Gordon	Corporate Services – Allied Health	Efficacy of maternal mental health interventions for Aboriginal and Torres Strait Islander parents of a child with disability: A systematic review.	\$58, 787.00
Carolyn Brickhill	Corporate Services – Allied Health	The impact of staff ratios on the delivery of allied health therapy to stroke survivors: A retrospective audit.	\$69, 556.00
Kerrie Aitken	Corporate Services – Allied Health	Vancomycin in Kids (VaniK): evaluating vancomycin dosing strategies in neonates and children with proven or suspected Methicillin-resistant Staphylococcus aureus infections	\$30, 757.88
Benjamin Freedman	Corporate Services – Clinical Governance	The Relationship Between Workplace Incivility and Perceptions of Patient Safety in Australian Hospitals: Mechanisms Underlying the Relationship and Intervention/Prevention	\$27, 387.36

Research Fellowship Grants

Research Fellowship Grants, awarded up to \$70, 000 each, are designed to support Townsville HHS staff to undertake research as part of a formal Higher Degree by Research.



Investigator	Service Group	Grant/Project Title	Awarded (\$)
Sonja Brennan	Surgical Service Group	Renal parenchymal thickness: An indirect estimate of nephron numbers in the first two years of life using mixed effects modelling	\$38, 440.24
Amy Brown	Medical Service Group	Patient preferences and perspectives; and clinical considerations in motion monitoring during prostate radiation therapy treatment	\$30, 500.27
Nathan Engstrom	Surgical Services	Improving service delivery and outcomes for heart failure patients in regional, rural and remote North Queensland	\$70, 000.00
Tim McNabb	Facilities, Infrastructure & Support Services	Improving outpatient patient experience and reducing operational costs using internet of things (IOT) technology	\$15, 591.00
Calogero Longhitano	Mental Health Service Group	Psychiatric and Metabolic Effects of Ketogenic Therapy in Psychotic Disorders	\$69, 356.00



Research Registrar Grants

Research Registrar Grants awarded up to \$10, 000 each, are designed to support our junior medical staff to undertake research as part of their training program.

Investigator	Service Group	Grant/Project Title	Awarded (\$)
Heidi Walker	Medical Service Group	Impact of low value healthcare at Townsville University Hospital Emergency Department on patient flow and workflow efficiency: A prospective observational cohort study	\$9961.00
Maheesha Seneviratne	Health and Wellbeing Service Group	A retrospective cohort study of antenatal findings, neonatal presentation, and neurodevelopmental outcomes of congenital Cytomegalovirus (CMV) infection in a North Queensland regional hospital	\$3000.00
Tina Yutong Li	Mental Health Service Group	Anorexia Nervosa in Pregnancy and Long-Term Impact in Offspring: a Systematic Review	\$3000.00
Timothy Leow	Mental Health Service Group	A pilot study into the effectiveness of mindfulness-based stress reduction (MBSR) for improving mental health in North Queensland	\$10, 000.00

THHS Corporate Services Research Activities



Allied Health Services Division

Message from the Director

The Allied Health Services Division (AHSD) has maintained a focus on enhancing research capacity and capability in our workforce throughout 2021. AHSD staff have participated in Allied Health Translating Research into Practice (AHTRIP) opportunities, and our discipline departments have been actively involved in research that informs excellence in clinical care.

Physiotherapy staff were successful in obtaining three SERTA grants for the 2021/2022 financial year. These have been extended into 2022/2023 due to COVID-19 related delays. The SERTA grants are supporting research that is focused on (1) exercise for stroke survivors, (2) the impact of staff ratios on outcomes following stroke, and (3) the accuracy of diagnostic assessments performed by physiotherapists in the emergency department for patients with acute vestibular syndrome. Physiotherapy has also partnered with several Queensland Health sites to investigate available supports and strategies for Physiotherapy clinical educators supervising students who are experiencing difficulties with their mental health and emotional wellbeing, as well as partnering in a multi-site investigation considering how patients with functional neurological disorders receive care in hospital. Physiotherapy has also continued their collaboration with the Queensland Early Detection and Intervention Network (QEDIN) to improve early screening pathways and interventions for children who have, or have a high chance of having, Cerebral Palsy.

Occupational Therapy has published a qualitative study examining the experiences of families and clinicians with the paediatric burn telehealth model. The experiences of families transferred from rural and remote communities to the Townsville University Hospital following a burn injury are currently being collated for publication. Occupational Therapy have also been successful in obtaining funding from the Tropical Australian Academic Health Centre Clinician Researcher Fellowships' 2021 round, to investigate patient preferences for telehealth and / or face to face appointments following a traumatic hand injury. Commencement has been delayed due to COVID-19-19 and this will now occur in the 2022/2023 year. Psychology has continued to investigate the treatment efficacy of cognitive behaviour therapy for people presenting with non-cardiac chest pain.

Nutrition and Dietetics have commenced an AHTRIP project to develop a standardised nutrition protocol for allogeneic stem cell transplants at the Townsville University Hospital. They have also formed a research group to study the effect of oral nutrition supplementation post cardiothoracic surgery on protein and energy intake. Dietitians are preparing a paper for submission to the Dietitians Australia Journal, focusing on increasing research capacity and capability within a Dietetics department through development of a team specific research strategy and framework using a modified Delphi method. They have also provided input into other studies in the health service, such as medical oncology's investigation into culinary preferences for systemic treatment related taste changes, and our Research Fellow's study regarding patient preferences for hospital outpatient clinic referrals.

And last, but certainly not least, Speech Pathology has successfully completed Allied Health Professions Office of Queensland (AHPOQ) funded Cancer Capabilities Research, which examined care for people with head and neck cancer from rural areas, trialed shared care models with rural clinicians, examined service capability frameworks, developed rural learning portfolios, and has produced 5 manuscripts and 9 presentations. A fantastic effort from the Allied Health Services Division team!

Joanne Stitt
Director, Allied Health Services

Health Practitioner Research Fellow Report

Health Practitioner disciplines include allied health and other clinical professions who support the health and well-being of the Townsville Community. Altogether, 34 different Health Practitioners (HPs) work in Townsville Hospital and Health Service providing clinical care and support in a range of settings.

Of these 34 disciplines, 17 are research active via translation of research or conducting studies. The focus of HP research is to improve access, efficiency and outcomes.

To achieve this focus, education into health service research methods have been led by myself, as Research Fellow and Team membership with the Health Services Research Association of Australia and New Zealand. During 2021, HPs collectively published 20 peer reviewed papers, were successful in obtaining over \$1.2 million in grants, gave 21 conference presentations and 12 individuals were enrolled in a PhD.



Collaborations within and between the disciplines are strongly encouraged with new communities of research practice setting up in Medical Imaging and Dietetics in 2021. Consistent research outputs over the last few years suggest HPs have reached capacity for research alongside their clinical role.

Efforts to increase capacity are ongoing and include applications for external grants to introduce fractional research positions, advocating for conjoint appointments with local universities and via embedded positions in the next Enterprise Bargaining Agreement. Health Practitioners will continue to focus on health service research and aim to increase awareness of health economics into the future.

Dr Tilley Pain

Allied Health Principal Research Fellow

RGO Approved Research

Principal Investigators	Department	Study Title
Dr Tilley Pain	Occupational Therapy	Improving access, cost and outcomes of rural and remote children undergoing burn rehabilitation
Mrs Lauren Lambie	Physiotherapy	Exploratory investigation of people with functional neurological disorders in hospital: How are people with FND managed within a Queensland hospital
Mrs Fiona Midanowicz	Physiotherapy	Supports and Strategies for Queensland Clinical Educators whilst supervising students experiencing difficulties with their mental health and emotional wellbeing

Nursing & Midwifery Services Division

Message from the Executive Director

Townsville Hospital and Health Service Nursing and Midwifery Research has continued to flourish under the direction and supervision Dr Cate Nagel and Dr Wendy Smyth. Nursing and Midwifery Services has remained committed to supporting nurses and midwives to participate and undertake evidence-based research projects and to be in the forefront of influencing models of care, improving patient care and outcomes.

The caliber and expertise of our nursing and midwifery researchers is evident in the number of publications and presentations that have been conducted and continued in 2022. It is to be acknowledged the depth and breadth of research that has been presented locally, nationally, and internationally in 2021.

COVID-19-19 has provided many challenges and barriers, our Nursing and Midwifery Researchers are to be applauded for their ongoing dedication, commitment, and resilience. On behalf of all nurses and midwives, we congratulate and say thank you to all our research Nursing and Midwifery. We look forward to 2022 and the new and continued opportunities for research, collaboration, and translation of research into clinical practice.

Judy Morton

Executive Director, Nursing & Midwifery Services

Message from Research Lead

Our research team is committed to growing the capabilities of nurses and midwife at Townsville Hospital and Health Service as active as researchers. Our success is measured by our growth in the numbers of clinicians undertaking projects, publications, grants, and presentations.

Other metrics that we use as outcome measures are the numbers of clinicians undertaking Higher Degrees by Research and the number of collaborations. This growth has continued albeit adversely impacted by COVID-19-19.

Professor Cate Nagle

Nursing & Midwifery Research Lead



Presentations

National Nurses Forum 26 - 28 October 2021 Canberra

Exploring Women's experiences of Gestational Breast Cancer and their interactions with the health care system.
Hurren, S., Yates, K., Nagle, C. and McAuliffe, M.

Online Symposium Sino-Australia Global Health: Tropical Medicine and Sexually Transmitted Diseases 22-23rd April 2021

Caesarean section: the global paradox. Nagle, C (Invited Speaker)

Townsville HHS Research Showcase 7 – 12 October 2021 Townsville

"A bit on the nose" but important to know: a study of clinicians' knowledge, practices, and perceptions of Clostridioides difficile. Finnimore, K., Carrucan, J., Butters, R., Smyth, W., & Nagle, C

Nursing Informatics International Congress: Nurses and Midwives in the digital age 23 August-2 September 2021

"I really believe my clinical care i/s judged by how well I complete ieMR": Impact of ieMR on perinatal care.
Hadland, M & Kearny, L

International Society for Quality in Health Care conference, Florence, 8-10th February 2021

Organisational interventions to reduce non-medically indicated caesarean section rates: a systematic review and meta-analyses. Chapman A., Nagle C., Bick D., Lindberg R., Kent B., Hutchison, A.

Labouring Together: Women's Experiences of "Getting the Care that I Want and Need" in Maternity Care. Watkins V., Hutchinson A., Nagle C., Kent B., Street M.

Labouring Together: Clinicians' Experiences of "Working Together to Get The Best Outcomes" in Maternity Care. Watkins V., Hutchinson A., Nagle C., Kent B., Street M.

32nd International Confederation of Midwives' Triennial Congress Online 30 May - 3 June 2021

An Immersive sensory experience during labour. Holland S, Taylor R, Hadland M, Smyth W, Nagle C.

Maternity service organisational interventions that aim to reduce caesarean section: A systematic review and meta-analyses Chapman, A., Nagle, C., Bick, D., Lindberg, R., Kent, B. and Hutchison, A.

Virtual conference, Australasian Institute of Digital Health and Australian College of Midwives 2021

The impact of ieMR on perinatal care in Australia: A multi-site study. Hadland, M., Kearney, L., Nagle, C., Ostrenski, A., Holland, S., Smyth, W., McAtee, J.

Australian College of Midwives (Queensland), 2021.

Immersive sensory experience during labour - is it the way forward? Hadland, M., Holland, S., Taylor, R., Smyth, W., & Nagle, C.

Research Collaborations

Centre of Nursing and Midwifery Research, James Cook University

Deakin University

Murdoch Children's Research Institute, Parkville

Plymouth University

Sunshine Coast University Hospital

Other RGO Approved Research - Corporate Services

Principal Investigators	Department	Study Title
Associate Professor Clair Sullivan	Digital Health & Knowledge Management	An Evaluation of Digital Health Maturity and Continuity of Care Maturity in Queensland using HIMSS (Healthcare Information Management Systems Society)
Ms Sara Hubbard	Research	Unfinished Research in Regional Health

Library & Information Services

Message from the Director

The Library team has worked closely with the Townsville Institute of Health Research and Innovation in all aspects of research. Our librarians are familiar with the research application process and have participated as members of the Human Research Ethics Committee.

The role of the Townsville University Hospital Librarians mainly involved assisting novice and experienced research alike in gathering information required to define and refine their research topic. Our staff enjoy working collaboratively with researchers and assist with database searches and reference management (EndNote).

Researchers can also seek advice from library staff on publications and Journal Impact Factors. Anyone seeking library support for research – search online for Townsville Health Library.

Louisa D'Arrietta
Director, TUH Library

216
peer reviewed
publications



Photo (L-R): Louisa D'Arrietta (Director), Robyn Pccinelli (Library Officer) and Audrey Shamier (Client Service Librarian)



THHS Service Group Research Activities

Surgical Service Group

Message from the Director

2021 was another great year for the Surgical Service Group in terms of the number of research projects and submitted research papers. It is incredible achievement given the continued challenges of COVID-19-19.

The Surgical Service Group recognises the significant role research plays in enhancing patient care.

We want to build our reputation as research leaders where research drives service delivery improvement care and the sustainability of regional and rural healthcare.

Therese Cotter
Surgical Service Group Director

RGO Approved Research

Principal Investigators	Department	Study Title
Dr John Yeh	General Surgery	Impact of establishing a specialised hepatobiliary unit on liver resections in a non-specialised tertiary centre in regional Australia. Short Title: HPB unit and hepatectomy
Dr John Yeh	General Surgery	Validating the National Surgical Quality Improvement Program surgical risk calculator for pancreaticoduodenectomy: a retrospective cohort study in regional Australia Short Title: NSQIP for Whipple
Dr Kaushik Hazratwala	Orthopaedics	DISTINCT: Dual Mobility Versus Standard Total Hip Arthroplasty In Femoral Neck Fractures, A Registry-Nested, Cluster-randomised Trial
Mrs Laura Irving	Cardiac Unit	Exploring the impact of fixed wall computers in patient bays on patient care in a northern Queensland Cardiac Centre
Mr Sahil Chopra	ENT	Case Series of patient outcomes following reconstruction by modified radical mastoidectomy for cholesteatoma in North Queensland Short Title: MRM Outcomes in North Queensland
Dr Lim Eng	Cardiac Services	A Randomised Controlled Trial of Early valve replacement in severe ASymptomatic Aortic Stenosis (EASY-AS)
Dr Jason Tong	Maxillofacial Surgery	The Use of Computer Aided Three-Dimensional Prototyping to Surgically Assist in Tooth Autotransplantation
Dr Pankaj Saxena	Cardiothoracic Surgery	Adipose Tissue and Fibrofatty Deposits in Chest Wall Muscle and the Hearts of Diabetic and Non-diabetic Patients Across a Wide Range of BMI Values

RGO Approved Research

Principal Investigators	Department	Study Title
Dr Pranavan Palamuthusingam	General Surgery	Spigelian Hernia: A multi-site review of operative outcomes of surgical repair in the adult population
Dr Siva Senthuran	ICU	Optimising utilisation and outcomes of critical illness: A multicentred, interdisciplinary collaborative in Queensland
Dr Arjun Chavan	PICU	Australia and New Zealand PARK-PICU Study: Prevalence of Acute Rehab for Kids in the PICU
Mr Jonathon Carll	General Surgery	An analysis of Liver Trauma at a major regional tertiary centre - a comparative study
Dr April Win	Cardiothoracic Surgery ICU	A phase III multicentre blinded randomised controlled clinical non-inferiority trial of cryopreserved platelets vs. conventional liquid - stored platelets for the management of surgical bleeding Short Title: The Cryopreserved vs. Liquid Platelets trial: CLIP-II
Professor Jonathan Golledge	Vascular Surgery Internal Medicine	The Holistic Peripheral Artery Disease Management Trial (OPTIMAL)
Dr Phoebe Leung	General Surgery	Regional Queensland Colorectal Cancer Survival Study
Mrs Emma Willisroft	Cardiac Centre	Effect of a five-day, intranasal decolonisation treatment on Staphylococcus aureus surgical site infection rates for cardiothoracic open-heart surgery patients
Dr Patrick Purcell	Intensive Care Emergency	ROTEM® Mobile Application for Blood Product Administration; Improving accuracy, time to results and clinician confidence
Dr Hao-Hsuan Tsai	Maxillofacial Surgery ENT Radiation Therapy	Development of Patient Concerns Inventory for Carers of Head and Neck Cancer Patients

Research Groups

Queensland Research Centre for Peripheral Vascular Disease – Vascular Surgery

The Queensland Research Centre for Peripheral Vascular Disease (QRCPVD) is dedicated to improving management of peripheral vascular disease and associated health conditions.

Studies focus on presenting complaints and complications of peripheral vascular disease; however, the group continually evolves with new findings from our studies. Our experienced research team uses a broad range of techniques including vivo pre-clinical models, in vitro studies, genomics, genetics, bioinformatics, molecular biology, epidemiology, clinical trials, health economics and complex statistical analyses.

Ongoing research in the following trials:

- Clinical Trial – The Metformin Aneurysm Trial (MAT)
- Clinical Trial – Metformin for Treating Peripheral Artery Disease-Related Walking Impairment (MERIT)
- Clinical Trial – Brief Behavioural Counselling Intervention for Peripheral Artery Disease (BIP)
- Clinical Research – The Holistic Peripheral Artery Disease Management Trial (OPTIMAL)
- Research Study – An Innovative program to Prevent diabetes-related foot Complications (IMPACT)
- Research Study – An evaluation of Custom-made offloading footwear acceptability and adherence (COMFITE)

Research Team Members

Professor Jonathan Golledge
Director & Chief Principal Investigator
James Cook University & Townsville University Hospital

Dr Rene Jaeggi Global, Project Manager
James Cook University

Mrs Jenna Pinchbeck, Senior Team Leader
James Cook University

Dr Joseph Moxon,
Senior Statistician / Associate Dean, Research
James Cook University

Ms Lisan Mulvey, Senior Clinical Research Worker
James Cook University (Brisbane)

Ms Alkira Deren, Senior Clinical Trial Coordinator
James Cook University / Townsville University Hospital

Ms Cindy Sealey, Senior Clinical Trial Coordinator,
James Cook University / Townsville University Hospital

Mr Benjamin Crowley, Clinical Trial Coordinator
James Cook University

Mr Aaron Drovandi, Post-Doctoral Research Fellow
James Cook University

Dr Shiv Thanigaimani, Post-Doctoral Research Scientist
James Cook University

Mr James Phie, Post Graduate Research Student
James Cook University

Mr Leonard Seng, Clinical Research Worker
James Cook University

Dr Annabelle Kavanagh, Clinical Research Worker
James Cook University - Brisbane

Ms Stephanie Shi, Clinical Research Worker
James Cook University - Brisbane

Ms Ratnesh Gilhotra, Clinical Trial Coordinator
James Cook University - Cairns

Mrs Glenys Standley, Clinical Research Worker
James Cook University

Mr Cedric Hensman, Systems Database Officer
James Cook University

Mrs Sandra Burrows,
Research Administration Project Officer
James Cook University

Mrs Alexandra Golledge, Research Worker
James Cook University

Research Collaborations

- James Cook University, College of Medicine & Dentistry
- Ulcer and wound HEALing consortium (UHEAL)
- The George Institute for Global Health – The Metformin Aneurysm Trial
- Townsville Aboriginal and Islander Health Services - COMFITE Trial

Research Higher Degrees

- Dr James Phie – Enrolled, PhD, James Cook University
- Dr Chanika Alahakoon – Enrolled, PhD, James Cook University
- Dr Tejas Singh – Enrolled, PhD, James Cook University

External Research Grants Received

“The Holistic Peripheral Artery Disease Management Trial (OPTIMAL).” The Heart Foundation Strategic Initiative Funding - \$1,000,000

“The TELe-Artery trial (TEAL).” Medical Research Futures Fund, Clinical Researcher Applied Research - \$2,862,084

“Metformin for treating peripheral artery disease-related walking impairment (MERIT).” TAACH Seed Funding – Collaborative between JCU, TOWNSVILLE HHS, TAIHS and CHHHS: Kunwarjit Sangla, Ramesh Velu, Sherab Bhutia (CHHHS); Akira Venn (JCU); Joe Moxon (JCU); Lisa Oliver (TAIHS) – \$50,000.

Research Groups

Townsville Hearing Research Centre – Audiology

The group was awarded AUS\$ 560,000 by the William Demant Foundation, Denmark to study otitis media in young children using wideband absorbance with deep metric learning.

This study will be conducted at Townsville University Hospital in collaboration with Hearing research unit for children, SHRS, UQ. Also conducted invited face to face learning lab workshop on effects of middle ear disorders on wideband acoustic immittance in clinical populations, May 24, 2021, Audiology Australia annual conference, Gold Coast, Queensland.

Research Team Members

Venkatesh Aithal
Principal Investigator
Director Audiology

Sreedevi Aithal
Principal Investigator
Cochlear Implant & Health Hearing Diagnostic
Audiology co-ordinator

Shane Anderson
Principal Investigator
Adult & Paediatric CI Surgeon / Senior Staff Specialist

Saliya Caldera
Director ENT Services / Senior Staff Specialist

Katrina Roberts
Nursing Director
Health & Wellbeing Service Group

Melissa Forrester
Senior Audiologist
CHIC Clinic Co-ordinator

Ebony Munzel
Senior Audiologist

Lisa Rainbow
Senior Audiologist

Sandra Munro
Clinical Audiologist

Research Collaborations

Hearing Research Unit for Children, School of Health and Rehabilitation Service, University of Queensland.

External Research Grants Received

William Demant Foundation. Denmark - \$560,000

Medical Imaging Research Group – Medical Imaging

Newly formed TUH Medical Imaging Research Group (MIRG) in 2021. The MIRG is a multidisciplinary group which consists of MRI, CT and general radiographers and sonographers who are interested in research; however, most have had minimal research experience.

The goal is to foster their enthusiasm by conducting a research project and providing leadership, training, and guidance for the group. We are currently developing a research project to investigate the use of different medical imaging modalities in the setting of acute abdominal pain

Research Team Members

Dr Sonja Brennan
Principal Investigator / Consultant Sonographer

Jodi Flowers
Co-investigator / Senior Sonographer

Laila Keane
Co-investigator / Radiographer

Terese McCallum
Co-investigator / Radiographer

Josh Mendezona
Co-investigator / Radiographer

Brandon Mooney
Co-investigator / Radiographer

Brodie Taylor
Co-investigator / Radiographer

Shirin Welsh
Co-investigator / Senior Sonographer

Individual Researchers

Dr Sonja Brennan – Medical Imaging

Dr Brennan's research has provided clinicians with the ability to analyse kidney growth of a baby in the womb, through a simple ultrasound measurement taken of the kidney tissue thickness (renal parenchyma).

The study showed that the measurement of the renal parenchyma was an easy to perform, non-invasive measurement to monitor kidney growth accurately in developing babies.

Charts of the normal ranges of this measurement were created and can be utilised with other markers to assist in the diagnosis of kidney disease and in the identification of infants at high risk of developing kidney disease later in life.

In October 2021 Dr Brennan also completed her Queensland Advancing Clinical Research Fellowship, which supported her research and translational outcomes.

Dr Brennan has also completed her Doctor of Philosophy. Congratulations Dr Brennan.

Research Advisory Team

Professor Yogavijayan Kandasamy
Primary Advisor
James Cook University

Assoc Professor David Watson
Secondary Advisor
James Cook University

Assoc Professor Donna Rudd
Secondary Advisory,
James Cook University

Professor Michal Schneider
Secondary Advisor
Monash University

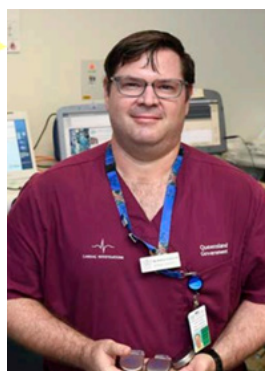
Researchers in the Spotlight

Nathan Engstrom, Cardiac Scientist

"Improving service delivery and outcomes for heart failure patients in regional, rural and remote North Queensland"

Electrician turned cardiac scientist; Nathan Engstrom is currently completing his Doctor of Philosophy at James Cook University. Exploring a better way to help patients get the most out of their implantable cardioverter defibrillators (ICDs), Nathan and his team, including Professor Geoffrey Dobson, Dr Hayley Letson (Research Fellow), and Dr Kevin Ng (Cairns and Hinterland HHS) are breaking ground for heart failure patients. Specifically, hoping to more effectively predict patients who are going to have arrhythmias so we can better target who we install these devices in.

Having limited exposure to research prior to enrolling in his PhD, Nathan has had the assistance of JCU's cohort doctoral studies program to develop his research skills. After completing a pilot study in 2020, Nathan published his first research paper "Primary prevention implantable cardiac defibrillators: a Townsville district perspective" in Frontiers in Cardiovascular Medicine.



Nathan and team then retrospectively evaluated patients who received ICDs and reviewed state-wide guidelines that govern who is a suitable candidate for receiving a device. From this review, a validation study (ongoing) of an ECG marker has analysed 30 ECGs from heart failure patients to form the basis for a new risk stratification matrix to aid in the identification of vulnerable heart failure patients who are at risk of sudden cardiac death.

"Personally, I've enjoyed my research journey thoroughly and I hope where it ends is at a place that delivers better outcomes for very sick patients with low heart output and irregular heartbeats."

Mental Health Service Group

Message from the Director

The Townsville Mental Health Service Group supports Medical, Nursing and Allied Health staff to create and translate research into evidence-based outcomes and improve patient outcomes through robust quality initiatives.

The MHSG welcome Dr Calogero Longhitano to the research team in his role as Associate Professor of Psychiatry. Carlo was also a successful recipient of a THHS SERTA research fellowship grant in 2021 and continues with his research in 'Psychiatric and Metabolic Effects of Ketogenic Therapy in Psychotic Disorders'.

We welcome Corianne Richardson our senior research officer back into her role, after a protracted secondment into a leadership role. Research within the service group has been challenging with COVID-19 delaying the progress of several of our research projects and plans. A regular research café has commenced to provide an opportunity for staff to chat and meet with other staff who are interested in, needing assistance or conducting research.

Ann Marie Mallett
Mental Health Service Group Director

RGO Approved Research

Principal Investigators	Department	Study Title
Ms Theresa Oke Dr Wendy Smyth	Alcohol, Tobacco & Other Drugs	Let's talk about weed.
Dr Zoe Rutherford Andrea Catt	Alcohol, Tobacco & Other Drugs Specialist Services	Evaluation of the Queensland Mental Health Community Support Services Program

Research Groups

Mental Health Service Group Research Program – Safety, Education, Research Quality Unity

As a service group we are focused on increasing our capabilities in research and are also supporting several of our staff to undertake Higher Degrees and PhD studies.

The MHSG welcome Calogero Longhitano to the research team in his role as Associate Professor of Psychiatry. Carlo was also a successful recipient of a THHS SERTA research fellowship grant in 2021.

Research within the service group has been challenging with COVID-19 delaying the progress of several of our research projects and plans.

Current Projects & Research Team Members

“Understanding the misuse of pregabalin among the ATODS consumers in a regional city of Australia.”
Dr Amuthanila Kasianandan

“Prevalence of Neurodevelopmental Abnormalities in children involved in the Justice System – A case series”
Dr Suparna Chakrabarty

“ICD-10 Z codes and Adverse childhood experiences (ACE)”

Dr Mark Mayall

“Coaching of Clinical Nurses in a Mental Health Setting: An Exploratory Case Study”

(SARAS support provided by the MHSG)

Corianne Richardson

“Psychiatric and Metabolic Effects of Ketogenic Therapy in Psychotic Disorders.”

Carlo Longhitano

“Planning for the worst: The Opioid Treatment Program and a person-centred approach to disaster preparedness, response and recovery.”

Nerida Firth

Research Collaborations

‘Let’s talk about weed’ with Jane O’Connor and Theresa Oke from Wide-Bay Hospital and Health Service supported by the THHS Nursing Research Unit

Researchers in the Spotlight

Calogero Longhitano, Psychiatrist

“Nutritional Interventions in Psychotic Disorders”

In 2021, Dr Longhitano completed a systematic review of the efficacy of nutritional interventions in schizophrenia spectrum disorder, which found that while dietary supplements such as omega-3 fatty acids or vitamins offered limited benefits to this disorder, greater efficacy could be ascribed to whole diet interventions, such as gluten free and ketogenic diets. However, there is a lack of good quality, randomised clinical trials on the subject.

Dr Longhitano and team are currently finalising the preparation of a protocol for such a trial investigating the ketogenic diet in bipolar disorder and schizophrenia, which will contribute to his PhD.



Dr Longhitano successfully applied for funding from United States’ philanthropic society, The Baszucki Brain Foundation (BFF). Following this Dr Longhitano and team, including external advisor Professor Christopher Palmer of Harvard Medical School, have collaborated with the Metabolic Psychiatry Research Network, a network comprising several research groups based in the USA, Europe and Australia.

Through the network collaboration, Dr Longhitano’s research protocol is now being finalised into a robust, peer reviewed project that includes the most relevant biological markers to help demonstrate the potential of the proposed dietary intervention.

Rural Hospitals Service Group

RGO Approved Research

Principal Investigators	Department	Study Title
Professor Elizabeth Cardell	Allied Health	Evaluation of the Allied Health Rural Generalist (AHRG) Pathway 2019-2022

Health & Wellbeing Service Group

Message from the Director

Health and Wellbeing Service Group clinicians continue to focus on improving practice through research, publications, and conference presentations.

The ongoing COVID-19 pandemic constrained professional face to face meetings, conferences, and congresses. Despite the constraints and challenges, the focus on higher level achievements through research was maintained.

Women's and Community Services welcomed Dr Kendall George to the leadership team in 2021. Dr George, the current Midwifery and Nursing Director, quickly linked with established researchers across Townsville HHS to promote research as a tenet within her team and across the HHS. Dr George's 2021 publication "The Parenting Premmies Support Program: Designing and developing a mobile health intervention for mothers of preterm infants" is particularly relevant to Townsville University Hospital neonatal staff, baby graduates and families.

James Cook University is on our doorstep and academic colleagues are waiting to work alongside clinicians to support them to gain the relevant skills to complete research studies and higher degrees. I am humbled by the ongoing resilience, tenacity and commitment of researchers and clinicians.

COVID-19-19 has given opportunity to use digital communications to connect across campuses, institutions, States, and countries. I hope clinicians are inspired to engage in formal clinical research and I encourage all budding researchers to contact one of our experienced team members to take the leap into research and to see their professional lives fulfilled.

Onwards and upwards.

Vicki Carson

Health & Wellbeing Service Group Director

RGO Approved Research

Principal Investigators	Department	Study Title
Dr Vanaja Sabesan	Paediatrics	The effectiveness of staff education in the documentation of blood pressure and subsequent management of hypertension in children
Dr Andrew White	Paediatrics	Assessment of renal function in neonates and infants using Cystatin C
Ms Candice Anderson	Neonatology	Neonatal healthcare providers' perceptions of the feasibility of home phototherapy in neonatal jaundice.
Mrs Amanda Martin	Birth Centre	An exploration of the rates and severity of perineal trauma of women who birthed in water at a northern Queensland Birth Centre 2010-2020.
Associate Professor Helen Heussler	Paediatrics	Genomics of Intellectual Disability – improving access to diagnosis.
Associate Professor Helen Heussler	Paediatrics	Genomics of Intellectual Disability – improving access to diagnosis.
Dr Margot Bosanquet	Neonatal Intensive Care Unit Special Care Nursery Paediatrics	Learning through Everyday Activities with Parents Study (LEAP-CP)
Dr Natalee Williamson	Neonatal Unit	Outcomes of growth restricted low birth weight preterm neonates at Townsville University Hospital: a retrospective review
Dr Ian Law	Neonatology	Therapeutic hypothermia in neonatal hypoxic ischaemic encephalopathy: A 10-year retrospective analysis of outcomes in a tertiary neonatal intensive care unit.
Dr Hayley Letson	Obstetrics & Gynaecology	Obstetric Bleeding in North Queensland: Defining the Problem
Associate Professor Lisa Whop	Child & Youth Health	Yarning about HPV vaccination
Dr Yvonne Teoh	Paediatrics	Paediatric Traumatic Brain Injury at Townsville University Hospital: Rehabilitation Service needs for Ongoing Disability
Dr Cecelia O'Brien	Obstetrics and Gynaecology	Predicting neonatal outcomes related to Diabetes in pregnancy
Ms Audra Davis	Maternity	Impact of the Midwifery Community Access Program
Dr Lee Huang	Neonatology	The Retrieved Neonates of Mackay: a Retrospective Analysis

Research Groups

Perinatal Research – Neonatal / Maternal Fetal Medicine

During 2021, Dr Yoga Kandasamy and team continued their work on the KIDMIN study, an NHMRC funded project. The first phase of this study, to determine mother and newborn factors that impact on a newborn's kidney development, was completed following the recruitment of 399 women. The second phase of the study commenced in October 2021. This study reflects the goal of clinical research informing practice through staff completing higher degrees and other associated projects.

Research Team Members

Dr Yoga Kandasamy, Neonatologist and Principal Investigator
Dr David Watson, Director of Maternal Fetal Medicine
Dr Sonja Brennan, Consultant Sonographer
Ms Helena McInnes, Project Manager
Mrs Nicole Clapham, Research Nurse
Ms Chloe Sobieralski, Research Nurse

Specialist Trainee research projects

"Outcome of extremely low birth babies born in TUH."
Dr Natalee Williamson

"Therapeutic hypothermia in neonatal hypoxic ischaemic encephalopathy: A 10-year retrospective analysis of outcomes in a tertiary neonatal intensive care unit."
Dr Ian Law

Research Higher Degree

"Faecal Microbiome" Mr Jacob Westaway

JCU MBBS Honors

"Home phototherapy" Dr Candice Anderson

All projects have been completed successfully.

Children's Development Services Research Group

Research Team

Dr Margot Bosanquet
Anya Gordon
Lucy Fogarty
Ms Carly Dickinson, enrolled PhD (University of Queensland)
Ellena Oakes

Research Projects

"LEAP-CP: Learning through Everyday Activities with Parents, for infants at high risk of CP in Indigenous Australia."

Building on the successful LEAP-CP Learning through Everyday Activities with Parents with children with CP trial in India, the research team has modified the surveillance and intervention package to extend the trial for Aboriginal and/ or Torres Strait Islander families, to test whether our peer-delivered culturally adapted early intervention program (LEAP-CP) improves babies reaching their developmental milestones (movement, sitting, playing, communicating, seeing). QCPRR has been working with colleagues across Queensland to build a dedicated network of medical and allied health clinicians, and Aboriginal and Torres Strait Islander community workers, to co-design, deliver and champion the project. This project is funded by EU-NHMRC Partnership Grant APP1194128, Children's Hospital Foundation, Cerebral Palsy Alliance, and Perpetual Trustees.

"Queensland Early Detection & Intervention Network (QEDIN) for infants with Cerebral Palsy"

"Vision intervention for Seeing Impaired babies through Learning and Enrichment (VISIBLE)"

VISIBLE is a multisite randomised controlled trial of early vision-aware and parent-directed environmental enrichment program. The study aims to determine the feasibility and acceptability of the VISIBLE intervention program and evaluate the efficacy of the VISIBLE program to lead to greater improvements of visual function, developmental outcomes and parent-infant emotional and relational development, as compared to standard care. This project is funded by the Cerebral Palsy Alliance grant PG15717 (2018-2022) \$172,730.

"Pilot testing the clinical audit and implementation of neonatal brain MRI for North-Queensland infants at high-risk for adverse neurodevelopmental outcomes." This project is funded by a TAAHC Seed Grant \$50,000.

Research Collaborators

- Queensland Cerebral Palsy Rehabilitation & Research Centre, University of Queensland
- Australasian Cerebral Palsy Clinical Trials Network, University of Queensland
- Commonwealth Scientific and Industrial Research Organisation
- Griffith University
- Cerebral Palsy Alliance
- Children's Health Queensland
- James Cook University

Individual Researchers

Dr Kendall George – Women's and Community Services

Holding a joint position between Townsville HHS and James Cook University's College of Health Care Sciences, Kendall was involved in multiple research projects in 2021 in addition to completing their training as a JCU HDR Advisor.

Dr George is supervising three Higher Degree Research students from the University of Queensland, located at Sunshine Coast University Hospital.

"Factors influencing intentions of women and maternity health care providers to achieve and facilitate a normal physiological birth."

Holly Meyer

"Mindfulness-Based group therapy as Support for Mental Health Concerns in Pregnancy."

Amber Jenkins

"New Graduate Midwives' transition to practice."

Deyna Hopkinson

Researchers in the Spotlight

Susan Ireland, Neonatologist

"The provision of care for extreme preterm and peri viable babies"

In 2021 Dr Susan Ireland, medical lead for northern Queensland neonatal retrievals, concluded seven years of research contributing to her PhD thesis: "Do you people ever think of the lives you ruin?", exploring whether extreme preterm and peri viable babies should be resuscitated and the influence of parents and staff on decision making.

Discussing her research findings, Dr Ireland reflected that where many clinicians look at statistics and outcomes like chronic lung disease, parents and paediatricians were more positive about the outcomes of these babies, focusing on what a child is achieving in line with their abilities – recognising that a vast majority of families cope and just get on with it.



Dr Ireland was a late comer to academic studies and stated that she enjoyed the experience.

Research Advisory Team

Professor Sarah Larkins, James Cook University
Dr Robin Ray, James Cook University
Dr Lynn Woodward, James Cook University

"I think research makes you a better clinician: we all pride ourselves on taking a family-centred approach to care but [completing this research] has taken it to a different level for me and I think it has changed, and will continue to change, the way I practice."

Medical Service Group

Message from the Director

Researchers in 2021 were presented with challenges due to the escalation of the COVID-19-19 pandemic. Clinicians within Medical Service Group did not allow these challenges to deter their research aspirations and were well supported by their colleagues.

The Medical Service Group actively encourages clinicians to participate in all levels of research. As our daily operations return to business as usual, we will ensure the support to these staff is provided and their successes celebrated.

The quality of research and researchers across medical service group is excellent including participation in many sponsored clinical trials.

In 2022, Amy Brown will conclude her PhD research entitled "Dosimetric Impact of the Clarity Autoscan Transperineal Ultrasound Probe Pressure on Perineal Skin Dose in Prostate Cancer Patients". This research project has included significant quality of life and patient choice considerations which may impact cancer patient care into the future.

Aniko Cooper
Medical Service Group Director

RGO Approved Research

Principal Investigators	Department	Study Title
Dr Hock Choong Lai	Haematology	An ALLG phase 3 randomised trial of Selinexor and Lenalidomide versus Lenalidomide maintenance post Autologous Stem Cell Transplant for patients with Newly Diagnosed Multiple Myeloma Short Title: ALLG MM23 Acronym: (SeaLAND)
Dr Clinton Gibbs	Emergency ICU	Characteristics and Outcomes of patients transported by aeromedical retrieval services in North Queensland due to suspected Traumatic Brain Injury and need for neurosurgical care: A retrospective observational study Short Title: North Queensland Aeromedical Retrieval of suspected Traumatic Brain Injury (NQAR-sTBI) study
Miss Celine Lee	Dermatology	Evaluation of the Store-and-forward teledermatology service delivery in 4-6 pilot sites
Mrs Amy Brown	Radiation Therapy	A comparison of intrafraction magnetic resonance image soft tissue changes in pelvis radiation therapy patients

Principal Investigators	Department	Study Title
Dr Abhishek Joshi	Medical Oncology	Phase 3 study of enfortumab vedotin in combination with pembrolizumab with or without chemo versus chemo alone in previously untreated locally advanced or metastatic urothelial cancer Short Title: SGN22E-003
Dr Alex Tan	Radiation Oncology	Feasibility of Magnetic Resonance Imaging guided stereotactic reirradiation of locally recurrent prostate tumours Short Title: PRIUS-MR (Prostate Re-Irradiation Using SABR and MRI guidance) pilot
Dr Alexandra Webster	Dermatology	Prospective study to evaluate patient adherence to recommended regimens of oral nicotinamide for the prevention of keratinocyte carcinomas (KCs).
Dr Christopher Heather	Infectious Diseases	Central Base of Skull Osteomyelitis - A case series in tropical and subtropical settings
Dr Vinay Gangathimmaiah	Emergency	Emergency Healthcare for Detainees In Police Watchhouse Custody
Dr Vinay Gangathimmaiah	Emergency	Evaluating the impact of electric-scooter introduction on trauma-related patient presentations to a major referral emergency department in regional Queensland: A single-site, retrospective, observational, cohort study. Short Title: BEST-ED - Blunt Electric Scooter Trauma in Emergency Department study
Dr Abhishek Joshi	Medical Oncology	Use and Impact of Breast Cancer Survivorship Care Plan within THHS
Dr Wendy Smyth	Renal	Immersive virtual reality in a northern Queensland haemodialysis unit: A cross-over randomised controlled feasibility trial
Professor Anthony Smith	Medical Oncology	Telehealth for the delivery of cancer care in Australia: A rapid assessment of telehealth use and barriers and enablers to uptake during the COVID-19 pandemic
Dr Kayla Ward	Neurology	Prevalance and epidemiology of Moyamoya angiopathy in North Queensland
Dr John Casey	Haematology	Elucidation of the mechanisms of immune thrombocytopenia including COVID-19 vaccine-induced thrombocytopenia and thrombosis
Dr Timothy Squire	Radiation Oncology Medical Oncology	Darolutamide + Consolidation Radiotherapy in Advanced prostate cancer detected by PSMA Acroynm: DECREASE (TROG 19.06)
Ms Madeline Carr	Radiation Oncology Medical Physics	Multi-Site Validation of Anatomy-Specific ADC Measurements on MR-Linac Systems Using the QIBA Phantom Short Title: Australian MR-Linac Diffusion Validation Study
Dr Vinay Gangathimmaiah	Emergency Department Cardiology	The Limit of Detection in the Emergency Department Trial (LEGEND)

Principal Investigators	Department	Study Title
Mr David McIntyre	Renal Medicine	The McIntyre audit tool 26 (MAT 26): Testing for the reliability and validity of 26 haemodialysis nurse sensitive indicators. Short Title: Reliability and validity of Haemodialysis Nurse Sensitive Indicators
Dr Joel Wight	Haematology	A Randomized, Double-Blind, Placebo-Controlled, Phase 3 Study of Navitoclax in Combination with Ruxolitinib Versus Ruxolitinib in Subjects with Myelofibrosis (TRANSFORM-1)
Mrs Amy Brown	Oncology	Supporting Our Carers Study - Phase 2 and Phase 3
Dr Jeffrey Goh	Radiation Oncology	A Randomized, Phase 3, Double-Blind Study of Chemoradiotherapy With or Without Pembrolizumab for the Treatment of High-risk,
Dr. Abhishek Joshi Sub Investigator - Satellite Site)	Medical Oncology	Locally Advanced Cervical Cancer (KEYNOTE-A18 / ENGOT-cx11/ GOG-3047)
Dr Suresh Varma	Medical Oncology	DREAM3R: DuRvalumab (MEDI4736) with chemotherapy as first line treatment in advanced pleural Mesothelioma - A phase 3 Randomised trial
Dr Hock Choong Lai	Haematology	A phase 3, multicenter, open-label, randomized, study of gilteritinib versus midostaurin in combination with induction and consolidation therapy followed by one year maintenance in patients with newly diagnosed Acute Myeloid Leukemia (AML) or Myelodysplastic syndromes with excess blasts-2 (MDS-EB2) with FLT3 mutations eligible for intensive chemotherapy (AML24 / HOVON 156 AML/ AMLSG 28-18).
Dr Joel Wight	Haematology	MOR208C310 - A phase 3, multicenter, randomized, double-blind, placebo-controlled trial comparing the efficacy and safety of tafasitamab plus lenalidomide in addition to R-CHOP versus R-CHOP in previously untreated, high-intermediate and high-risk patients with newly diagnosed diffuse large B-cell lymphoma (DLBCL)
Dr Stephanie Athan	Microbiology Emergency Medicine	The Utility of C-Reactive Protein in the Diagnosis and Initial Management of Suspected Sepsis in the Emergency Department of a Tertiary Care Centre in North QLD: a Retrospective Cohort Study
Dr Justin Smith	Radiation Oncology	Financial Toxicity and Out-of-Pocket Expenses in Patients with Head & Neck Cancer

Research Groups

Townsville Cancer Centre Research – Oncology

Research continues to grow at the Townsville Cancer Centre (TCC), across medical oncology, radiation oncology, haematology, and palliative care. Our clinical trials unit coordinates many national and international clinical trials, including Teletrials.

The research team authored a total of 16 publications in 2021. Five staff members are currently at various stages of their Doctor of Philosophy candidatures in the areas of lung cancer pathways (Dr Zulfiquer Otty), breast cancer survivorship (Dr Abhishek Joshi) and prostate cancer image-guidance considerations (Amy Brown), the history of palliative care (Dr Ofra Fried) and medical physics aspects of the Magnetic Resonance Linear Accelerator (Ariana Shoobridge). Marcus Powers submitted his PhD on commissioning the Magnetic Resonance Linear Accelerator in late 2021, and our QUT radiation therapy research honours student based at Townsville graduated with first class honours at the end of 2021.

The quarterly TCC-wide research forums continued in 2021, highlighting research in various departments, and potential inter-departmental collaborations. We look forward to these forums continuing to gain momentum in future.

Research Team Members

Amy Brown
Research Fellow (Cancer Services)

The TCC research team consists of multiple clinician-researchers across Medical Oncology, Radiation Oncology, Haematology and Palliative Care.

External Collaborations

- James Cook University
- Queensland University of Technology
- Menzies
- QMRI

External Research Grants

“Evaluation of the impact of a radiation therapist-led model of care for Magnetic Resonance Linac adaptive cancer treatments.”

Health Practitioner Research Scheme, Glen Newman (Principal Investigator) \$28,730.

“Implementing a survivorship care plan for women with early breast cancer and evaluating its impact on value-based patient-centred outcomes.”

TAAHC, Abhishek Joshi (Principal Investigator) \$43,070.

Townsville University Hospital Emergency Medicine Research Program – Emergency Department

Townsville University Hospital's Emergency Medicine Research Program (TUH-EMRP) has continued to build research capacity in 2021 with a team of experienced and novice clinician researchers. The 2021 THHS-SERTA research capacity building grant has provided the TUH-EMRP a launchpad for sustainable growth. Three clinician researchers are now pursuing Doctorates in Philosophy and are expected to significantly enhance the outputs, outcomes and impact of TUH EMRP.

The appointment of four paediatric emergency physicians, one of whom is now the Co-director of Emergency Medicine Research, is anticipated to significantly bolster the Paediatric Emergency Medicine research profile of TUH-EMRP.

Research Team

Vinay Gangathimmaiah
Co-director of Emergency Medicine Research/Principal Investigator/Staff Specialist

Julian Wong
Co-director of Emergency Medicine Research/Principal Investigator/Staff Specialist

Nicole Chapman
Clinical Research Coordinator/Co-investigator/Clinical Nurse

Rebecca Hancock
Clinical Research Coordinator/Co-investigator/Registered Nurse

Bethany Roche
Principal Investigator/Nurse Practitioner

Krystel Land Principal Investigator/Senior Physiotherapist

Denise Blake
Principal Investigator/Senior Staff Specialist

Tanya Mellett
Principal Investigator/ Staff Specialist

Kate Hooper
Principal Investigator/ Staff Specialist

Emma Wawn
Principal Investigator/ Staff Specialist

Colin Banks
Principal Investigator/ Senior Staff Specialist

Clinton Gibbs
Principal Investigator/ Senior Staff Specialist

Jane Dutson
Co-investigator/Senior Staff Specialist

Luke Lawton
Co-investigator/Senior Staff Specialist

Graeme Maw
Co-investigator/Senior Staff Specialist

Research Collaborations

- Mackay Base Hospital, Mt Isa Base Hospital and Cairns Hospital – North Queensland Toxicology study.
- Royal Brisbane and Women's Hospital – Limit of Detection in Emergency Department (LEGEND).
- Princess Alexandra Hospital – Neck Of Femur Fascia Iliac Catheters in Emergency Department (NOFFICSED).
- Retrieval Services Queensland, Queensland Ambulance Service, Royal Flying Doctor Service, Queensland and LifeFlight Retrieval Medicine – North Queensland Aeromedical Retrieval in suspected Traumatic Brain Injury (NQAR-sTBI)
- Alfred Health, Victoria – COVID-19-19 Emergency Department (COVED) study.
- Royal Children's Hospital, Victoria – Bronchiolitis KT sustainability study.
- Monash Medical Centre, Victoria – The Australian Resuscitation in Sepsis Evaluation (ARISE) Fluids study.

External Research Grants

"Identifying RNA-based blood markers in Emergency Department patients with suspected acute ischaemic stroke arising from large vessel occlusion."
Emergency Medicine Foundation \$98,326.00

Research Higher Degrees

- Clinton Gibbs, Enrolled, PhD, James Cook University
- Vinay Gangathimmaiah, Enrolled PhD, James Cook University

Translational Research in Endocrinology and Diabetes (TREAD)

TREAD pioneered novel landmark studies for treatment and monitoring of diabetes in North Queensland. These include electromagnetic stimulation and shockwave therapies for diabetic foot ulcers and nurse practitioner-led inpatient (dashboard) management of diabetes.

TREAD also participated in a multicentre international clinical trial -The effect of Tirzepatide Versus Dulaglutide on Major Cardiovascular Events in Patients with Type 2 Diabetes (SURPASS-CVOT). In addition, 4 JCU honours medical students, and 3 MPhil/PhD candidates were supervised in 2021 with successful outcomes.

Research Team

Prof Usman Malabu
Head of TREAD

Prof Kunwarjit Sangla
Director of Endocrinology/Research Advisor

Dr Shaurya Jhamb
Clinical Research Fellow

Mrs Jacqueline Bulbrook
Clinical Research Nurse

Mrs Julie Goodall
Clinical Research Podiatrist

Mr Benjamin Crowley
Clinical Research Coordinator

Mrs Casey Thompson
Diabetes Research Nurse Practitioner

Mrs Ursula Togialua
Diabetes Research Nurse Practitioner

Mrs Gaynor Garstone
Diabetes Research Nurse

Ms Robyn Chadwick
Clinical Nurse Consultant – Diabetes Research

Research Collaborations

- Ulcer and wound HEALing consortium (UHEAL)
- University of Notre Dame – Teldiabetes foot care in rural/remote North Queensland
- PNG Institute of Medical Research – Teldiabetes in rural/remote PNG Islands

External Research Grants

"The effect of Tirzepatide Versus Dulaglutide on Major Cardiovascular Events in Patients with Type 2 Diabetes (SURPASS-CVOT)"
Eli Lilly Australia Pty Limited

Individual Researchers

Dr Robert Norton - Microbiology & Pathology Department

With the assistance of many junior doctors and rotational staff, Dr Norton has collaborated with several national and international academic institutions and colleagues on aspects of Melioidosis, Rheumatic fever and Q fever.

Dr Norton is actively working on a proposed collaborative state-wide Q fever study with the University of Queensland Advancing integrated Q fever risk management in high-risk communities.

External Research Grant

"Preclinical evaluation of a streptococcal peptide based specific diagnostic for rheumatic fever and the identification of proteins responsible for the pathogenesis of rheumatic heart disease."
NHMRC Ideas Grant \$485,135

Timothy Squires – Radiation Oncology

Utilised the MR-Linear accelerator to demonstrate electron streaming beyond the incidence with a phantom. This proof of principle research adds to investigation of how magnetic fields may need to be arranged around a space craft as a form of radiation protection in space.

Dr Mike Boggild - Neurology

A co-investigator on multiple research projects focusing on multiple sclerosis, Dr Boggild is currently involved in the multi-site, phase II, randomised, placebo-controlled clinical trial "Reducing the frequency of Autoimmune adverse events in the treatment of Multiple sclerosis with alemtuzumab using B-cell depletion (RAMBLE)". The research, led by Griffith University Professor, Simon Broadley received a project grant from Multiple Sclerosis Research Australia for \$350,000.

Conference Presentations

"Disease modifying therapies for MS." Multiple Sclerosis for Australian and New Zealand Neurology trainees Presentation (virtual, Oct 2021).

Liane Barnes – Respiratory & Sleep

Working in collaboration with Pulmonary Health in The Tropics (PHITT) team at James Cook University, Liane has had significant project delays in 2021 due to COVID-19 and changes to national guideline recommendations for lung function testing. Liane's research was impacted due to the inability to perform ward-based testing, with the hope to recommence the research as part of a Masters in Philosophy at James Cook University in 2022.

Bridee Neibling – Physiotherapy

A 2021 SERTA funding recipient, Bridee's area of research focus is on coaching stroke survivors to persevere with practice. Data collection has not yet commenced following delays in project start up following HREC approval.

Research Advisory Team

Associate Professor Ruth Barker
Primary Supervisor/Academic, James Cook University

Dr Kathryn Hayward
Secondary Supervisor/Researcher, University of Melbourne

Dr Paul Chapman
Co-investigator/Director of Rehabilitation, Townsville University Hospital

Carolyn Brickhill
Co-investigator/Physiotherapist, Townsville University Hospital

Researchers in the Spotlight

Amy Brown, Radiation Therapist

"Men's preferences for image-guidance in prostate radiation therapy: A discrete choice experiment"

As the Townsville Cancer Centre's Research Fellow, Amy supported 17 investigator-led projects across in 2021, predominately in Medical Oncology and Radiation Oncology. Her personal research interests include image-guided radiation therapy, health economics and health preference research.

Amy conducted a discrete choice experiment study as part of her PhD, in collaboration with a consumer investigator, Mr Lux Anable. The study investigated the patient and general population preferences for image-guidance in prostate cancer radiation therapy, and Lux's contribution to the research and team were invaluable.



Conference Presentations

- *"Men's preferences for image-guidance in prostate radiation therapy: a discrete choice experiment"* Presentation – ANZUP ASM (Oct 2021 - Virtual)
- *"Improvement in male pelvis magnetic resonance image contouring following radiologist-delivered training"* Presentation – RANZCR ASM (Oct 2021 - Virtual)
- *"Men's preferences for image-guidance in prostate radiation therapy: a discrete choice experiment"* Poster – RANZCR ASM (Oct 2021 - Virtual)
- *"Men's preferences for image-guidance in prostate radiation therapy: a discrete choice experiment"* Townsville Health Research Showcase.

"Working with... our consumer investigator... from protocol development to publication... was so valuable, particularly as this study was evaluating patient preferences. I look forward to working with consumer investigators in future studies, and highly recommend it to other research teams!"

Facilities, Infrastructure & Support Service Group



Researchers in the Spotlight

Tim McNabb, Architect

“Spatial Healthcare and the Internet of Things”

Tim's research seeks to use internet connected smart sensors (internet of things devices) to optimise the use of clinical space in the healthcare system.

Tim is currently enrolled in a Doctor of Philosophy program with James Cook University under the supervision of Dr Kristin Wicking, College of Healthcare Sciences and Professor Trina Myers from School of Information Systems at Queensland University of Technology.

THHS Research Publications 2021



Abbasi, C, M Carolina Jimenez, et al. (2021). **“Massive gastrointestinal bleeding due to jejunal diverticula in a community hospital: A case report and review of diagnostic and therapeutic options.”** Gastroenterology Insights **12**(2): 196-201.

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Al-Shinnag, M, H Marfan, et al. (2021). **“Birt-Hogg-Dubé Syndrome and Hereditary Leiomyomatosis and Renal Cell Carcinoma Syndrome: an effective multidisciplinary approach to hereditary renal cancer predisposing syndromes.”** Frontiers in oncology **11**: 738822, 16 September 2021.

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Anderson, C M, Y Kandasamy, et al. (2021). **“The efficacy of home phototherapy for physiological and non-physiological neonatal jaundice: A systematic review.”** Journal of Neonatal Nursing. [published online ahead of print, 18 August 2021.]

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Archer, V, W Smyth, et al. (2021). **“Bathing wipes, a valuable hygiene option for frail older persons at home: A proof-of-concept study.”** Australian Journal of Advanced Nursing **38**(3): 43-46.

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August, D L, Y Kandasamy, et al. (2021). **“Fresh perspectives on hospital-acquired neonatal skin injury period prevalence from a multicenter study: length of stay, acuity, and incomplete course of antenatal steroids.”** The Journal of perinatal & neonatal nursing **35**(3): 275-283.

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Babl, F E, M D Lyttle, et al. (2021). **“Mild traumatic brain injury in children with ventricular shunts: A PREDICT study.”** Journal of Neurosurgery: Pediatrics **27**(2): 196-202.

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Baines, J, M Powers, et al. (2021). **"An alternative to the use of lead for patient treatment shielding in superficial radiotherapy."** Physical and engineering sciences in medicine **44**(1): 93-102.

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Benfield, S, J D Hewis, et al. (2021). **"Investigating perceptions of 'dose creep' amongst student radiographers: A grounded theory study."** Radiography (London, England : 1995) **27**(2): 605-610.

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Bhandari, A, M Ibrahim, et al. (2021). **"CT-based radiomics for differentiating renal tumours: a systematic review."** Abdominal radiology (New York) **46**(5): 2052-2063.

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Bhandari, A, S N Purchuri, et al. (2021). **"Knowledge and attitudes towards artificial intelligence in imaging: a look at the quantitative survey literature."** Clinical imaging **80**: 413-419.

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Bhandari, A, C Sharma, et al. (2021). **"The role of 2-hydroxyglutarate magnetic resonance spectroscopy for the determination of isocitrate dehydrogenase status in lower grade gliomas versus glioblastoma: a systematic review and meta-analysis of diagnostic test accuracy."** Neuroradiology **63**(11): 1823-1830.

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Bressan, S, N Eapen, et al. (2021). **"PECARN algorithms for minor head trauma: Risk stratification estimates from a prospective PREDICT cohort study."** Academic emergency medicine : official journal of the Society for Academic Emergency Medicine **28**(10): 1124-1133.

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Bridson, T, H Abeysondera, et al. (2021). **"A double-edged sword - Metabolic complications of clozapine in a rural area."** Schizophrenia research **228**: 260-261.

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Brown, A, T Pain, et al. (2021). **"Patient perceptions and preferences about prostate fiducial markers and ultrasound motion monitoring procedures in radiation therapy treatment."** Journal of medical radiation sciences **68**(1): 37-43.

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Chuter, V H, A Searle, et al. (2021). **“Estimating the diagnostic accuracy of the ankle-brachial pressure index for detecting peripheral arterial disease in people with diabetes: A systematic review and meta-analysis.”** Diabetic medicine : a journal of the British Diabetic Association **38**(2): e14379.

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Doma, K, A Leicht, et al. (2021). **“Effect of exercise-induced muscle damage on bowling-specific motor skills in male adolescent cricketers.”** *Sports* **9**(7): 103.

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Gandhi, M K, T Hoang, et al. (2021). **"EBV-associated primary CNS lymphoma occurring after immunosuppression is a distinct immunobiological entity."** Blood **137**(11): 1468-1477.

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