

2021

RBWH Research Report

INTERNAL
MEDICINE
SERVICES

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Internal Medicine Services



Professor Keshwar Baboolal
Executive Director
Internal Medicine Services, RBWH

Internal Medicine Services (IMS) has a long history of advancing healthcare through research. Over the past 2 years the COVID-19 pandemic has had a significant impact on the healthcare system and the people who work within it. Despite this, our staff have adapted to the challenges posed and have demonstrated resilience in ongoing research and continued collaboration to deliver research of the highest quality.

IMS strongly believe that fostering an active research culture adds to the diverse knowledge within healthcare but also allows patients to access the latest therapies, diagnostics and medicines at the forefront of modern healthcare. In 2021, our continued collaborations with our university and industry partners, as well as other healthcare providers both within QLD and across Australia, ensured that our contributions not only benefit our MNHHS patients but also patients across Australia and the world.

The comprehensive list of research submitted by each department highlights the research achievements of those staff and are attributed to the tireless efforts of our highly dedicated staff across all disciplines and all departments. The insights gained and developments achieved through research have been broadly shared through delivery at symposiums, national and international conferences, publications and health forums.

To support and enable research, the IMS research teams received many grants and awards to support their research endeavours through a number of pathways including RBWH Foundation Research Awards, special grants and funding from sources such as NHMRC.

On behalf of the IMS Executive team I would like to commend and thank IMS staff for their commitment and continued contributions to research that supports healthcare into the future.

Department of Cardiology

The cardiology department has a broad investigator-driven research programme that has grown from clinicians improving models of care with interdisciplinary collaboration including health service research and evaluating new technologies.

The **Practical Implementation Of advaNcEd Echocardiography (PIONEER) Research Group** are evaluating how novel echocardiographic technologies can value-add on top of standard echocardiography in various conditions including hypertrophic cardiomyopathy and myocardial infarction. Associate Professor Sandhir Prasad has been awarded a Metro North Clinician Research Fellowship (2022-2025) to undertake the Echocardiography Guided Prognosis Following Myocardial Infarction: Redefining Risk Stratification to Improve Patient Outcomes (ECHO Guide Study). This extended body of work will exploit RBWH echocardiography database and utilise data linkage to facilitate risk stratification and redefine normalcy thresholds.

The **Cardiovascular Telemedicine Program** continues to deliver high-quality cardiac investigations to rural and regional sites, and was the Winner of the “Leadership Award” at the Bond University Sustainable Healthcare Awards 2021: This programme has reduced waiting times, increased access (especially for Indigenous patients), decreased inequity and improved service quality for regional centres.

We have unique cardiac obstetric (collaboration with Obstetric Medicine/ IMAC) and cardiac genetic (collaboration with GHQ) services receiving statewide referrals and undertaking collaborative research. Other research interests include chest pain evaluation (collaboration with ETC/ IMAC) and using salivary biomarkers to manage heart failure. The **Accelerated Chest pain Risk Evaluation (ACRE)** programme is being actively translated into clinical practice throughout Queensland. We contribute to the Queensland Cardiac Outcomes Registry (QCOR), which evaluates the quality of healthcare in patients receiving interventional, electrophysiology, pacing, heart failure, and cardiac rehabilitation services.

(<https://clinicalexcellence.qld.gov.au/sites/default/files/docs/priority-area/clinical-engagement/networks/cardiac/qcor-annual-report-2020.pdf>)

Editorial and other key positions held by RBWH cardiology staff:

- Professor and Clinical Director, Australian Centre for Health Service Innovation, QUT
- Associate Editor, Heart Lung Circulation (3 staff members)
- Associate Cardiac Editor, Australasian Journal of Ultrasound in Medicine
- Editorial boards for Cardiac Failure Review, Medicine Today and Cardiology Today
- European Cardiac Obstetric Registry (only Australian representative)
- Australian Government Medical Services Advisory Committee (MSAC)
- Australian Government MBS Review Advisory Committee (MRAC)
- National Cardiac Registry (NCR) Board
- Royal Australasian College of Physicians Specialist Advisory Committee- QLD representative
- National Heart Foundation Research Committee
- Cardiac Society of Australia and New Zealand (CSANZ) Board and Executive
- Chair, CSANZ Quality Standards Committee
- CSANZ Education Trust Board of Trustees
- CSANZ Scientific Committee
- CSANZ Queensland Regional President
- European Society of Cardiology Congress Abstract Review Committee
- Australian Genomics Health Alliance- Cardiovascular Genetic Disorders Flagship
- Australia and New Zealand Alliance for Cardiovascular Trials Scientific Advisory Committee
- Co-Chair of the Statewide Cardiac Clinical Network
- Brisbane Diamantina Health Partners Evidence and Innovation in Clinical Care Theme Leadership Group
- QCOR- Heart failure Data Custodian
- Queensland Cardiovascular Research Network Steering Committee
- ANZ Cardiac Magnetic Resonance (ANZCMR) Executive
- Society of Cardiovascular Computed Tomography Education Committee
- Board of Directors, Australian Cardiac Outcome Registry (ACOR)

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Sandhir Prasad	Metro North Clinician Research Fellowship (2022-2025)	
Tele-Cardiac Investigation Program	Winner "Leadership Award"	2021 Bond University Sustainable Healthcare Awards
Sandhir Prasad	Promotion to Associate Professor (Level D), UQ	
John Atherton	Promotion to Professor (Level E), UQ	
William Parsonage	Australia's Top 250 Researchers	The Australian Research Magazine
Kristyan Guppy-Coles	QUT Centre for Biomedical Technologies Industry Engagement Award	
Kristyan Guppy-Coles	QUT Chief Investigator for the Centre for Biomedical Technologies	
Kristyan Guppy-Coles	RBWH Human Research Ethics Committee Member (Category 1f) and Reviewer Appointments	
Kristyan Guppy-Coles	QUT Alternative Faculty Representative to University Ethics Committee / School Human Research Ethics Advisor	
Kristyan Guppy-Coles	Visiting Research Fellow Appointment, Griffith Institute for Drug Discovery	

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
T Briffa, J Redfern, D Chew, J Atherton , G Hillis, S Nicholls, D Brieger, J Rankin, A Maiorana, C Budgeon.	Cardiology	Secondary Prevention for All in Need (SPAN) after Type 1 myocardial infarction: a comparative effectiveness randomised trial	Heart Foundation 2020 Secondary Prevention Strategic Grant (No. 105531)	\$999,034	5yrs, 2021-2024

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
K Guppy-Coles, K Hajkowicz, D Fielding, J Atherton, K Baboolal, P Harris, J Robson, S Cherian, D Langguth, C Kennedy, P Hobson, G Ward.	Cardiology, Infectious Diseases, Thoracic Medicine, Internal Medicine Service line	Investigation of SARS-CoV-2 vaccine seroconversion in an Australian healthcare staff population	Royal Brisbane and Women's Hospital (RBWH) & RBWH Foundation Project Grant	\$49,990	1yr, 2021-2022
A Driscoll, A Hutchinson, L Orellana, J Atherton , D Prior, C Reid, C De Pasquale, P Newton, R Audehm, E Zomer.	Cardiology	I-HEART – Implementation of HEART failure guidelines in Regional AusTalia	NHMRC 2020 Partnership Projects PRC1 (No. 2005589)	\$1,260,000 from NHMRC \$3,000,000 from partners	5yrs, 2021-2025
S Prasad, K Guppy-Coles, J Atherton, P-L Inglis, A Lo.	Cardiology, Oncology	Validation of hand carried ultrasound for oncology nurse-led semi-automated, point-of-care assessment of left ventricular systolic function via ejection fraction and myocardial strain measurements	Royal Brisbane and Women's Hospital 2021 Project Grant	\$40,063	1yr, 2021-2022
C Punyadeera, K Alexandrov, J Atherton , A Coats, L Cullen , G Dimeski, X Zhang.	Cardiology, Emergency Trauma Centre	Biosensor based clinical-decision support for patients with heart failure	NHMRC 2020 Ideas Grant (No. 2002576)	\$691,933	3yrs, 2021-2023
R Maddison, R Vasa, J Atherton , B Oldenburg, V Kostakos, T Dingler, J Rawstorn, D Kwasnicka.	Cardiology	Harnessing information technology to improve self-management behaviours and health outcome in people with heart failure: A smarthome ecosystem Living Lab Study	NHMRC 2020 Ideas Grant (No. 2004316)	\$1,120,226	4yrs, 2021-2024
J Atherton , C Punyadeera, X Zhang, K Guppy-Coles, N Karunathilake.	Cardiology	An Investigation of the relationship between microbiome and heart failure	Royal Brisbane and Women's Hospital 2021 Project Grant	\$47,813	1yr, 2021-2022
W Parsonage , B Abell, S McPhail, V McCreanor, S Kularatna.	Cardiology	Driving transformative improvements in cardiac rehabilitation services in order to enhance outcomes following cardiac events.	Defence Health Foundation	\$73,482	1yr, 2021
S McPhail, R Justo, W Parsonage , B Auld, A Barnett, S Kularatna, K Eagleson, N White, B Abell, S Bora.	Cardiology	CHD LIFE+ family-centered care models supporting long-term neurodevelopment.	Medical Research Future Fund Cardiovascular Mission	\$2,997,258	5yrs, 2020-2024

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
S Senanayake, S Kularatna, W Parsonage , S McPhail, B Abell, V McCreanor	Cardiology	Value for money in cardiac rehabilitation: economic evaluation of different models of care	NHMRC via University of Sydney (NHMRC Synergy Grant)	\$20,000	1 yr, 2022
J Greenslade, L Cullen, W Parsonage , D Chew, S McPhail, G Figtree, D Brain.	Emergency Trauma Centre, Cardiology	The Limit of Detection in the Emergency Department Trial: A stepped-wedge cluster randomised trial for rapid assessment of patients with suspected acute coronary syndrome in the Emergency Department.	NHMRC Partnership (APP1193269)	\$532,120 from NHMRC \$541,000 from partners	3 yrs, 2020-2023
S Senanayake, S Kularatna, W Parsonage , S McPhail, B Abell, V McCreanor	Cardiology	Value for money in cardiac rehabilitation: economic evaluation of different models of care	NHMRC via University of Sydney (NHMRC Synergy Grant)	1 yr; 2022 \$20 000	
J Atherton, K Guppy-Coles, S Prasad, P-L Inglis.	Cardiology, Oncology	Screening and monitoring for cardiac dysfunction using echocardiography and novice healthcare staff	Heart Foundation Vanguard Grant 2019	\$136,611	2yrs, 2020-2021
T Marwick, L Thomas, A Taylor, A Spencer, A La Gerche, C Tam, S Loi, P Mollee, J Atherton , P Harnett.	Cardiology, Oncology, Haematology	Benefit of 2D-strain surveillance in improving cardiovascular outcomes in cancer patients undergoing cardiotoxic chemotherapy	NHMRC 2016 Project Grant (No. 1119955)	\$2,391,979	5yrs, 2017-2021
KB Guppy-Coles, J Atherton, K Hajkowicz , J Robson, E Kiriakous, C Punyadeera, D Fielding, P Harris.	Cardiology, Thoracic Medicine, Infectious Diseases	Development and validation of a rapid, portable SERS platform for the detection of SARS-CoV-2 antigen.	RBWH & RBWH Foundation Project Grant Special Round COVID-19	\$49,500	1yr, 2020-2021
J Adsett, A Mudge, J Atherton, D Fielding , A Hickey.	Internal Medicine and Aged Care and Cardiology	Yesterday, Today and Tomorrow. Using the Heart Failure and Pulmonary Rehabilitation COVID-19 experience to inform models of care at RBWH.	RBWH & RBWH Foundation Project Grant Special Round COVID-19	\$45,152	1yr, 2020-2021
Julie Adsett , Rachel Bowe, Rebecca Kelly, Rita Hwang, Menaka Louis, Norm Morris.	Physiotherapy	Feasibility, reliability and validity of sit to stand tests in patients with heart failure.	DOPSQ	\$6,371	1yr, 2020-2021

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Adam Scott	Alice McDonald, Tiffany Roberts, John Atherton , Paul Scuffham (Griffith)	Tele-Cardiac Investigations to support rural/regional hospitals.		
Kristyan Guppy-Coles	John Atherton, Sandhir Prasad, Ada Lo, Kym Smith, Po-Ling Inglis, Patrick Beard, James Armstrong, Terena Truloff, Arun Dahiya	Novel automated technologies to assess left ventricular function in routine clinical practice and screening.		
Ada Lo	John Atherton, Kristyan Guppy-Coles , Arnold Ng (PAH), William Wang (PAH), Sandhir Prasad	Evaluation of novel echocardiographic parameters in hypertrophic cardiomyopathy.		
Sandhir Prasad	John Atherton, John Younger, Kristyan Guppy-Coles Liza Thomas (Westmead), Tony Stanton (SCUH), James Anderson, Ada Lo, Joanne Sippel, Kym Smith	Left ventricular diastolic dysfunction following myocardial infarction: prevalence, predictors and prognosis.		
Louise Cullen, William Parsonage	Jaimi Greenslade, Louise McCormack	The impact of ImpACT: A protocol to improve emergency chest pain assessment.		
Louise Cullen, William Parsonage	Briffa T, Chew D, Knuiman M, Fatovich D, Hickman P, Nedkoff L, Sanfilippo F, Hillis G, Mitra B, Wilkes G, Schneider H, Rankin J, Karnon J, Scanlan S, Stapleton S, Mather V.	Is highly-sensitive troponin testing advancing clinical practice, improving outcomes and cost-effective in the investigation and management of chest pain in the Emergency Department?		
Daniel Lancini	Paul Martin, Sandhir Prasad, Louise Cullen, Jaimi Greenslade	Atrial fibrillation in the emergency chest pain presentation.		
John Atherton, Chamindie Punyadeera (QUT)	Benjamin Schulz (QUT), Goce Dimeski (QUT), Karam Kostner (Mater), Wandy Chan (TPCH), Kristyan Guppy-Coles	Salivary biomarkers in heart failure.		
Amelia Lewis	Adam Scott, Kristyan Guppy-Coles, Emma Toms	Feasibility and diagnostic accuracy of signal processed, machine learning electrocardiogram to identify diastolic dysfunction: Comparison to echocardiography.		
William Parsonage	Abell B, McPhail S, McCreanor V, Kularatna S	Driving transformative improvements in cardiac rehabilitation services in order to enhance outcomes following cardiac events.		
Annalisse Leikvold	Daniel Lancini, Kristyan Guppy-Coles, Paul Martin	Feasibility and accuracy of a low cost, portable ECG device for measuring QTc interval in adults.		

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Kristyan Guppy-Coles	John Atherton, Krispin Hajkowicz, David Fielding, Patrick Harris, Jenny Robson, Emad Kiriakous, Chamindie Punyadeera, Carl Kennedy, Daman Langguth, Sarah Cherian, Peter Hobson, Shane Byrne	Development and validation of a rapid, portable platform for SARS-CoV-2 antigen detection from nasopharyngeal and throat mucus.		
Daniel Lancini	Paul Martin, Sandhir Prasad, Louise Cullen, Jaimi Greenslade	Atrial fibrillation in the emergency chest pain presentation.		

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Joseph Selvanayagam (SAHMRI) John Atherton (Site PI; International Steering Committee Member)	Sanjay Prasad, Andrew McGavigan, Graham Hillis, Werner Jung, Laurent Billot, Suchi Grover, John Atherton, John Younger, Paul Martin	Cardiovascular Magnetic Resonance GUIDEd management of mild-moderate left ventricular systolic Heart Failure (CMR GUIDE HF).	5	34
Tom Marwick (Baker) John Atherton (Site-PI)	Liza Thomas, Andrew Taylor, Andrew Spencer, Andre La Gerche, Con Tam, Sherene Loi, Peter Mollee, John Atherton, Paul Harnett, Sandhir Prasad	Benefit of 2D-strain surveillance in improving cardiovascular outcomes in cancer patients undergoing cardiotoxic chemotherapy.	6	6
William Parsonage	Elizabeth Sullivan, Rachael Cordina, Dominica Zentner, Michael Peek, Lisa Simmons, Lawrence Lam, David Celermajer, Wendy Pollock, Karin Lust , Jon Hyett, Zhuoyang Li	Australasian Maternity Outcomes Surveillance System (AMOSS) longitudinal study of first-time NSW/ACT mothers with heart disease and their babies.		
William Parsonage, Karin Lust (Site Co-PIs)	Karin Lust William Parsonage Kylie Burns Helen Tanner Lee Minuzzo	EORP Registry of pregnancy and cardiac disease: ROPAC 3		
John Atherton (Site-PI)	Multi-centre clinical trial	A multicentre, randomised, double-blind, parallel-group, placebo-controlled study to evaluate the efficacy and safety of finerenone on morbidity and mortality in participants with heart failure(NYHAII-IV) and left ventricular fraction >40% (FINEARTS-HF)	12	12

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
John Atherton (Site-PI)	Multi-centre clinical trial	A Pivotal Phase 3 Randomised, Placebo-controlled Clinical Study to Evaluate the Efficacy and Safety of the sGC Stimulator Vericiguant/MK-1242 in Adults With Chronic Heart Failure With Reduced Ejection Fraction (VICTOR)		
John Atherton (Site-PI)	Multi-centre clinical trial	A multi-centre, randomized, double-blind, active-controlled, parallel-group Phase 3 study to evaluate the efficacy and safety of LCZ696 compared to ramipril on morbidity and mortality in high risk patients following an acute myocardial infarction (PARADISE-MI).	Follow up phase	5
John Atherton (Site-PI)	Multi-centre clinical trial	A Double-blind, Randomized, Placebo-controlled, Multicentre Study to Assess the Efficacy and Safety of Omecamtiv Mecarbil on Mortality and Morbidity in Subjects With Chronic Heart Failure With Reduced Ejection Fraction (GALACTIC-HF).	Follow up phase	17
John Atherton (Site-PI)	Multi-centre clinical trial	1VIT15043: A Randomized, Double-Blind, Placebo-Controlled Study to Investigate the Efficacy and Safety of Injectafer® (Ferric Carboxymaltose) as Treatment for Heart Failure with Iron Deficiency (HEART-FID).	Follow up phase	14
John Atherton (Site-PI)	Multi-centre clinical trial	The long-term effects of dietary sodium restriction on clinical outcomes in patients with heart failure (SODIUM-HF).	Follow up phase	13
John Atherton (Site-PI)	Database	National Echo Database Australia	Awaiting Site Initiation	
John Atherton (Site-PI)	Multi-centre clinical trial	Cardiac Magnetic Resonance GUIDEd management of mild-moderate Heart Failure (CMR GUIDE HF)	3	37
Christopher Hammett (Site-PI)	Multi-centre clinical trial	A Phase 3, Multicentre, Double-blind, Randomized, Placebo-controlled, Parallel-group Study to Investigate the Efficacy and Safety of CSL112 in Subjects with Acute Coronary Syndrome (AEGIS-II).	8	38
Christopher Hammett (Site-PI)	Multi-centre clinical trial	Onyx ONE Study; A Randomized Controlled Trial with Resolute Onyx in One Month DAPT for High-Bleeding Risk Patients (ONYX-ONE).	Follow up phase	22
Christopher Hammett (Site-PI)	Multi-centre clinical trial	A randomised controlled trial of Rivaroxaban for the prevention of major cardiovascular events in patients with coronary or peripheral artery disease (COMPASS).	Follow up phase	40

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Christopher Hammett (Site-PI)	Multi-centre clinical trial	A phase III, double-blind, randomized placebo-controlled study to evaluate the effects of dalcetrapib on cardiovascular (CV) risk in a genetically defined population with a recent Acute Coronary Syndrome (DAL-GENE).	Follow up phase	10
Paul Martin (Site-PI)	Multi-centre clinical trial	Clinical Investigation of the ENO/TEO/OTO Pacing System under MRI environment (CAPRI).	Follow up phase	12
Peter Stewart (Site-PI)	Multi-centre clinical trial	Clinical Evaluation of the Absorb TM BVS, the Everolimus Eluting Bioresorbable Vascular Scaffold in the Treatment of Participants with de novo Native Coronary Artery Lesions (ABSORB).	Follow up phase	25

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Martin E, Campbell M, Parsonage W, Rosengren D, Bell SC, Graves N. What it takes to build a health services innovation training program. *Int J Med Educ.* 2021 Dec 23;12:259-263. doi: 10.5116/ijme.61af.30bd. PMID: 34942601.
2. Cullen L, Greenslade J, Parsonage W. Chest Pain Assessment: What Is Our Endgame? *Clin Chem.* 2021 Dec 17:hvab246. doi: 10.1093/clinchem/hvab246. Epub ahead of print. PMID: 34919650.
3. Rémond MGW, Li Z, Vaughan G, Frawley J, Peek MJ, Carapetis JR, Remenyi B, Parsonage W, McLintock C, Sullivan EA. The Spectrum, Severity and Outcomes of Rheumatic Mitral Valve Disease in Pregnant Women in Australia and New Zealand. *Heart Lung Circ.* 2021 Nov 25:S1443-9506(21)01314-7. doi:10.1016/j.hlc.2021.10.017. Epub ahead of print. PMID: 34840063.
4. Pretorius CJ, Parsonage W, Cullen LW, Wilgen U, De Waal E, Klingberg S, Dimeski G, White R, Greenslade J, Ungerer JPJ. Evaluation of the Atellica TnIh cardiac troponin I assay and assessment of biological equivalence. *Clin Chem Lab Med.* 2021 Nov 22;60(2):283-290. doi: 10.1515/ccim-2021-0991. PMID: 34800088.
5. Kularatna S, Rowen D, Mukuria C, McPhail S, Chen G, Mulhern B, Whitty JA, Byrnes J, Scuffham P, Atherton J, Höfer S, Parsonage W. Development of a preference-based heart disease-specific health state classification system using MacNew heart disease-related quality of life instrument. *Qual Life Res.* 2021 May 26. doi: 10.1007/s11136-021-02884-4.
6. Kularatna S, Senanayake S, Parsonage W, Jun D, McPhail S. Economic burden of patients living with heart disease in the last years of life in Australia; a retrospective analysis using linked data. *Eur Heart J Qual Care Clin Outcomes.* 2021 Mar 16:qcab006. doi: 10.1093/ehjqcco/qcab006.
7. Parsonage WA, Chew DP. The Cardiac Society of Australia and New Zealand (CSANZ) Guidelines and Quality Standards Committee: How to use it. A guide for fellows and authors. *Heart Lung Circ.* 2021 Apr; 30(4):469-470. doi: 10.1016/j.hlc.2021.02.003.
8. McCreanor V, Nowbar A, Rajkumar C, Barnett AG, Francis D, Graves N, Boden WE, Weintraub WS, Al-Lamee R, Parsonage WA. Cost-effectiveness analysis of percutaneous coronary intervention for single-vessel coronary artery disease: an economic evaluation of the ORBITA trial. *BMJ Open.* 2021 Feb 9;11(2):e044054. doi: 10.1136/bmjopen-2020-044054.
9. Boyle S, Sung-Him Mew T, Lust K, McKenzie S, Javorsky G, Parsonage W. Pregnancy Following Heart Transplantation: A Single Centre Case Series and Review of the Literature. *Heart Lung Circ.* 2021 Jan;30(1):144-153. doi: 10.1016/j.hlc.2020.10.007.

Journal Articles (RBWH staff in bold)

10. Parsonage WA, Zentner D, Lust K, Kane SC, Sullivan EA. Heart Disease and Pregnancy: The Need for a Twenty-First Century Approach to Care... *Heart Lung Circ.* 2021 Jan;30(1):45-51. doi: 10.1016/j.hlc.2020.06.021.

11. Chong D, Andreotti F, Verhamme P, Dalal J, Uaprasert N, Wang CC, On YK, Li Y, Hasegawa K, Almuti K, Bai R, Lo S, Krittayaphong R, Lee LH, Quek D, Johar S, Seow SC, Hammett CJ, Tan J. Direct Oral Anticoagulants in Asian patients with Atrial Fibrillation: Consensus Recommendations by the Asian Pacific Society of Cardiology on Strategies for Thrombotic and Bleeding Risk Management. *European Cardiology Review* 2021;16:e23.

12. Rasalam R, Atherton JJ, Deed G, Molloy-Bland M, Cohen, N, Sindone A. Systematic review of the effects of sodium-glucose cotransporter 2 inhibitors on hospitalization for heart failure and cardiac structure or function, and exploratory assessment of potential mechanisms. *ESC Heart Fail* 2021;8:4093-118.

13. Prasad SB, Atherton JJ. Quality first in obstructive hypertrophic cardiomyopathy. *Lancet* 2021;397(10293):2440-1.

14. Austin R, Quinn MCJ, Afoakwah C, Metke A, Leroux H, Atherton J, Brown J, Wornham LJ, Macciocca I, de Silva M, Thompson T, Martin E, Hilton D, Arsov T, Jackson M, Correnti G, Overkov A, Elbracht-Leong S, Ingles J, Scuffham P, Semsarian C, McGaughan J. Investigations of current models of care for genetic heart disease in Australia: A national clinical audit. *Int J Cardiol* 2021;330:128-30.

15. Bozkurt B, Coats A, Tsutsui H, Abdelhamid M, Adamopoulos S, Albert N, Anker S, Atherton J, Böhm M, Butler J, Drazner MH, Felker GM, Filippatos G, Fonarow GC, Fiuzat M, Gomez-Mesa J-E, Heidenreich P, Imamura T, Januzzi J, Jankowska EA, Khazanie P, Kinugawa K, Lam CSP, Matsue Y, Metra M, Ohtani T, Piepoli MF, Ponikowski P, Rosano GMC, Sakata Y, Seferović P, Starling RC, Teerlink JR, Vardeny O, Yamamoto K, Yancy C, Zhang J, Zieroth S. Universal definition and classification of heart failure: A report of the Heart Failure Society of America, Heart Failure Association of the European Society of Cardiology, Japanese Heart Failure Society and Writing Committee of the Universal Definition of Heart Failure. Endorsed by Canadian Heart Failure Society, Heart Failure Association of India, the Cardiac Society of Australia and New Zealand, and the Chinese Heart Failure Association. *Eur J Heart Fail* 2021;23:352-80. Co-published in *J Cardiac Fail* 2021 Mar 1;S1071-9164(21)00050-6. doi: 10.1016/j.cardfail.2021.01.022. (online ahead of print)

16. Pfeffer MA, Claggett B, Lewis EF, Granger CB, Køber L, Maggioni AP, Mann DL, McMurray JJV, Rouleau J-L, Solomon SD, Steg PG, Berwanger O, Cikes M, De Pasquale CG, East C, Fernandez A, Jering K, Landmesser U, Mehran R, Merkely B, Vaghaiwalla Mody F, Petrie MC, Petrov I, Schou M, Senni M, Sim D, van der Meer P, Lefkowitz M, Zhou Y, Gong J, Braunwald E, for the PARADISE-MI Investigators and Committees. Angiotensin Receptor–Neprilysin Inhibition in Acute Myocardial Infarction. *N Engl J Med* 2021;385:1845-55.

17. Teerlink JR, Diaz R, Felker GM, McMurray JJV, Metra M, Solomon SD, Adams KF, Anand I, Arias-Mendoza A, Biering-Sørensen T, Böhm M, Bonderman D, Cleland JGF, Corbalan R, Crespo-Leiro MG, Dahlström U, Echeverria LE, Fang JC, Filippatos G, Fonseca C, Goncalvesova E, Goudev AR, Howlett JG, Lanfear DE, Li J, Lund M, Macdonald P, Mareev V, Momomura S-I, O'Meara E, Parkhomenko A, Ponikowski P, Ramires FJA, Serpytis P, Sliwa K, Spinar J, Suter TM, Tomcsanyi J, Vandekerckhove H, Vinereanu D, Voors AA, Yilmaz MB, Zannad F, Sharpsten L, Legg JC, Varin C, Honarpour N, Abbasi SA, Malik FI, Kurtz CE, GALACTIC-HF Investigators. Cardiac Myosin Activation with Omecamtiv Mecarbil in Systolic Heart Failure. *N Engl J Med* 2021;384:105-16.

18. Mridha N, Ward E, Hayman S, Dahiya A, Prasad SB. Paradoxical Embolism through Patent Foramen Ovale as a Cause of Myocardial Infarction. *Med J Aust* 2021; 215(2):68-69.

19. O'Sullivan P, Younger J, Van Pelt N, O'Malley S, et al. Impact of COVID-19 on Diagnostic Cardiac Procedural Volume in Oceania: The IAEA Non-Invasive Cardiology Protocol Survey on COVID-19 (INCAPS COVID). *Heart Lung Circ.* 2021 May 16:S1443-9506(21)00502-3. doi: 10.1016/j.hlc.2021.04.021. Epub ahead of print. PMID: 34053885; PMCID: PMC8126176.

20. Dahiya A, Chao C, Younger J, et al. Society for Cardiovascular Magnetic Resonance 2019 Case of the Week series. *J Cardiovasc Magn Reson.* 2021 Apr 1;23(1):44. PMID: 33794918; PMCID: PMC8015162.

21. Forshaw A, Younger JF, Coffey S, Whalley GA. Is Australasia Ready for Sonographer-Led Stress Echocardiography? *Heart Lung Circ.* 2021 May;30(5):626-628. doi: 10.1016/j.hlc.2021.03.002. Epub 2021 Mar 7. PMID: 33691982.

22. Kozor R, Walker S, Parkinson B, Younger J, Hamilton-Craig C, Selvanayagam JB, Greenwood JP, Taylor AJ. Cost-Effectiveness of Cardiovascular Magnetic Resonance in Diagnosing Coronary Artery Disease in the Australian Health Care System. *Heart Lung Circ.* 2021 Mar;30(3):380-387. doi: 10.1016/j.hlc.2020.07.008. Epub 2020 Aug 27. PMID: 32863111.

23. Einstein AJ, Shaw LJ, Hirschfeld C, Williams MC, Villines TC, Better N, et al (as part of INCAPS); NCAPS COVID Investigators Group. International Impact of COVID-19 on the Diagnosis of Heart Disease. *J Am Coll Cardiol.* 2021 Jan 19;77(2):173-185. doi: 10.1016/j.jacc.2020.10.054. PMID: 33446311; PMCID: PMC7836433.

Books (RBWH staff in bold)

1. Anderson B, **Kwon A**. Technical Quality and Tips. ASE's Comprehensive Echocardiography (3rd edition) 2021; II (8): 50-55.

Keynote or Plenary Lectures given in 2021

Date	Title
12/2021	European Society of Cardiology Asia 2021. Antiplatelet treatment in ACS-PCI patients: Strategies to address ischaemic risk.
10/2021	2nd Global Web-Conference on Heart Failure (eSPACE-HF). Plenary session (Session 7: Co-morbidities in HF affecting QoL and hard outcomes). Topic: Prevention of Atrial Fibrillation. Athens time zone.
10/2021	2nd Global Web-Conference on Heart Failure (eSPACE-HF). Plenary session (Session 7: Co-morbidities in HF affecting QoL and hard outcomes). Topic: Prevention of Atrial Fibrillation. Beijing time zone.
10/2021	2nd Global Web-Conference on Heart Failure (eSPACE-HF). Session 10: The need for Global Cascade Guidelines. Topic: Key Points in the HF Guideline Approach: HF Guidelines for Australia/New Zealand. New York time zone.
09/2021	Evidence to Practice (E2P) Clinical Trial Forum. Topic: European Society of Cardiology 2021 Update: GUIDE-H
09/2021	Evidence to Practice (E2P) Clinical Trial Forum. Topic: European Society of Cardiology 2021 Update DAPT duration post-PCI: How low can we go?
06/2021	European Society of Cardiology Heart Failure 2021 Online Congress, Florence, Italy (Pre-recorded virtual and live discussion). Session: Cardiac resynchronisation therapy, areas of debate. Topic: We should wait for the effect of sacubitril/valsartan, SGLT2i and rehabilitation before implanting: CRT - pro.
06/2021	European Society of Cardiology Heart Failure 2021 Online Congress, Florence, Italy (Live virtual). Topic: Expert opinion on heart failure management: drug titration – discussion.
06/2021	European Society of Cardiology Heart Failure 2021 Online Congress, Florence, Italy (Live virtual). Topic: Heart Failure Guidelines 2021: pharmacological treatment – discussion.
06/2021	European Society of Cardiology Heart Failure 2021 Online Congress, Florence, Italy. Session chair: Controversies in 2021 OMT: should SGLT2i and ARNI now be considered first line treatments in HFrEF?
05/2021	Sanofi- Invitae Cardiology NGS Webinar. Meeting Chair.
05/2021	American College of Cardiology Congress Highlight Meeting (Boehringer Ingelheim sponsored) (Live virtual). Topic: Update on heart failure and hypertrophic cardiomyopathy trials.
03/2021	Inside Practice National Webinar: What's the big deal? Taking the congestion out of heart failure. Topic: Pharmacological strategies in the treatment of heart failure
02/2021	Heart Failure Congress (Novartis: National face-to-face/ virtual combined meeting). Panel member: Heart failure with preserved ejection fraction panel discussion.
02/2021	Heart Failure Congress (Novartis: National face-to-face/ virtual combined meeting). Meeting co-chair.
01/2021	Global web-Conference – eSPACE-Cardio-Renal-Metabolic. Session chair: Session 8: Arrhythmias in kidney disease. Singapore time zone.
05/2021	Agatha Kwon ASA (Australasian Sonographers Association) Annual International Hybrid Conference, May 2021. Topics: Strategies (LV, RV, LA) Introduction, Live scanning – knobology, data-sets and optimisation, and QLab: Computer based workshop
11/2021	ASUM 2021 ASM. Assessment of Diastolic Function – How To. Virtual Meeting. Invited Lecture. Prasad SB.

11/2021

ASUM 2021 ASM. Echocardiography in Heart Failure with Preserved Ejection Fraction. Virtual Meeting. Invited Lecture. Prasad SB.

Department of Clinical Pharmacology

The Department of Clinical Pharmacology has a number of research focuses, across multiple professional disciplines, reflecting the multidisciplinary makeup of the department. Research staff work collaboratively with the Department of Pharmacy, in areas related to medication safety and the quality use of medicines. Clinical Pharmacology continues to work collaboratively with other hospitals within Metro North Hospital and Health Service, other Queensland Hospitals and other academic institutions (UQ, QIMR Berghofer, QUT). In addition, the department continues to focus on the role of individualised feedback, of both nursing and medical staff, related to the safety of prescribing and administration of medicines. A National collaboration with multiple universities (University of Queensland, University of New South Wales, Murdoch Children's Research Institute and Curtin University of Technology) investigating medication re-purposing to reduce risk of ovarian cancer and extend survival. Lastly, Dr Donovan, Director of Clinical Pharmacology, continues to expand his research interests in the cost-effectiveness of health care and continues to work collaboratively with researchers from within and external to RBWH, including a successful NHMRC project grant in collaboration with, amongst others, UQ and QIMR Berghofer.

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Assoc Prof Susan Jordan (University of Queensland), Assoc Prof Katrina Spilsbury (Curtin University of Technology), Dr Louise Wilson (University of Queensland), Dr Peter Donovan (RBWH)	Clinical Pharmacology, Internal Medicine and Aged Care	Hysterectomy, Oophorectomy and Long-term chronic Disease - the HOLD study	Australian Government – National Health and Medical Research Council.	\$690,005.60	4yrs 2021-2025
Dr Susan Jordan (Queensland Institute of Medical Research Berghofer), Prof Sallie-Anne Pearson (University of New South Wales), Dr Nirmala Pandeya (University of Queensland), Assoc Prof Michael Coory (Murdoch Children's Research Institute), Dr Katrina Spilsbury (Curtin University of Technology), Dr Peter Donovan	Clinical Pharmacology, Internal Medicine and Aged Care	IMPROVE – Investigating Medication Re-Purposing to Reduce risk of Ovarian cancer and Extend survival	National Health and Medical Research Council	\$438,313	2017-2021
Dr Peter Donovan	Clinical Pharmacology	STARS Evaluation Project (STEP)	University of Queensland	\$30,000	6 months

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Karen Davies	Karen Hay, Karen Whitfield , Karen Chippindall, Peter Donovan , Ian Coombes , Samantha Keogh, Katherine Losinski , Paul Jarrett , Catriona Booker	Medication Administration Evaluation and Feedback Tool: A Pilot Stepped Wedge Cluster Randomised Trial	60 staff	60 staff
Peter Donovan	Nicola Hinton (Cairns Hospital), Gaurav Puri (Cairns Hospital), Clare Cutmore , Heike Krausse , Jade Eccles-Smith , Brent Knack (Clinical Excellence Queensland), Jennifer Abel (Logan Hospital), Kay Dean (West Morteen HHS), Kerry Porter (Princess Alexandra Hospital), Roisine Warwick (Redland Hospital), Lee Allam (Princess Alexandra Hospital), Emma Whittle , Margaret Whillier , Matthew Balcerek	Queensland Inpatient Diabetes Survey		
Champika Pattullo	Benita Suckling , Peter Donovan , Lisa Hall (Queensland University of Technology)	Development, implementation and outcomes of an adaptable OXYCODONE Quality Improvement STRATEGY: Steps towards opioid stewardship		

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Clair Sullivan	Magid Fahim, Danielle Stowasser, Margie Butnoris, Tracy Comans, Peter Donovan , Martin Canning, Champika Pattullo , Ian Parker , Ben Sly, Jodie Austin, Anthony Russell, Oliver Canfell, Lee Woods, Vikki Goldup, Martin Byrne, Wilkin Chan, Yasaman Meshkat, Zack Kodiyattu, Chad Wright, Digby Simposin, Kim-Huong Nguyen, Kristy Rogan, Gloria Wong , Emma Whittle, Richard Friend , Jayden Mifsud, Elizabeth McCourt , Katherine Dekker , Angela North , Panteha Voussoughi	STARS Evaluation Program (STEP)	98	98
Pascale Dettwiller	L Walters, D Gonzalez-Chica, Michelle Rothwell, Elizabeth McCourt	Exploring the concept of clinical courage in the rural allied health profession	NA	NA
Amelia Anderson	Elizabeth McCourt , Michael Barras, Sam Hollingworth	Exploring natural disaster preparedness of hospital pharmacists	NA	NA
Dr Susan Jordan (University of Queensland)	Prof Sallie-Anne Pearson (University of New South Wales), Dr Nirmala Pandeya (University of Queensland), Assoc Prof Michael Coory (Murdoch Children's Research Institute), Dr Katrina Spillsbury (Curtin University of Technology), Dr Peter Donovan	IMPROVE - Investigating Medication re-Purposing to Reduce risk of OVarian cancer and Extend survival		
Louise Cullen (Emergency and Trauma Centre)	Nathan Brown, Peter Donovan , Ian Coombes, Jaimi Greenslade, David Hughes, Elizabeth Doran	Prevalence and characteristics of medication-related presentations to the emergency department. Emergency & Trauma Centre, Royal Brisbane and Women's Hospital.		
Benita Suckling	Champika Pattullo , Peter Donovan , Shirley Hu (University of Queensland), Bill Loveday (Medications and Regulations, Queensland Health)	Rates of Opioid Dispensing and Opioid-related Harms 2010-2018 – The Queensland Experience		
Midori Nagakai	Karen Whitfield, Glen Kennedy, A Clavarino, Nicole Gavin	Oral mucositis prevention in patients undergoing haematopoietic stem cell transplantation (HSCT)		
Nicolas Anning	Karen Whitfield , G Hopkins , A Clavarino, Peter Donovan	Pre and post-operative medication management in bariatric patients		
Paul Firman	Karen Whitfield Ken-Soon Tan, Alexandra Clavarino	Therapeutic Drug Monitoring optimisation		
Abby Yu	Karen Whitfield , Michael D'Emden , Andrew Hale	Diabetic patient, medication optimisation prior to surgery		
Elizabeth Doran	Karen Whitfield , Louise Cullen , Ian Coombes	Risk assessment tool of poisoned patients by non-expert clinicians in Emergency Department		

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Phillip Robinson	Peter Donovan , Nicola Dalbeth (University of Auckland, Auckland Hospital)	A Health Economic Analysis Colchicine Therapy for Gout Prophylaxis		
Benjamin Sly	Clair Sullivan (University of Queensland), Anthony Russell (Princess Alexandra Hospital), Sally Shrapnel (University of Queensland), Peter Donovan	Statewide Inpatient Glycaemic Benchmarking (STING)		
Benjamin Sly	Clair Sullivan (University of Queensland), Anthony Russell (Princess Alexandra Hospital), Sally Shrapnel (University of Queensland), Peter Donovan	Statewide Inpatient Glycaemic Dashboard Implementation (STING-DASH)		

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Real S, Lee T, Bishop J, Mirkov S, Johnson J, **McCourt E**, Hughes J, Pont L, Page AT and Penm J. Attitudes, barriers and facilitators of hospital pharmacists conducting practice-based research: a systematic review. J Pharm Pract Res. 2021 51: 192-202. <https://doi.org/10.1002/jppr.1741>
2. **McCourt E**. 'Calamity before the storm: How can we bridge the gap between primary and secondary care in a disaster?' Pharmacy Growth, Research, Innovation, and Training. 2021 4(4), 250-254.
3. **Donovan PJ**, **Eccles-Smith J**, Hinton N, Cutmore C, Puri G, Porter K, Abel J, Allam L, Dermedgoglou A. The Queensland Inpatient Diabetes Survey (QuIDS) 2019: the beside audit of practice. Medical journal of Australia, 2021-08-01, Vol.215 (3), p.119-124
4. **Eccles-Smith J**, Puri G, Hinton N, **Donovan PJ**, Cutmore C, Porter K, Dermedgoglou A. Access to inpatient diabetes resources: hospital characteristics from the inaugural Queensland Inpatient Diabetes Survey. Internal medicine journal, 2021-06-18.
5. **Pattullo C**, Suckling B, Taylor S, **Donovan PJ**. Developing and piloting an adaptable oxycodone quality improvement strategy: steps towards opioid stewardship. Australian health review, 2021-01-01, Vol.45 (3), p.353-360
6. **Madan A**, **Donovan PJ**, **Risetto T**, Lander CM, **Trener H**. Monitoring for Valproate and Phenytoin Toxicity in Hypoalbuminaemia: A Retrospective Cohort Study. British journal of clinical pharmacology, 2021-11, Vol.87 (11), p.4341-4353
7. Finn S, D'Arcy E, **Donovan PJ**, Barras MA, Kanagarajah S. A randomised trial of pharmacist-led discharge prescribing in an Australian geriatric evaluation and management service. International journal of clinical pharmacy, 2020-11-02, Vol.43 (4), p.847-857
8. Engstrom T, Baliunas DO, Sly BP, Russell AW, **Donovan PJ**, Krausse HK, Sullivan CM, Pole JD. Toilet Paper, Minced Meat and Diabetes Medicines: Australian Panic Buying Induced by COVID-19. International journal of environmental research and public health, 2021-07-01, Vol.18 (13), p.6954
9. **Pattullo C**, Suckling B, **Donovan PJ**, Hall L. Developing a framework for implementing Opioid Stewardship Programs in Australian Hospital Settings. Internal medicine journal, 2021-10-06
10. **Whitfield K**, **Coombes I**, **Denaro C**, **Donovan PJ**. Medication Utilisation Program, Quality Improvement and Research Pharmacist-Implementation Strategies and Preliminary Findings. Pharmacy, 2021-11-04, Vol.9 (4), p.182
11. Baker A, Clarke L, **Donovan PJ**, Ungerer J, Hartel G, Bruxner G, Cocchi L, Gordon A, Moudgil V, Robinson G, Roy D, Sohal R, **Whittle E**, Scott JG. Cadence discovery: study protocol for a dose-finding and mechanism of action clinical trial of sodium benzoate in people with treatment-refractory schizophrenia. Trials, 2021-12-01, Vol.22 (1), p.918-918.

Journal Articles (RBWH staff in bold)

12. Tanvir, E.M., Mahmood, S., Islam, M.N., Khatun, M., Afroz, R., Islam, S.S., Afrin, S., Khalil, M.I., Chowdhury, M.A.Z., Ng, J.C. and **Whitfield, K.M.**, 2021. Environmental Exposure to Metals and Metalloids in Primary School Aged Children Living in Industrialised Areas of Eastern South Asian Megacity Dhaka, Bangladesh.
13. Nakagaki M, Gavin NC, Clavarino A, Kennedy GA, **Whitfield K.** A real-world accuracy of oral mucositis grading in patients undergoing hematopoietic stem cell transplantation. Supportive Care in Cancer. 2021 Nov 25:1-8.
14. Davidson J, Simmonds C, **Whitfield K.** Wilby KJ. Students' proposed self-management strategies in response to written cases depicting situations of adversity. Pharmacy Education. 2021 Dec 2;21:810-6.
15. O'Conner K, Davies M, **Koorts P**, Cartwright D, **Whitfield K** (2021) Gentamicin dosing in neonates with normal renal function: trough and peak levels. European Journal of Drug Metabolism and Pharmacokinetics (in press)
16. **Whitfield K**, Wilby KJ. (2021) Developing grit, motivation, and resilience: to give up, on giving in. Pharmacy special edition Motivation, Grit, and Resilience in Pharmacy Education and Practice. Pharmacy, 9(2), 109. <https://doi.org/10.3390/pharmacy9020109>
17. **Whitfield K**, Arya A, Austin Z, Bajis D, Bradley C, Clark B, Galbraith K, Safouh ELHajj M, Hall K, Hughes L, Kirsas S, Langran C, Mantzourani E, Wilby KJ, Willis S (2021) Developing a Global Community of Practice for Pharmacy Workforce Resilience – meet GRiT. Pharmacy special edition Motivation, Grit, and Resilience in Pharmacy Education and Practice. Pharmacy, 9(2), 110. <https://doi.org/10.3390/pharmacy9020110>
18. E M Tanvir, Tatiana Komarova, Eva Comino, Ronald Sumner, **Karen M. Whitfield** and P. Nicholas Shaw (2021) Effects of storage conditions on the stability and distribution of clinical trace elements in whole blood and plasma: application of ICP-MS. Journal of Trace Elements in Medicine and Biology 68 (2021) 126804.
19. Dresser JD, **Whitfield KM**, Kremer LJ, Wilby KJ. (2021) Exploring how post-millennial pharmacy students balance life priorities and avoid situations known to deplete resilience. Am Journal of Pharm Ed. <https://doi.org/10.5688/ajpe8369>

Keynote or Plenary Lectures given in 2021

Date	Title
02/2021	Karen Davies ANZ Health Roundtable Medication Safety Webinar Keynote presentation - Medication Administration Evaluation and Feedback Research
08/2021	Karen Davies ANZ Health Round Table Medication Safety Webinar Keynote presentation – Medication Administration Evaluation and Feedback Stepped Wedge Cluster Randomised Trial Pilot Implementation Study
2021	Karen Whitfield Resilience - endurance with direction to give up on giving in. Life Long Learning for Pharmacists Conference Dublin (Workshop Virtual)
2021	Karen Whitfield Panel Discussion. Life Long Learning for Pharmacists Conference Dublin (Workshop Virtual)
2021	Karen Whitfield Neonatal Iontropes – Neonatal Nurse Practitioner Special Interest Group of the Australian College of Neonatal Nurses (ACNN) Brisbane (Workshop)

Department of Endocrinology & Diabetes

The research output and impact of the Department of Endocrinology & Diabetes continues to expand. 2021 saw significant activity in clinician-led research, clinical trials, and the conjoint internal medicine laboratory.

Clinician-led research within the department is performed by medical and allied health members. Research areas studied in 2021 included diabetes, digital health, thyroid disease and thyroid cancer, vitamin D and calcium metabolism, pituitary disease, adrenal disease, and transgender medicine. Department members collaborated widely with other hospitals, universities, and research institutes within Australia and overseas.

The clinical trials unit has traditional strength in diabetes studies, as evidenced by being Australasian-leading recruiters for multiple current studies. Two recently completed studies the department contributed to were published in the New England Journal of Medicine in 2021. In addition to ongoing diabetes work, the clinical trials unit has expanded into studies for thyroid disease and bone disease, with additional studies in congenital adrenal dysplasia and obesity planned for 2022. 2021 also marked the first year the Department offered a Clinical Trials fellowship, aiming to deliver clinical trial experience and dedicated research time for recently graduated Endocrinologists.

The conjoint internal medicine laboratory continued investigating mechanisms of placental thyroid hormone metabolism, making important preliminary discoveries how toxins interfere with thyroid hormone transport and potential links of thyroid hormone metabolism with diseases of pregnancy including preeclampsia.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Clair Sullivan	Centre for Health Services Research (CHSR) Researcher of the Year Award 2021	CHSR Staff Awards
Burton-Jones A, Akhlaghpour S, Ayre S, Barde P, Staib A, Clair Sullivan	John Campbell Research Impact Award, Australasian Association of Information Systems (Burton-Jones A, Akhlaghpour S, Ayre S, Barde P, Staib A, Sullivan C. (2019) <i>Changing the conversation on evaluating digital transformation in healthcare: Insights from an institutional analysis. Information and Organisation</i> 100255. https://doi.org/10.1016/j.infoandorg.2019.100255)	Australasian Association of Information Systems Awards
Burton-Jones A, Akhlaghpour S, Ayre S, Barde P, Staib A, Clair Sullivan	Best RICK Paper Award, Information and Organisation (Burton-Jones A, Akhlaghpour S, Ayre S, Barde P, Staib A, Sullivan C. (2019) <i>Changing the conversation on evaluating digital transformation in healthcare: Insights from an institutional analysis. Information and Organisation</i> 100255. https://doi.org/10.1016/j.infoandorg.2019.100255)	Information and Organisation Journal Awards
Don McLeod	Editorial Board	Thyroid
Don McLeod	Associate Editor	Clinical Thyroidology

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Leading Digital Excellence in Queensland health – Project 0083	Digital Health Cooperative Research Centre	\$1,485,000	3 years 2020-2023

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Enhanced data extraction and modelling from electronic medical records	Digital Health Cooperative Research Centre	\$1,400,000	2 years 2020-2022
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	An evaluation of digital health and continuity of care maturity in Queensland using HIMSS methodology	Digital Health Cooperative Research Centre	\$330,000	4 years 2020-2024
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Systematic Maturation of Health Analytics for Health Redesign (SMART)	Vice-Chancellor's Strategic Fund UQ	\$3,000,000	1 year 2021-2022
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Australian Research Data Commons Grant for EMR to OMOP Project	University of Melbourne	\$60,000	1 year 2021-2022
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Data Driven Clinical Research Innovation Hub	Stryker	\$499,491	3 years 2021-2023
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Digital Hospital: A Cost benefit analysis to inform business cases	QLD Health	\$29,840	3 months 2021
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	HDR Alliance Program	QLD Health	\$935,817	4 years 2021-2024
Clair Sullivan	Endocrinology & Diabetes Digital Health Research Network	Advanced QLD Industry Research Fellowships	Advanced QLD	\$660,000	3 years 2022-2024
Don McLeod (CIE)	Endocrinology & Diabetes	Sun-D trial - The effect of high SPF sunscreen application on vitamin D. (APP2006773)	NHMRC	\$1,175,124	4yrs, 2021-2024
Don McLeod (CIA)	Endocrinology & Diabetes	Optimising thyroid hormone treatment for Queenslanders	Queensland Advancing Clinical Research Fellowship	\$300,000	3ys, 2020-2022
Don McLeod (CIA)	Endocrinology & Diabetes	The causes, prognosis, and treatment of thyroid disease	Metro North Clinician Research Fellowship	0.4FTE	4yrs, 2019-2022

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Don McLeod (AI)	Endocrinology & Diabetes	The D-Health Trial: a large-scale population-based trial of vitamin D supplementation for improving the health of older adults (APP1120682)	NHMRC	\$2,591,860	5yrs, 2017-2021

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Caroline Bachmeier	Anna Zournazi, Jacobus Ungerer, Christina Jang, Warrick Inder	Clinical Validation of Measurement of Androgen levels in Women with Polycystic Ovarian Syndrome (PCOS) by Liquid Chromatography Tandem Mass Spectrometry versus Immunoenzymatic Assay		
Clair Sullivan	Jodie Austin, Jason Pole, Ben Sly, Chien Chen, Amir Rahimi, Guido Zuccon, Magid Fahim, Sally Shrapnel, Tracy Comans, Maree Ruge	STARS-enhanced data extraction and modelling	0	0
Clair Sullivan	Magid Fahim, Margie Butnoris, Danielle Stowasser, Tracy Comans, Ian Parker, Ben Sly, Jodie Austin, Oliver Canfell, Teyl Engstrom, Jason Pole, Tony Russell, Peter Donovan, Lee Woods, Martin Byrne, Angela North, Laura D'Adamo, Harrison Whiting, Jess Miller	STARS Evaluation Project (STEP)	0	0
Clair Sullivan	Benjamin Sly, Anthony Russell, Peter Donovan, Amir Kamel, Sally Shrapnel, Brett Sillars, Mitchell Mckean, Guarav Puri, Kana Appadurai	Statewide Inpatient Glucometric Benchmarking (STING)	0	0
Clair Sullivan	Victoria Campbell, Jason Pole, Teyl Engstrom, Oliver Canfell, Chad Wright	Digital Early Warning Tool System Upgrade Review (DEWTUS)	0	0
Clair Sullivan	Colleen Lau, Ides Wong, Linda Selvey, Amalie Dyda, Yoni Nazarchy, Han Chang Lim, Jodie Austin	Strengthening decision support for COVID-19 through SMART use of vaccination coverage data in Queensland (SOCS)	0	0

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Clair Sullivan	Ides Wong, Lee Woods, Rebekah Eden, Tim Kelsey, Rhona Duncan, Keith McNeil, Andrew Pearce, Michael Beckmann, Sophie Macklin, Yun Zou, Lakshmi Jayan	An Evaluation of Digital Health Maturity and Continuity of Care Maturity in Queensland using HIMSS	0	0
Clair Sullivan	Keith McNeil, Len Gray, Guido Zuccon, Magid Fahim, Jodie Austin, Lee Woods, Oliver Canfell, Sally Shrapnel, Jason Ferris, Dom Gorse, Ben Sly, Han Chang Lim, Jon Fraser, Monica Noselli, Robyn Littlewood, Phil King, Harry Scells, Anton Van der Vegt, Jason Pole, Ides Wong	Towards Systematic Maturation of Analytics and System Redesign to Transform (SMART) Healthcare and Public Health Research	0	0
Clair Sullivan	Magid Fahim, Len Gray, Sally Shrapnel, Guido Zuccon, Keith McNeil, Jodie Austin, Jason Pole, Ben Sly, Amir Rahimi, Teyl Engstrom, Monica Noselli, Reji Philip, Chien Chi, Keith McNeil	Enhancing electronic Medical records to improve Patient Outcomes, integrate health Workforce and generate Efficient Research	0	0
Don McLeod	Peter Donovan, Matthew Balcerek, Rachel Neale, Susan Jordan	The Thyro-pilot trial	39	39
Don McLeod	Ladenson P, Cooper D, Caturegli P, Veitor N, Whiteman D, Jordan S	Does stress cause Graves' disease?	NA	NA
Don McLeod	Ladenson P, Cooper D, Caturegli P, Bedno S, Matos P, Whiteman D, Jordan S, Neale R, Hutfless S, Ippolito S, Sabini E.	The association between thyroid autoimmunity and thyroid cancer	NA	NA
Kerry Richard	Don McLeod, Michael d'Emden, Melanie Young, Huika Li	The role of transthyretin in placental function and pregnancy disorders	NA	NA
Syndia Lazarus	Matthew Balcerek, Elizabeth Wootton	A retrospective review of short synacthen test requests at Pathology Queensland	NA (audit)	NA (audit)
Lauren Burrage	Donald McLeod, Carel Pretorius, Syndia Lazarus	A retrospective audit of the frequency of hypocalcaemia and hypophosphataemia post intravenous iron carboxymaltose and iron polymaltose in the inpatient setting	NA (audit)	NA (audit)
Lauren Burrage	Don McLeod, Carel Pretorius, Syndia Lazarus, Caroline Bachmeier, Matthew Balcerek	Comparison of Spot Urine Calcium and Creatinine Clearance Ratios with 24-Hour Urine in Parathyroid Hormone Dependent Hypercalcaemia	12	12

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Peter Donovan	Matthew Balcerek , Puri G, Knack B,	Queensland Inpatient Diabetes Survey – Bedside Audit and Hospital Characteristics Combined Analysis		
Peter Donovan	Margaret Whillier, Matthew Balcerek , Hinton N.	Queensland Inpatient Diabetes Survey – Patient Experience Survey Results		
Matthew Balcerek	Cooley R, Nielsen G	Retrospective Review of Inpatient Gender Affirming Hormone Therapy Management at a Tertiary Referral Centre in Queensland		
Matthew Balcerek	Nolan B	Monitoring and management of hyperprolactinaemia in transgender patients on feminising hormone therapy (Literature Review and Management Guidelines)		

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Emily Brooks (PAH)	Christina Jang , Ann McCormack, Ashish Munsif, Carmela Caputo, Warrick Inder, Viral Chikani	A randomised trial of prophylactic fluid restriction In prevention of delayed hyponatraemia following pituitary surgery	(Just commenced end 2021)	
Olivia Holland	Kerry Richard	Adaptive placental responses to gestational diabetes and role in disease severity		
James Cuffe (UQ)	Kerry Richard	Understanding the relationship between thyroid autoimmunity and pregnancy outcomes		
Sponsor: Eli Lilly	Michael d’Emden, Don McLeod, Peter Donovan, Emma Whittle, Matthew Balcerek	SURPASS-CVOT: The effect of tirzepatide vs dulaglutide on major adverse cardiovascular events in patients with type 2 diabetes	29	48 First in world participant randomized Top recruiter in Aus/NZ
Sponsor: Novo Nordisk	Michael d’Emden, Don McLeod, Matthew Balcerek	PIONEER PLUS: Efficacy and safety of once daily oral semaglutide 25mg and 50mg compared with 14mg in subjects with type 2 diabetes	7	7 Top recruiter in Aus/NZ
Sponsor: Alexion	Syndia Lazarus, Andrea Fernandez	An observational, longitudinal, prospective, long term registry of patients with hypophosphatasia (HPP)	3	3

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Sponsor: Eli Lilly	Michael d'Emden	SURPASS 2: Tirzepatide versus Semaglutide Once Weekly in Patients with Type 2 Diabetes	0	7 Top recruiter in Aus/NZ Published in NEJM
Sponsor: Novo Nordisk	Michael d'Emden	ARISE: a prospective, non-interventional, single-arm study assessing clinical parameters associated with the use of insulin degludec/insulin aspart in patients with type 2 diabetes in real-world settings	0	5
Rachel Neale (QIMR Berghofer)	Waterhouse M, Baxter C, Duarte Romero B, Don McLeod , English DR, Armstrong BK, Ebeling P, Hartel G, Kimlin MG, O'Connell RL, Van Der Pols JC, Venn AJ, Webb PM, Whiteman DC	The D-Health Trial	0	0
Susan Jordan (UQ)	Rahhman ST, Don McLeod , Pandeya N, Thyroid Neale RE, Bain CJ, Baade P, Youl PH, Susan Thomas , Roger Allison .	The Queensland Thyroid Cancer Study	0	595

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- English KA, Chikani V, **Christina Jang**, Dimeski G, Olson S, Inder WJ. The relationship between early post-operative ACTH / cortisol following pituitary surgery and long-term glucocorticoid requirement - Do ultradian rhythms matter? Clin Endocrinol (Oxf). 2021; 94(4): 636-644 (PMID: 33369760)
- Pituitary disease: An update. Inder WJ, **Christina Jang**. Aust J Gen Pract. 2021; 50(1-2): 30-35 (PMID: 33543159)
- Dendere R, Janda M, **Clair Sullivan**. Are we doing it right? We need to evaluate the current approaches for implementation of digital health systems. Australian Health Review. 2021; 45 (6): 778-781. doi: 10.1071/ah20289
- Canfell OJ, Littlewood R, Burton-Jones A, **Clair Sullivan**. Digital health and precision prevention: shifting from disease-centred care to consumer-centred health. Australian Health Review. 2021 doi: 10.1071/ah21063
- Sly B, Russell AW, **Clair Sullivan**. Digital Interventions to improve safety and quality of inpatient diabetes management: a systematic review. International Journal of Medical Informatics. 2021; 157: 104596. doi: 10.1016/j.ijmedinf.2021.104596
- Desselle MR, Kirrane M, Chao IT, Coles Black J, Woodruff MA, Chuen J, **Clair Sullivan**. Evaluating the safety and effectiveness of novel personal protective equipment during the COVID-19 pandemic. Medical Journal of Australia, 2021; 214 (11); 496-499.e1. doi: 10.5694/mja2.51091
- Kirrane MD, Shrapnel S, Ramanan M, Clement P, Fraser JF, Laupland KB, **Clair Sullivan**, Shekar K. Intensive care digital health response to emerging infectious disease outbreaks such as COVID-19. Anaesthesia and Intensive Care. 2021; 49 (2): 0310057X2097577-111. doi: 10.1177/0310057x20975777
- Dyda, A, Fahim M, Fraser J, Kirrane M, Wong I, McNeil K, Ruge M, Lau CL, **Clair Sullivan**. Managing the digital disruption associated with COVID-19-driven rapid digital transformation in Brisbane, Australia. Applied Clinical Informatics. 2021; 12 (5):1135-1143. doi: 10.1055/s-0041-1740190

Journal Articles (RBWH staff in bold)

9. **Clair Sullivan**, Wong I, Adams E, Fahim M, Fraser J, Ranatunga G, Busato M, McNeil K. Moving faster than the COVID-19 pandemic: the rapid, digital transformation of a public health system. *Applied Clinical Informatics*. 2021; 12 (2): 229-236. doi: 10.1055/s-0041-1725186

10. Strong J, Drummond S, Hanson J, Pole JD, Engstrom T, Copeland K, Lipman B, **Clair Sullivan**. (2021). Outcomes of rapid digital transformation of large-scale communications during the COVID-19 pandemic. *Australian Health Review*, 45 (6), 696-703. doi: 10.1071/ah21125

11. Mann KD, Good N, Fatehi F, Khanna S, Campbell V, Conway R, **Clair Sullivan**, Staib A, Joyce C, Cook D. (2021). Review of Tools for the Prediction of Patient Deterioration in the Digital Hospital Setting. *Journal of Medical Internet Research*, 2021; 23 (9): e28209 doi: 10.2196/28209

12. Austin JA, Barras MA, **Clair Sullivan**. Safe and effective digital anticoagulation: a continuous iterative improvement approach. *ACI Open*. 2021; 05 (02): e116-e124. doi: 10.1055/s-0041-1736631

13. Hodgson T, Burton-Jones A, Donovan R, **Clair Sullivan**. The Role of Electronic Medical Records in Reducing Unwarranted Clinical Variation in Acute Health Care: Systematic Review. *JMIR Medical Informatics*. 2021; 9 (11): e30432, e30432. doi: 10.2196/30432

14. Engstrom T, Baliunas DO, Sly BP, Russell AW, **Peter Donovan**, **Heike Krausse**, **Clair Sullivan**, Pole JD. Toilet paper, minced meat and diabetes medicines: Australian panic buying induced by COVID-19. *International Journal of Environmental Research and Public Health*. 2021; 18 (13): 6954. doi: 10.3390/ijerph18136954

15. Schults J, Paterson R, Kleidon T, Cooke M, Ullman A, McNeil K, Chopra V, Charles K, Ray-Barruel G, **Nicole Marsh**, **Clair Sullivan**, Sturgess DJ. and **Claire Rickard**. Understanding consumer preference for vascular access safety and quality measurement: An international survey. *Australian Health Review*. 2021; doi: 10.1071/AH21053

16. Waterhouse M, Baxter C, Duarte Romero B, **Don McLeod**, English DR, Armstrong BK, Ebeling PR, Hartel G, Kimlin MG, O'Connell R, van der Pols JC, Venn AJ, Webb PM, Whiteman DC, Neale RE. Vitamin D supplementation for falls in older people: outcomes from the randomised, placebo-controlled D-Health Trial. *Journal of Cachexia, Sarcopenia and Muscle*. 2021; 12: 1428–39 (PMID 34337905)

17. Rahman ST, Pandeya N, Neale RE, **Don McLeod**, Baade PD, Youl PH, Allison R, Leonard S, Jordan SJ. Tobacco smoking and risk of thyroid cancer according to BRAF V600E mutational subtypes. *Clinical Endocrinology*. 2021; 95: 891–900 (PMID 34170568)

18. Rahman ST, Pandeya N, Neale RE, **Don McLeod**, Baade PD, Youl PH, Allison R, Leonard S, Jordan SJ. Risk of thyroid cancer following hysterectomy. *Cancer Epidemiology*. 2021; 72: 101931. doi: 10.1016/j.canep.2021.101931 (PMID 33812322)

19. Waterhouse M, Baxter C, Duarte Romero B, **Don McLeod**, English DR, Armstrong BK, Clarke MW, Ebeling PR, Hartel G, Kimlin MG, O'Connell RL, Pham H, Rodney Harris RM, van der Pols JC, Venn AJ, Webb PM, Whiteman DC, Neale RE. Predicting deseasonalised serum 25 hydroxy vitamin D concentrations in the D-Health Trial: an analysis using boosted regression trees. *Contemporary Clinical Trials*. 2021; 104: 106347 doi: 10.1016/j.cct.2021.106347 (PMID 33684596)

20. Shih P, Nickel B, Degeling C, Thomas R, Brito JP, **Don McLeod**, McCaffery K, Carter S. Terminology change for small low-risk papillary thyroid cancer as a response to overtreatment: Results from three Australian community juries. *Thyroid*. 2021; 31(7):1067–75 (PMID 33238815)

21. Pham H, Waterhouse M, Baxter C, Duarte Romero B, **Don McLeod**, Armstrong BK, Ebeling PR, English DR, Hartel G, Kimlin MG, Martineau AR, O'Connell R, van der Pols JC, Venn AJ, Webb PM, Whiteman DC, Neale RE. The effect of vitamin D supplementation on acute respiratory tract infection in older Australian adults: an analysis of data from the D-Health Trial. *Lancet Diabetes and Endocrinology* 2021; 9: 69–81 (PMID 33444565)

22. Olsen CM, **Don McLeod**, Dusingize CJ, Pandeya N, Whiteman DC. Cigarette smoking and estrogen-related cancer – Letter. *Cancer Epidemiology, Biomarkers & Prevention*. 2021; 30: 1977 (PMID 34607880)

23. **Don McLeod**. Withholding radioactive iodine for lower risk papillary cancers is safe, but delays the certainty of treatment response. *Clinical Thyroidology*. 2021; 33:117–120

24. **Matthew Balcerek**, **Don McLeod**. K1-70 - A Thyrotropin Receptor Antagonist with Therapeutic Potential in Graves' Disease, Thyroid Eye Disease, and Differentiated Thyroid Cancer. *Clinical Thyroidology*. 2021; 33: 433–36

Journal Articles (RBWH staff in bold)

25. **Matthew Balcerek, Don McLeod.** Teprotumumab improves the clinical course of thyroid eye disease across multiple subgroups of patients with durable responses. *Clinical Thyroidology*. 2021; 33: 312–15

26. **Matthew Balcerek, Don McLeod.** Competing risks of death in aging individuals with thyroid cancer. *Clinical Thyroidology*. 2021; 33: 274–77

27. **Matthew Seymour, Thomas Robertson, Jason Papacostas, Kirk Morris, Jennifer Gillespie,** Norris D and Duncan E. A woman with visual loss, amenorrhoea and polyuria: the first reported case of nodular lymphocyte-predominant Hodgkin lymphoma presenting with hypopituitarism [published online ahead of print, 2021 May 1]. *Endocrinol Diabetes Metab Case Rep*. 2021;2021:20-0100. doi:10.1530/EDM-20-0100

28. **Carrie-Anne Lewis, Susan de Jersey, Matthew Seymour, George Hopkins,** Hickman I, **Emma Osland.** Iron, Vitamin B12, Folate and Copper Deficiency After Bariatric Surgery and the Impact on Anaemia: a Systematic Review. *Obes Surg*. 2020 Nov;30(11):4542-4591. doi: 10.1007/s11695-020-04872-y. Epub 2020 Aug 12. PMID: 32785814.

29. **Monique Kowitz, Katrina Chakradeo, Ashleigh Hennessey, Penny Wolski.** Premature live birth in a woman with antisynthetase syndrome following recurrent miscarriages. *BMJ Case Rep*. 2021; 14(5): e240929. doi: 10.1136/bcr-2020-240929 (PMID: 33975837)

30. **Quyhn Truong,** Ryder SJ, **Jennifer Gillespie, Jason Papacostas, Don McLeod.** Clival prolactinoma masquerading as a chordoma: a case report. *Radiology Case Reports*. 2021; 16: 1320–24 (PMID 33897924)

31. **Matthew Balcerek,** Nolan B, Brownhill A, Wong P, Locke P, Zajac JD, Cheung AS. Feminizing hormone therapy prescription patterns and cardiovascular risk factors in older transgender individuals in Australia. *Front. Endocrinol*. 2021; 12: 12: 667403 <https://doi.org/10.3389/fendo.2021.667403>

32. Bennett M, **Matthew Balcerek,** Lewis E, Zhang R, **Caroline Bachmeier, Siok Tey,** Faux S, Girgis L, Greenfield J, **Syndia Lazarus.** Voriconazole-associated periostitis: New insights into pathophysiology and management. *JBMR Plus*. 2021. <http://dx.doi.org/10.1002/jbm4.10557>

33. **Sarah Davidson, Susan de Jersey, Fiona Britten, Penny Wolski, Renuka Sekar, Leonie Callaway.** Fetal ultrasound scans to guide management of gestational diabetes: Improved neonatal outcomes in routine clinical practice. *Diabetes Res Clin Pract*. 2021; 173: 108696 (PMID: 33592211)

34. **Jane Musial, Andrea Cawte,** & Mullins R, Hannan-Jones M, **Susan de Jersey.** Implementation and evaluation of a university-hospital partnership program for Type 2 diabetes. *Australian health review: a publication of the Australian Hospital Association*. 2021. 10.1071/AH21173.

35. **Margaret Whillier, Jane Musial, Helen MacLaughlin.** Evaluation Of Patient Experience Post Structured Education For Diabetes Self Management (Dose Adjustment For Normal Eating-Ozdafne). *Diabetes Research and Clinical Practice*. 2021; 181: 109065. 10.1016/j.diabres.2021.109065.

36. Naumann F, Mullins R, **Andrea Cawte,** Beavis S, **Jane Musial,** Hannan-Jones M. Designing, implementing and sustaining IPE within an authentic clinical environment: the impact on student learning. *Journal of Interprofessional Care*. 2021;35(6): 907-913 10.1080/13561820.2020.1837748.

37. Frías JP, et al. SURPASS-2 investigators (incl. **Michael d'Emden**). Tirzepatide versus Semaglutide Once Weekly in Patients with Type 2 Diabetes. *N Engl J Med*. 2021; 385(6): 503-515. (PMID: 34170647)

38. **Michael d'Emden, Jacobus Ungerer, Susan de Jersey.** Alternative screening protocols may miss most cases of gestational diabetes mellitus during the COVID-19 pandemic. *Med J Aust*. 2021; 214(6): 284-284.e1. (PMID: 33684958)

39. Bhatt DL, et al. SCORED Investigators (incl. **Michael d'Emden**). Sotagliflozin in Patients with Diabetes and Chronic Kidney Disease. *N Engl J Med*. 2021; 384(2): 129-139. (PMID: 33200891)

40. Wootton E, Balcerek M, **Syndia Lazarus,** Duncan E. (2021) Post-traumatic heterotopic ossification with incidental hyperparathyroidism. *Journal of the Endocrine Society*. <https://doi.org/10.1210/jendso/bvab048.431>

41. Narhi A, **Andrea Fernandes,** Toivainen-Salo S, Harris J, McInerney-Leo A, **Syndia Lazarus,** Avela K, Duncan EL. A family with partially penetrant multicentric carpotarsal osteolysis due to gonadal mosaicism: First reported case. *American Journal of Medical Genetics Part A*. 2021; 185: 2477-81

Book Chapters (RBWH staff in bold)

1. Makeham M, Ryan A, Taggart R, **Clair Sullivan**, Sprivulis P, McNeil K. Working as a CIO in Healthcare. In: Butler-Henderson K, Day K, Gray K. The health information workforce. Switzerland; Springer International Publishing; 2021.
2. **Don McLeod**. A papillary thyroid cancer with minimal extra-thyroidal extension. In: Grani G, Cooper DS, Durante C (eds) Thyroid Cancer: A Case Based Approach, 2nd Edition. Springer. 2021: 41–53
3. **Don McLeod**. Staging and prognosis of differentiated thyroid cancer. Chapter 56. In: Braverman LE, Cooper DS, Kopp P (eds). Werner and Ingbar's The Thyroid: A Fundamental and Clinical Text, 11th Edition. Wolters Kluwer, Philadelphia. 2021: 733–50

Keynote or Plenary Lectures given in 2021

Date	Title
03/2021	Clair Sullivan . RACP panel: AI for healthcare – your questions answered!
04/2021	Clair Sullivan . OHDSI APAC Community Panel
04/2021	Clair Sullivan . Healthcare Leaders Forum: Exploring State of the Art in Digital Transformation to Keep Pace with the Brave New World HIMMS international
05/2021	Christina Jang . Functional Hypothalamic Amenorrhoea: Endocrine Society of Australia Annual Seminar Meeting
08/2021	Kerry Richard . Local Organising Committee and Session Chair Annual Meeting of the Queensland Perinatal Consortium (QPACT)
10/2021	Don McLeod . Disparities in Graves' Disease: What we know, and clues to bridging knowledge gaps (Plenary talk as part of Arthur Bauman Clinical Symposium). American Thyroid Association (ATA) Annual Meeting. Online.
10/2021	Clair Sullivan . St Vincent's Campus Research Symposium: Keynote address
31/10/2021 – 03/11/2021	Christina Jang . Member of Program Organising Committee and Session Chair- Endocrine Society of Australia Annual Scientific meeting
31/10/2021 – 03/11/2021	Don McLeod . Member of organising committee Endocrine Society of Australia Annual Scientific Meeting
11/2021	Don McLeod . Disparities in Graves' Disease: What we know, and clues to bridging knowledge gaps. 13 th International Congress of Endocrine Disorders (ICED). Iran Endocrine Society. Online.
11/2021	Kerry Richard . Transthyretin: a transport system for the delivery of hormones and proteins to the placenta and fetus. Australian Physiological Society, Gold Coast
12/2021	Clair Sullivan . Data and Analytics in Healthcare: Leveraging Data to Improve Quality and Efficiency of Care Outcomes presentation and panel facilitation Public Sector Network National conference
12/2021	Clair Sullivan . AAHMS obesity roundtable: Panel member

Department of Gastroenterology & Hepatology

Endoscopy Research Group

The Endoscopy Research Group has a large group of interventional endoscopists with varying research interests. Most interventional research for 2021 was Investigator- led and involved studies that included; benchmarking the post-gastroscopy and post-colonoscopy 3-year cancer rate at RBWH, evaluation of the upper gastrointestinal bleeding pathway, endoscopic correlation of positive GI PET findings, a RCT on the use of bowel prep in capsule endoscopy, multi-collaboration with ETC to evaluate the impact of acute management plans of patients presenting with repeated ingestion of foreign bodies, ongoing prospective work exploring the quality of life in patients with neoplastic Barrett's oesophagus, screening for pancreatic cancer in high-risk individuals, and ongoing recruitment for a novel endoscopic procedure in post-bariatric surgery patients to reduce reflux. Additionally 2021 focussed on the setting up of the Familial Cancer Clinic database.

Hepatology

The Hepatology Unit runs a large clinical trial programme giving patients access to new therapies for Hepatitis B, autoimmune liver diseases and non-alcoholic steatohepatitis. It is part of a national network to collect data on the rapidly rising incidence of hepatocellular carcinoma and continues to build a serum bank of patients with chronic liver disease to provide samples for collaborative projects investigating non-invasive markers of disease progression. In 2021, the results of a study of the benefits of palliative care in advanced cirrhosis have been submitted for publication and a dedicated palliative care service has been implemented in clinical practice within the unit. A new initiative is the incorporation of specialist dietician clinics to address the sarcopenia and malnutrition which complicate advanced liver disease and a database has been developed to document the results of this change in practice.

IBD Clinical Research Group

The RBWH IBD Clinical Research Unit has a highly experienced medical and clinical research nursing team and continues to participate in many pharmaceutical trials (Phase II–IV), academic, investigator initiated and Australian IBD Consortium collaborative research projects of new and emerging treatments for medically refractory Crohn's disease (CD) and ulcerative colitis (UC). While a number of new medical therapies have become available in recent years, a substantial proportion of IBD patients will have medically refractory disease and a critical medical need for novel and evidence-based treatment approaches to increase the proportion of patients who can avoid surgery and achieve long-term clinical remission continues.

The Gut Health Research group (QIMR Berghofer MRI) is an independently funded team of clinicians, scientists, and students working in close collaboration with the Department of Gastroenterology at RBWH, and with local (QIMR Berghofer, Mater Adult Hospital), national (the member units of the ANZ IBD consortium) and international (International IBD Genetics Consortium) colleagues. The laboratory successfully launched an NUDT15 genetics screening service as of July 2021, initially within Queensland and subsequently across Australia. Our data were presented at AGW in 2021 and a full paper is currently under review for publication. With this clinical service we are also optimizing a second SNP assay to assist in the management of patients with IBD considered for anti-TNF therapy. The SNP can further stratify for the risk of developing anti-drug antibodies.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Lochlan Fennell	2021 Young Investigator Award	Australian Gastroenterology Week

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Mark Appleyard	Gastroenterology & Hepatology	Research Coordinator Grant	MN Research Grant		2020-2021
Ben Devereaux, Mark Appleyard	Gastroenterology and Hepatology	Screening for pancreatic cancer in high-risk individuals	Pancare Foundation	\$20,000 per year	2020-2025

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Graham Radford-Smith	Gastroenterology (collaborating with ANZ IBD Consortium)	Does infliximab dosing to target with therapeutic drug monitoring yield higher rates of healing than standard infliximab dosing in patients with perianal fistulising Crohn's disease? A prospective, randomised, controlled, multi-centre study	MRFF	\$900,000	4yrs, 2022-

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Szymon Ostrowski	Anthony Croft Graham Radford-Smith	Viral infections in patients with acute severe colitis	0	185
Derek Li	Graham Radford-Smith Allison Brown	Risk factors for recurrent colonic polyps in patients undergoing outpatient colonoscopy	NA	465
Rajit Gilhotra	Florian Grimpen, Kimberley Ryan, Eva Malacova, Mehul Lamba, Lisa Song, Matthew Remedios	Endoscopic correlation of incidental PET avidity in the gastrointestinal tract	Retrospective cohort study	
Patrick Walsh	Mehul Lamba, Abdunnasser Lafta, Mark Appleyard, George Hopkins	Assessing the safety of a novel endoscopic resection and plication (RAP) technique in post laparoscopic sleeve gastrectomy patients with severe reflux: A pilot clinical trial	5	5
Florian Grimpen	Matthew Remedios, Kimberley Ryan, Mark Appleyard, Joshua Satchwell	Barrett's Oesophagus and its progression to oesophageal adenocarcinoma –endoscopic therapies on clinical outcomes & quality of life (Prospective observational)	42	122
Myat Khaing	Mehul Lamba, Barbara Leggett, Mark Appleyard, Kimberley Ryan, Katherine Hanigan, Chun Gan, Florian Grimpen	Risk of post-colonoscopy colorectal cancer: Single centre study	Retrospective cohort study	
Naeman Goetz	Mehul Lamba, Kimberley Ryan, Florian Grimpen	Risk of upper gastrointestinal cancer after a negative gastroscopy: retrospective single centre study	Retrospective cohort study	
Mehul Lamba	Katherine Hannigan, Kimberley Ryan, Ian Brown, Mark Bettington (Envoi), Mark Appleyard, Florian Grimpen, Chun Gan, Barbara Leggett	Clinicopathological features of sessile serrated lesions with dysplasia	Retrospective cohort study	
Richard Skoien	Andrew Clouston, Neha Tiwari	An audit of diffuse subsinusoidal fibrosis of the liver at RBWH	35	35

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Richard Skoien	Alison Kearney, Olivia Cullen, Neha Tiwari, Ismail Arbi, Joanne Mira, Carol Douglas, Barbara Leggett	Post-pilot performance of the HepatoCare model of multidisciplinary supportive and palliative care in advanced cirrhosis	30	90

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Paris Hoey	Kaushali Britto, Kimberley Ryan, Florian Grimpén, Clancy McDonald (ETC), Nathan Brown (ETC), Trent Lipp (ETC), Kym Boon (Liaison Psychiatry), Mark Appleyard	Service evaluation of a pragmatic interdisciplinary model of care for the management of repeated intentional foreign body ingestion (RIFBI) in patients with borderline personality disorder (BPD)	Retrospective audit	9
Benedict Devereaux	Mehul Lamba, Florian Grimpén, Mark Appleyard, Alina Stoita, (St Vincents, Sydney)	Screening for pancreatic cancer in high-risk individuals (National multicentre study)	10	23
Benedict Devereaux	Mehul Lamba, Florian Grimpén, Mark Appleyard, Bronte Holt (St Vincent's – Melbourne)	Multicentre prospective evaluation of the "Hot Spaxus" lumen apposing stent for EUS-guided drainage of pancreatic walled off necrosis	0	0
Florian Grimpén	Kimberley Ryan, Enoka Gonsalkorala (RBWH/CBH), Mark Appleyard, Anthony FT Brown (ETC), Catriona Slater (CBH, ED), Andrew Teo (CBH, Surgery)	How does the implementation of an upper gastrointestinal bleeding pathway impact on patient clinical outcomes and hospital processes: A multicentre study	Retrospective audit	
Alan Moss (Western Hospital, Footscray)	Mark Appleyard, Florian Grimpén, Chun Gan	Cold snare polypectomy for non-pedunculated colonic polyps sized 10-19mm: A prospective observational study (CSP study)	3	20
Caitlin Hall	PhD UQ/QIMRB Lucca Cochi Graham Radford-Smith Anton Lord	Understanding the relationship between the gut microbiome and the brain.	Nil required	100
Yoon-Kyo An	MPhil UQ/TRI/QIMRB Jake Begun Graham Radford-Smith ANZ IBD Consortium	AURORA (Australian Ustekinumab Real-World Observational Research	120	20
Rina Kumar	PhD UQ/QIMRB Graham Radford-Smith Severine Navarro Anton Lord Martha Zakrzewski	Analysis of the mucosa-associated gut microbiome in health and disease	Nil required	120

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Graham Radford-Smith	Mark Appleyard (Dept of Gastroenterology, RBWH), Anton Lord (Gut Health, QIMRB), Louisa Gordon and Patricia Valery (Population Health, QIMRB), Tony Rahman (Dept of Gastroenterology, TPC), Nick Tuticci, Dept of Gastroenterology, QEII)	Development of a risk assessment tool to improve clinical triage accuracy for colonoscopic investigations for earlier detection of colorectal cancer and precancerous lesions.	377	1005
Abigail Marsh	PhD UQ Graham Radford-Smith Veronique Chachay Merrilyn Banks	The effects of an anti-inflammatory diet on disease activity, symptom severity and microbiota profile in patients with inflammatory bowel disease.	40	36

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Kane AM, Liu C, Akhter DT, McKeone DM, Bell CA, Thurecht KJ, Leggett BA, Whitehall VLJ. Curcumin chemoprevention reduces the incidence of Braf mutant colorectal cancer in a preclinical study. *Dig Dis Sci* 2021; 66:4326-4332
- Borowsky J, Haruki K, Lau MC, Costa AD, Vayrynen JP, Ugai T, Arima K, da Silva A, Felt K, Zhao M, Gurjao C, Twombly TS, Fujiyoshi K, Vayrynen SA, Hamada T, Mima K, Bullman S, Harrison TA, Phipps AI, Peters U, Ng K, Meyerhardt JA, Song M, Giovannucci EL, Wu K, Zhang X, Freeman GJ, Huttenhower C, Garrett WS, Chan AT, Leggett BA, Whitehall VLJ, Walker N, Brown I, Bettington M, Nishihara R, Fuchs CS, Lennerz JK, Giannakis M, Nowak JA, Ogino S. Association of *Fusebacterium nucleatum* with specific T cell subsets in the colorectal carcinoma microenvironment. *Clinical Cancer Research* 2021; 27:2816-2826
- Kane AM, Liu C, McKeone DA, Bond CE, Pollock PM, Young G, Leggett BA, Whitehall VLJ. Aspirin reduces the incidence of metastasis in a preclinical study of Braf mutant serrated neoplasia. *Br J Cancer* 2021; 124:1820-1827
- Win AK on behalf of the International Mismatch Repair Consortium. Variation in the risk of colorectal cancer for Lynch Syndrome: a retrospective family cohort study. *The Lancet Oncology* 2021; 22:1014-1022
- Khan S, Chandran S, Chin J, Karim S, Mangira D, Nasr M, Ermerak G, Trinh A, Kia C, Mules T, Zad M, Ang TL, Johns E, Tee D, Kaul A, Ratanachu-Ek T, Jirathan-Opas J, Fisher L, Cameron R, Welch C, Lim G, Metz A, Moss A, Bassan M, Saxena P, Kaffes A, St John a, Hourigan LF, Tahkalidis P, Weilert F, Vaughan R, Devereaux B. Drainage of pancreatic fluid collections using a lumen-apposing metal stent with an electrocautery-enhanced delivery system. *Journal of Gastroenterology and Hepatology* 2021; 36(12), 3395-3401, doi:10.1111/jgh.15658
- Khan S, Di Jiang C, Gilhotra R, Rowbotham D, Chong A, Majumdar A, Whie C, Huelsen A, Brooker J, O'Beirne J, Schauer C, Efthymiou M, Vaughan R, Chandran S. The role of a novel self-expanding metal stent in variceal bleeding: a multicenter Australian and New Zealand experience. *Endoscopy Open* 2021, in press
- Ryan K, Malacova E, Appleyard M, Brown AFT, Song L, Grimpén F. Clinical utility of the Glasgow Blatchford Score in patients presenting to the emergency department with upper gastrointestinal bleeding; A retrospective cohort study. *Emergency Medicine Australasia* 2021; 33(5), 817-825, doi:10.1111/1742-6723.13737
- Ooi M, Duong T, Holman R, Huynh D, Lafta A, Grimpén F, Appleyard M, Rayner C, Nguyen N. Comparison of Cap-Assisted vs Conventional endoscopic technique for management of food bolus impaction in the esophagus: Results of a multicenter randomized controlled trial. *The American Journal of Gastroenterology* 2021;116 (11), 2235-2240
- Thompson B, Philcox S, Devereaux B, Metz A, Croagh D, Windsor J, Davaris A, Gupta S, Barlow J, Rhee J, Tagkalidis P, Zimet A, Sharma A, Manocha R, Neale R. A decision support tool for the detection of pancreatic cancer in general practice: A modified Delphi consensus. *Pancreatology* 2021; 21(8), 1476-1481

Journal Articles (RBWH staff in bold)

10. Lamba M, Hieng Ngu J, Stedman CA. Trends in incidence of autoimmune liver diseases and increasing incidence of autoimmune hepatitis. *Clinical Gastroenterology and Hepatology* 2021; 19 (3), 573-579

11. De Roza MA, **Lamba M**, Boon-Bee Goh G, Huey-Ming Lum J, Chang-Chuen Cheah M, Ngu JHJ. Immunoglobulin G in non-alcoholic steatohepatitis predicts clinical outcome: A prospective multi-centre cohort study. *World Journal of Gastroenterology* 2021; 27 (43), 7563-7571

12. Walsh PR, Lamba M, Benias P, Lafta A, Hopkins G. Feasibility of resection and plication "RAP" technique for management of medically refractory GERD in patients with altered gastric anatomy. *Endoscopy International Open* 2021; 9 (10), E1549-E1555

13. McPhail SM, Amarasena S, Stuart K, Hayward K, Gupta R, Brain D, Hartel G, Rahman T, Clark PJ, Bernardes CM, Skoien R, Mckillen B, Lee A, Pillay L, Lin L, Khaing MM, Horsfall L, Powell EE, Valery P. Assessment of health-related quality of life and health utilities in Australian patients with cirrhosis. *JGH Open* 2021; 133-142

14. Ong SY, Khoo T, Nicoll AJ, Gurrin L, Worland T, Pateria P, Ramm LE, Testro A, Anderson GJ, Skoien R, Powell LW, Ramm GA, Olynyk JK, Delatycki MB. Utility and limitations of Hepascore and transient elastography to detect advanced hepatic fibrosis in HFE hemochromatosis. *Scientific Reports* 2021; 11, doi:10.1038/s41598-021-94083-x

15. Kemp W, Majeed A, Mitchell J, Majumdar A, Tse E, Skoien R, Croagh D, Dev A, Gao H, Welman H, Craig P, Stuart K, cheng W, Edmunds S, Lee E, Sood S, Metz A, Thompson A, Sinclair M, Beswick L, Nicoll A, Riordan S, Braund A, Muller K, MacQuillan, Sandanayake N, Shakel N, Roberts SK. Management, outcomes and survival of an Australian IgG4-SC cohort: The MOSAIC study. *Liver International* 2021; 41(12), 2934-2943

16. Valery P, Bernardes CM, McKillen B, Amarasena S, Stuart KA, Hartel G, Clark PJ, Skoien R, Rahman T, Horsfall L, Hayward K, Gupta R, Lee A, Pillay L, Powell, EE. The patient's perspective in cirrhosis: Unmet supportive care needs differ by disease severity, etiology, and age. *Hepatology Communications* 2021; 5(5):891-905

17. Valery P, McPhail S, Stuart KA, Hartel G, Clark PJ, O'Beirne J, Skoien R, Rahman T, Moser C, Powell EE. Changing prevalence of aetiological factors and comorbidities among Australians hospitalised for cirrhosis. *Internal Medicine Journal* 2021; 51(5): 691-698

18. Zamor PJ, Brown A, Douglas D, Dillon J, Luetkemeyer AF, Jordan J, Mutimer D, Ghalib R, Crown E, Lovell SS, Hu Y, Moreno C, Nelson D, Colombo M, Papatheodoridis G, Rockstroh J, Skoien R, Lawitz E, Jacobson I. High sustained virologic response rates of Glecaprevir / Pibrentasvir in patients with dosing interruption or suboptimal adherence. *The American Journal of Gastroenterology* 2021; 116 (9): 1896-1904

19. Marsh A, Radford-Smith G, Banks M, Lord A, Chachay V. Dietary intake of patients with inflammatory bowel disease aligns poorly with traditional Mediterranean diet principles. *Nutr Diet.* 2021 Nov 21. doi: 10.1111/1747-0080.12715. Online ahead of print.PMID: 34806269

20. Truong SL, Chin J, Liew DFL, Zahir SF, Ryan EG, Rubel D, Radford-Smith G, Robinson PC. Systematic Review and Meta-Analysis of Inflammatory Bowel Disease Adverse Events with Anti-Interleukin 17A Agents and Tumor Necrosis Factor Inhibitors in Rheumatic Disease and Skin Psoriasis. *Rheumatol Ther.* 2021 Dec;8(4):1603-1616. doi: 10.1007/s40744-021-00360-6. Epub 2021 Aug 26.PMID: 34449067

21. Gu B, De Gregorio M, Picipella JL, Vande Casteele N, Andrews JM, Begun J, Connell W, D'Souza B, Gholamrezaei A, Hart A, Liew D, Radford-Smith G, Rimola J, Sutherland T, Toong C, Woods R, Wu Y, Xuan W, Williams AJ, Ng W, Ding NS, Connor S. Prospective randomised controlled trial of adults with perianal fistulising Crohn's disease and optimised therapeutic infliximab levels: PROACTIVE trial study protocol. *BMJ Open.* 2021 Jul 1;11(7):e043921. doi: 10.1136/bmjopen-2020-043921.PMID: 34210720

22. Radford-Smith G.J *Gastroenterol Hepatol.* Head-to-head trials in inflammatory bowel disease.2021 Apr;36 Suppl 1:18-19. doi: 10.1111/jgh.15452.PMID: 33817853

23. Lord A, Radford-Smith G. Letter: hidden costs in healthcare use for incident and prevalent Crohn's disease and ulcerative colitis. *Aliment Pharmacol Ther.* 2021 Jan;53(2):368-369. doi: 10.1111/apt.16169.PMID: 33368510.

Books (RBWH staff in bold)

1. **Devereaux B (Ed.)** Handbook of Clinical Pancreatology, 2nd Edition

2. **Devereaux B**, Jones D, Wardle E. Infection Prevention and Control in Endoscopy

Keynote or Plenary Lectures given in 2021

Date	Title
Devereaux, B 08/2021	(Invited speaker) Infection prevention and control in endoscopy: Formulating guidelines. Asia Pacific Digestive Week (virtual), Kuala Lumpur
Devereaux, B 08/2021	(Moderator): Live endoscopy for Asia Pacific Digestive Week (virtual), Kuala Lumpur
Devereaux, B 09/2021	(Invited) Infection prevention and control in endoscopy 2021. Australian Gastroenterology Week (virtual)
Devereaux, B	(Invited) Infection prevention and control in endoscopy 2021 and broader implications. Trans-Tasman lecture for NZ Gastro conference (virtual), Christchurch
Devereaux, B	(Invited) Chronic pancreatitis: Medical and Endoscopic pain management. PEI Expert Masterclass (virtual)

Department of Infectious Diseases

Throughout 2021 the RBWH Infectious Diseases Unit has remained at the forefront of COVID-19 pandemic response. Despite the challenges faced during this time the Unit has continued to have a prominent role in research, not only related to COVID-19 but beyond.

A particular highlight this year is that the Herston Infectious Diseases Unit (HeIDI) commenced operations enabling multi-disciplinary clinically-orientated research to transform infectious diseases research and clinical practice into the future.

Other highlights include:

- Completion of a three-part first-in-human study to evaluate the safety, tolerability, pharmacokinetics, and antimalarial activity against *Plasmodium falciparum* blood stage infection of ZY-19489 in healthy adult subjects. This study, accepted for publication by Lancet Infectious Diseases (Barber et al), demonstrated that the novel antimalarial ZY-19488 was safe and effective at clearing P. falciparum parasitemia, supporting the advancement of this antimalarial to Phase 2 studies.
- Completion of a phase 1b study to evaluate the blood stage antimalarial activity of a single oral dose of tafenoquine in healthy subjects experimentally infected with *Plasmodium falciparum*. This study characterised the pharmacokinetic/pharmacodynamics profile for tafenoquine for the clearance of blood-stage P. falciparum parasitemia, informing future use of this antimalarial. The study also characterised the transmission blocking activity of low dose tafenoquine and confirmed the utility of the induced blood stage malaria model for evaluating transmission blocking interventions. Results were presented at the Annual Meeting of the American Society of Tropical Medicine and Hygiene.

Further the commitment and dedication to research is evident in the Unit with Dr Paul Chapman receiving the Prof. William Egerton Award for Best Discovery and innovative research at the Herston Symposium 2021.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Paul Chapman	Prof. William Egerton Award for Best Discovery and innovative research	Herston Symposium 2021

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Melissa Kapulu, Philip Bejon, Faith Osier, Abdirahman Abdi, Kevin Marsh, Francis Ndungu, Bridget Barber , James McCarthy	Infectious Diseases	<i>Experimentally induced blood-stage malaria in Kenyan adults: understanding disease mechanisms and protection in the context of background immunity</i>	UK Medical Research Council	\$3,840,234	4yrs, 2021-2024
Michelle Boyle, Bridget Barber	Infectious Diseases	<i>Host targeted adjunctive therapies to boost malaria immunity.</i>	NHMRC	\$2,100,000	2 years, 2021 - 2022
Bridget Barber	Infectious Diseases	<i>Evaluating the role of osteoprotegerin and its ligand in malaria.</i>	RACP	\$50,000	1 year, 2021

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Matthew Grigg, Nicholas Anstey, Bridget Barber , Inke Lubis, RIntis Noviyanti, Farah Coutrier, Freya Shearer, Jennifer Flegg, Tom Burkot, Tanya Russell, Joost Philippa, Angela Devine	Infectious Diseases	<i>Establishing a network of surveillance of emerging zoonotic malaria in Indonesia</i>	Australian Centre for International Agricultural Research	\$2,830,470	3 years, 2020 - 2022
Andrew Redmond (chief investigator)	Infectious Diseases	QoVAX SET Pilot study	Queensland Health	\$6,735,000	2021
Andrew Redmond (associate investigator)	Infectious Diseases	CI STARFISH (Stopping Acute Rheumatic Fever Infections to Strengthen Health)	NHMRC	\$5,000,000	2021

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Bridget Barber	Michelle Boyle, Christian Engwerda, James McCarthy	A randomised, double blind, placebo controlled trial to evaluate the safety, tolerability and anti-parasite immunity boosting activity of ruxolitinib when co-administered with artemether-lumefantrine in healthy volunteers with <i>Plasmodium falciparum</i> induced blood stage malaria.	N/A	N/A
Bridget Barber	James McCarthy, Kevin Kumar Kansagra, Deven Parmar, Joerg Moehrle	A three-part first-in-human study to evaluate the safety, tolerability, pharmacokinetics, and antimalarial activity against <i>Plasmodium falciparum</i> blood stage infection of ZY-19489 in healthy adult subjects	N/A	N/A
Bridget Barber	James McCarthy, Dennis Shanks, Scott Miller, David Weshe, Louise Marquart, Azrin Rahman	A phase 1b study to evaluate the blood stage antimalarial activity of a single oral dose of tafenoquine in healthy subjects experimentally infected with <i>Plasmodium falciparum</i>	N/A	N/A
Bridget Barber	Arya Sheila-Nair, Michelle Boyle, Jessica Loughland	<i>Evaluating the role of osteoprotegerin and its ligand in malaria.</i>	N/A	N/A

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Melissa Kapulu, Kenya Medical Research Institute	Philip Bejon, Faith Osier, Abdirahman Abdi, Kevin Marsh, Francis Ndungu, Bridget Barber , James McCarthy	<i>Experimentally induced blood-stage malaria in Kenyan adults: understanding disease mechanisms and protection in the context of background immunity</i>	N/A	
Katharine Collins, Radboud University	Bridget Barber , Matthew McCall, James McCarthy	Controlled Human Malaria Infection models for evaluation of <i>Plasmodium falciparum</i> transmission-blocking interventions in healthy Malian adults	N/A	
David Paterson	Adam Stewart , Anna Hume	ASCOT Trial: The Australasian COVID-19 Trial		2020 – Present
Judith Dean	Andrew Redmond , Charles Gilks, Sarah Bell, David Whiley, Julian Langton-Lockton , Luke Coffey, Melissa Warner, Joseph Debattista	Molecular Pont of Care Testing in community based sexual health	Nil	

Research Activity With a Specific Focus on First Nations People

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Nina Hall	Andrew Redmond , Paul Memmott, Carol Go Sam, Samuel Barnes, Francis Nona, Condy Canuto	Housing and health in remote Australia	Nil	

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Woolley S, Marquart L, Woodford J, Chalon S, Moehrle JJ, McCarthy JS, Barber BE. Haematological response in experimental human *Plasmodium falciparum* and *Plasmodium vivax* malaria. *Malaria J* 2021; 20:470
2. Barber BE, Piera KA, Grigg MJ, Chen Y, William T, Weinberg JB, Yeo TW, Anstey NM. Glycocalyx breakdown in non-falciparum malaria, *Scientific Reports* 2021; 11:9741
3. Woolley S, Fernandez M, Rebello M, Llewellyn S, Marquart L, Amante F, Jennings H, Webster R, Chalon S, Moehrle JJ, McCarthy JS, Barber BE. Safety and infectivity of a novel biomanufactured *Plasmodium falciparum* blood stage malaria cell bank for use in volunteer infection studies, *Malaria J* 2021; 20: 93
4. Barber BE, Grigg MJ, Cooper DJ, van Schalkwyk DA, William T, Rajahram GS, Anstey NM. Clinical management of knowlesi malaria. *Adv Parasitol* 2021; 113: 45-76
5. Anstey NM, Grigg MJ, Rajahram GS, Cooper DJ, William T, Barber BE. Knowlesi malaria: human risk factors, clinical spectrum, and pathophysiology. *Adv Parasitol* 2021;113: 1-43

Journal Articles (RBWH staff in bold)

6. Grigg, MJ, Lubis, IN, Tetteh, KK, Britton S, Barber BE, William T, Rajahram, GS, Tan AF, Drakely CJ, Sutherland CJ, Noviyanti R, Anstey NM. *Plasmodium knowlesi* detection methods: diagnosis and surveillance. *Adv Parasitol* 2021;113: 77-130

7. Webster R, Sekuloski S, Odedra A, Woolley S, Jennings H, Amante F, Trenholme KR, Healer J, Cowman AF, Eriksson EM, Sathe P, Penington J, Blanch AJ, Dixon MWA, Tilley L, Duffy MF, Craig A, Storm J, Chan J, Evans K, Papenfuss AT, Schofield L, Griffin P, Barber BE, Andrew D, Boyle MJ, de Labastida Rivera F, Engwerda C, McCarthy JS. Safety, infectivity and immunogenicity of a genetically attenuated blood-stage malaria vaccine. *BMC Med* 2021; 19:1 – 13.

8. Chughlay F, Barnes K, Gaaloul ME, Aba N, Mohrle J, Griffin P, van Giersbergen P, Reuter S, Schultz H, Kress A, Tapley P, Webster R, Wells T, McCarthy JS, Barber BE, Marquart L, Boyle MJ, Engwerda C, Chalon S. Safety, tolerability, pharmacokinetics and pharmacodynamics of co-administered ruxolitinib and artemether-lumefantrine in healthy adults. *Antimicrob Agents Chemother*, In press.

9. Cooper DJ, Plewes K, Grigg MJ, Patel A, Rajahram GS, William T, Hiemstra TF, Wang Z, Barber BE, Anstey NM. An evaluation of commonly used surrogate baseline creatinine values to classify acute kidney injury during acute infection, *Kidney International Reports* 2021; 6 (3): 645-656

10. Loughland JR, Woodberry T, Oyong D, Piera KA, Amante FH, Barber BE, Grigg MJ, William T, Engwerda CR, Anstey NM, McCarthy JS, Boyle MJ, Minigo G. Reduced circulating dendritic cells in acute *Plasmodium knowlesi* and *Plasmodium falciparum* malaria despite elevated plasma Flt3 ligand levels. *Malaria J* 2021; 20:97

11. Woodford J, Gillman A, Jenvey P, Roberts J, Woolley S, Barber BE, Fernandez M, Rose S, Thomas P, Anstey NM, McCarthy JS. Positron emission tomography and magnetic resonance imaging in experimental human malaria to identify organ-specific changes in morphology and glucose metabolism: A prospective cohort study. *Plos Med* 2021; 18 (5): e1003567

12. Lynch SA, Subbarao K, Mahanty S, Barber BE, Roulis EV, van der Hoek L, McCarthy JS, Spann KM. Prevalence of neutralising antibodies to HCoV-NL63 in healthy adults in Australia. *Viruses* 2021; 13:1618

13. Wright H, Harris PNA, Chatfield MD, Lye D, Henderson A, Harris-Brown T, et al. Investigator-Driven Randomised Controlled Trial of Cefiderocol versus Standard Therapy for Healthcare-Associated and Hospital-Acquired Gram-negative Bloodstream Infection: Study protocol (the GAME CHANGER trial): study protocol for an open-label, randomised controlled trial. *Trials*. 2021;22(1):889. Epub 2021/12/09. doi: 10.1186/s13063-021-05870-w. PubMed PMID: 34876196; PubMed Central PMCID: PMCPCMC8649313.

14. Wen SCH, Ezure Y, Rolley L, Spurling G, Lau CL, Riaz S, et al. Gram-negative neonatal sepsis in low- and lower-middle-income countries and WHO empirical antibiotic recommendations: A systematic review and meta-analysis. *PLoS medicine*. 2021;18(9):e1003787. Epub 2021/09/29. doi: 10.1371/journal.pmed.1003787. PubMed PMID: 34582466; PubMed Central PMCID: PMCPCMC8478175 following competing interests: SCW has previously received research grant from GSK. DLP has board memberships with Merck, Shionogi, Achaogen, AstraZeneca, Leo Pharmaceuticals, Bayer, GlaxoSmithKline, Cubist, Venatorx and Accelerate. DLP has received payment from Pfizer for lectures. DLP also has grants pending with Shinogi and Merck.

15. Wang M, Earley M, Chen L, Hanson BM, Yu Y, Liu Z, et al. Clinical outcomes and bacterial characteristics of carbapenem-resistant *Klebsiella pneumoniae* complex among patients from different global regions (CRACKLE-2): a prospective, multicentre, cohort study. *The Lancet infectious diseases*. 2021. Epub 2021/11/13. doi: 10.1016/s1473-3099(21)00399-6. PubMed PMID: 34767753.

16. van Duin D, Paterson DL. Multidrug-Resistant Bacteria in the Community: An Update. *Infect Dis Clin North Am*. 2020;34(4):709-22. Epub 2020/10/05. doi: 10.1016/j.idc.2020.08.002. PubMed PMID: 33011046; PubMed Central PMCID: PMCPCMC8713071.

17. Tait JR, Bilal H, Rogers KE, Lang Y, Kim TH, Zhou J, et al. Effect of Different Piperacillin-Tazobactam Dosage Regimens on Synergy of the Combination with Tobramycin against *Pseudomonas aeruginosa* for the Pharmacokinetics of Critically Ill Patients in a Dynamic Infection Model. *Antibiotics (Basel)*. 2022;11(1). Epub 2022/01/22. doi: 10.3390/antibiotics11010101. PubMed PMID: 35052977; PubMed Central PMCID: PMCPCMC8772788.

18. Stewart AG, Satlin MJ, Schlebusch S, Isler B, Forde BM, Paterson DL, et al. Completing the Picture-Capturing the Resistome in Antibiotic Clinical Trials. *Clin Infect Dis*. 2021;72(12):e1122-e9. Epub 2020/12/24. doi: 10.1093/cid/ciaa1877. PubMed PMID: 33354717.

Journal Articles (RBWH staff in bold)

19. Stewart AG, Paterson DL, Young B, Lye DC, Davis JS, Schneider K, et al. Meropenem Versus Piperacillin-Tazobactam for Definitive Treatment of Bloodstream Infections Caused by AmpC β -Lactamase-Producing *Enterobacter* spp, *Citrobacter freundii*, *Morganella morganii*, *Providencia* spp, or *Serratia marcescens*: A Pilot Multicenter Randomized Controlled Trial (MERINO-2). *Open forum infectious diseases*. 2021;8(8):ofab387. Epub 2021/08/17. doi: 10.1093/ofid/ofab387. PubMed PMID: 34395716; PubMed Central PMCID: PMCPCMC8361238.

20. Stewart AG, Paterson DL. How urgent is the need for new antifungals? Expert opinion on pharmacotherapy. 2021;22(14):1857-70. Epub 2021/07/08. doi: 10.1080/14656566.2021.1935868. PubMed PMID: 34231434.

21. Stewart AG, Henderson A, Bauer MJ, Paterson DL, Harris PNA. Activity of temocillin against third-generation cephalosporin-resistant *Escherichia coli* and *Klebsiella pneumoniae* bloodstream isolates from a clinical trial. *JAC Antimicrob Resist*. 2022;4(1):dlab192. Epub 2022/01/07. doi: 10.1093/jacamr/dlab192. PubMed PMID: 34988445; PubMed Central PMCID: PMCPCMC8712245.

22. Stewart AG, Harris PNA, Henderson A, Schembri MA, Paterson DL. Erratum to: Oral cephalosporin and β -lactamase inhibitor combinations for ESBL-producing *Enterobacteriaceae* urinary tract infections. *J Antimicrob Chemother*. 2021;76(1):281. Epub 2020/10/29. doi: 10.1093/jac/dkaa424. PubMed PMID: 33111952.

23. Stewart AG, Harris PNA, Chatfield MD, Littleford R, Paterson DL. Ceftolozane-tazobactam versus meropenem for definitive treatment of bloodstream infection due to extended-spectrum beta-lactamase (ESBL) and AmpC-producing *Enterobacterales* ("MERINO-3"): study protocol for a multicentre, open-label randomised non-inferiority trial. *Trials*. 2021;22(1):301. Epub 2021/04/24. doi: 10.1186/s13063-021-05206-8. PubMed PMID: 33888139; PubMed Central PMCID: PMCPCMC8060904.

24. Stewart AG, Cottrell K, Henderson A, Vemuri K, Bauer MJ, Paterson DL, et al. In Vitro Activity of Cefotetan against ESBL-Producing *Escherichia coli* and *Klebsiella pneumoniae* Bloodstream Isolates from the MERINO Trial. *Microbiol Spectr*. 2021;9(1):e0022621. Epub 2021/07/08. doi: 10.1128/Spectrum.00226-21. PubMed PMID: 34232101; PubMed Central PMCID: PMCPCMC8552722.

25. Russo A, Paterson DL, Bassetti M. Editorial: Spotlight on the Relationship Between Sepsis and Infection: From Mechanisms to Therapy. *Front Med (Lausanne)*. 2021;8:716215. Epub 2021/08/20. doi: 10.3389/fmed.2021.716215. PubMed PMID: 34409054; PubMed Central PMCID: PMCPCMC8365086.

26. Rickard CM, Paterson DL, Chopra V. For and Against Routine Removal of Peripheral Intravenous Catheters. *JAMA Intern Med*. 2022. Epub 2022/02/15. doi: 10.1001/jamainternmed.2021.8304. PubMed PMID: 35157008.

27. Phan MD, Peters KM, Alvarez Fraga L, Wallis SC, Hancock SJ, Nhu NTK, et al. Plasmid-Mediated Ciprofloxacin Resistance Imparts a Selective Advantage on *Escherichia coli* ST131. *Antimicrobial agents and chemotherapy*. 2022;66(1):e0214621. Epub 2021/11/16. doi: 10.1128/aac.02146-21. PubMed PMID: 34780264; PubMed Central PMCID: PMCPCMC8765324.

28. Peri AM, Harris PNA, Paterson DL. Culture-independent detection systems for bloodstream infection. *Clin Microbiol Infect*. 2022;28(2):195-201. Epub 2021/10/24. doi: 10.1016/j.cmi.2021.09.039. PubMed PMID: 34687856.

29. Paterson DL, Rickard CM. Letter From Australia: A Never-Ending Pandemic? *Annals of internal medicine*. 2021;174(12):1743-4. Epub 2021/10/27. doi: 10.7326/m21-3295. PubMed PMID: 34698506; PubMed Central PMCID: PMCPCMC8697483 www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M21-3295.

30. Paterson DL, Kinoshita M, Baba T, Echols R, Portsmouth S. Outcomes with Cefiderocol Treatment in Patients with Bacteraemia Enrolled into Prospective Phase 2 and Phase 3 Randomised Clinical Studies. *Infect Dis Ther*. 2022. Epub 2022/02/21. doi: 10.1007/s40121-022-00598-9. PubMed PMID: 35184255.

31. Paterson DL, Isler B, Harris PNA. PRO: Carbapenems should be used for ALL infections caused by ceftriaxone-resistant *Enterobacterales*. *JAC Antimicrob Resist*. 2021;3(1):dlab013. Epub 2021/07/06. doi: 10.1093/jacamr/dlab013. PubMed PMID: 34223090; PubMed Central PMCID: PMCPCMC8210194.

32. Murigneux V, Roberts LW, Forde BM, Phan MD, Nhu NTK, Irwin AD, et al. MicroPIPE: validating an end-to-end workflow for high-quality complete bacterial genome construction. *BMC genomics*. 2021;22(1):474. Epub 2021/06/27. doi: 10.1186/s12864-021-07767-z. PubMed PMID: 34172000; PubMed Central PMCID: PMCPCMC8235852.

33. McNamara JF, Harris PNA, Chatfield MD, Paterson DL. Long term sepsis readmission, mortality and cause of death following Gram negative bloodstream infection: a propensity matched observational linkage study. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases*. 2022;114:34-44. Epub 2021/11/01. doi: 10.1016/j.ijid.2021.10.047. PubMed PMID: 34718157.

Journal Articles (RBWH staff in bold)

34. McNamara JF, Harris PNA, Chatfield MD, Paterson DL. Reply to Rezahosseini and Nielsen. *Clin Infect Dis*. 2021;72(11):e916. Epub 2020/09/25. doi: 10.1093/cid/ciaa1449. PubMed PMID: 32970797.

35. McNamara JF, Harris PNA, Chatfield MD, Paterson DL. Acute Myocardial Infarction and Community-acquired Staphylococcus aureus Bloodstream Infection: An Observational Cohort Study. *Clin Infect Dis*. 2021;73(9):e2647-e55. Epub 2020/08/17. doi: 10.1093/cid/ciaa1197. PubMed PMID: 32797225.

36. McCarthy KL, Harris-Brown T, Smits EJ, Legg A, Chatfield MD, Paterson DL. The MOBILISE study: utilisation of ambulatory pumps in the inpatient setting to administer continuous antibiotic infusions-a randomised controlled trial. *Eur J Clin Microbiol Infect Dis*. 2021;40(12):2505-13. Epub 2021/07/15. doi: 10.1007/s10096-021-04294-3. PubMed PMID: 34258686.

37. Lodise TP, Bassetti M, Ferrer R, Naas T, Niki Y, Paterson DL, et al. All-cause mortality rates in adults with carbapenem-resistant Gram-negative bacterial infections: a comprehensive review of pathogen-focused, prospective, randomized, interventional clinical studies. *Expert review of anti-infective therapy*. 2022:1-13. Epub 2021/12/24. doi: 10.1080/14787210.2022.2020099. PubMed PMID: 34937518.

38. Ling W, Furuya-Kanamori L, Ezure Y, Harris PNA, Paterson DL. Adverse clinical outcomes associated with carbapenem-resistant Acinetobacter (CRA) infections: a systematic review and meta-analysis. *JAC Antimicrob Resist*. 2021;3(4):dlab157. Epub 2021/11/11. doi: 10.1093/jacamr/dlab157. PubMed PMID: 34755112; PubMed Central PMCID: PMCPCMC8568848.

39. Lee XJ, Elliott TM, Harris PNA, Douglas J, Henderson B, Watson C, et al. Clinical and Economic Outcomes of Genome Sequencing Availability on Containing a Hospital Outbreak of Resistant Escherichia coli in Australia. *Value Health*. 2020;23(8):994-1002. Epub 2020/08/24. doi: 10.1016/j.jval.2020.03.006. PubMed PMID: 32828227.

40. Laupland KB, Stewart AG, Edwards F, Harris P, Heney C, George N, et al. Pasteurella species bloodstream infections in Queensland, Australia, 2000-2019. *Eur J Clin Microbiol Infect Dis*. 2022. Epub 2022/02/02. doi: 10.1007/s10096-022-04411-w. PubMed PMID: 35102471.

41. Kato H, Parker SL, Roberts JA, Hagihara M, Asai N, Yamagishi Y, et al. Population Pharmacokinetics Analysis of Amikacin Initial Dosing Regimen in Elderly Patients. *Antibiotics (Basel)*. 2021;10(2). Epub 2021/01/28. doi: 10.3390/antibiotics10020100. PubMed PMID: 33498481; PubMed Central PMCID: PMCPCMC7909551.

42. Isler B, Kidd TJ, Stewart AG, Harris P, Paterson DL. Achromobacter Infections and Treatment Options. *Antimicrobial agents and chemotherapy*. 2020;64(11). Epub 2020/08/21. doi: 10.1128/aac.01025-20. PubMed PMID: 32816734; PubMed Central PMCID: PMCPCMC7577122.

43. Isler B, Harris P, Stewart AG, Paterson DL. An update on cefepime and its future role in combination with novel β -lactamase inhibitors for MDR Enterobacterales and Pseudomonas aeruginosa--authors' response. *J Antimicrob Chemother*. 2021;76(12):3327-8. Epub 2021/10/09. doi: 10.1093/jac/dkab366. PubMed PMID: 34624086.

44. Isler B, Harris P, Stewart AG, Paterson DL. An update on cefepime and its future role in combination with novel β -lactamase inhibitors for MDR Enterobacterales and Pseudomonas aeruginosa. *J Antimicrob Chemother*. 2021;76(3):550-60. Epub 2020/12/18. doi: 10.1093/jac/dkaa511. PubMed PMID: 33332545.

45. Isler B, Ezure Y, Romero JLG, Harris P, Stewart AG, Paterson DL. Is Ceftazidime/Avibactam an Option for Serious Infections Due to Extended-Spectrum- β -Lactamase- and AmpC-Producing Enterobacterales?: a Systematic Review and Meta-analysis. *Antimicrobial agents and chemotherapy*. 2020;65(1). Epub 2020/10/14. doi: 10.1128/aac.01052-20. PubMed PMID: 33046493; PubMed Central PMCID: PMCPCMC7927835.

46. Huber CA, Reed SJ, Paterson DL. Bacterial Sub-Species Typing Using Matrix-Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometry: What Is Promising? *Curr Issues Mol Biol*. 2021;43(2):749-57. Epub 2021/07/24. doi: 10.3390/cimb43020054. PubMed PMID: 34294671.

47. Henderson A, Paterson DL, Chatfield MD, Tambyah PA, Lye DC, De PP, et al. Association Between Minimum Inhibitory Concentration, Beta-lactamase Genes and Mortality for Patients Treated With Piperacillin/Tazobactam or Meropenem From the MERINO Study. *Clin Infect Dis*. 2021;73(11):e3842-e50. Epub 2020/10/28. doi: 10.1093/cid/ciaa1479. PubMed PMID: 33106863.

48. Gordon LG, Elliott TM, Forde B, Mitchell B, Russo PL, Paterson DL, et al. Budget impact analysis of routinely using whole-genomic sequencing of six multidrug-resistant bacterial pathogens in Queensland, Australia. *BMJ Open*. 2021;11(2):e041968. Epub 2021/02/03. doi: 10.1136/bmjopen-2020-041968. PubMed PMID: 33526501; PubMed Central PMCID: PMCPCMC7852923.

Journal Articles (RBWH staff in bold)

49. Foster AL, Cutbush K, Ezure Y, Schuetz MA, Crawford R, Paterson DL. Cutibacterium acnes in shoulder surgery: a scoping review of strategies for prevention, diagnosis, and treatment. *J Shoulder Elbow Surg.* 2021;30(6):1410-22. Epub 2020/12/30. doi: 10.1016/j.jse.2020.11.011. PubMed PMID: 33373684.

50. Forde BM, Henderson A, Playford EG, Looke D, Henderson BC, Watson C, et al. Fatal Respiratory Diphtheria Caused by β -Lactam-Resistant *Corynebacterium diphtheriae*. *Clin Infect Dis.* 2021;73(11):e4531-e8. Epub 2020/08/11. doi: 10.1093/cid/ciaa1147. PubMed PMID: 32772111.

51. Fang FC, Benson CA, Del Rio C, Edwards KM, Fowler VG, Fredricks DN, et al. COVID-19-Lessons Learned and Questions Remaining. *Clin Infect Dis.* 2021;72(12):2225-40. Epub 2020/10/27. doi: 10.1093/cid/ciaa1654. PubMed PMID: 33104186; PubMed Central PMCID: PMCPCMC7797746.

52. De Oliveira DMP, Forde BM, Phan MD, Steiner B, Zhang B, Zuegg J, et al. Rescuing Tetracycline Class Antibiotics for the Treatment of Multidrug-Resistant *Acinetobacter baumannii* Pulmonary Infection. *mBio.* 2022;13(1):e0351721. Epub 2022/01/12. doi: 10.1128/mbio.03517-21. PubMed PMID: 35012353; PubMed Central PMCID: PMCPCMC8749419.

53. De Oliveira DMP, Bohlmann L, Conroy T, Jen FE, Everest-Dass A, Hansford KA, et al. Repurposing a neurodegenerative disease drug to treat Gram-negative antibiotic-resistant bacterial sepsis. *Sci Transl Med.* 2020;12(570). Epub 2020/11/20. doi: 10.1126/scitranslmed.abb3791. PubMed PMID: 33208501.

54. Davis JS, Metcalf S, Paterson DL, Robinson JO, Clarke B, Manning L. Proposed empiric antibiotic therapy for prosthetic joint infections: an analysis of the Prosthetic Joint Infection in Australia and New Zealand, Observational (PIANO) cohort. *Intern Med J.* 2022;52(2):322-5. Epub 2022/02/22. doi: 10.1111/imj.15677. PubMed PMID: 35187821.

55. Burnard D, Robertson G, Henderson A, Falconer C, Bauer MJ, Cottrell K, et al. *Burkholderia pseudomallei* Clinical Isolates Are Highly Susceptible In Vitro to Cefiderocol, a Siderophore Cephalosporin. *Antimicrobial agents and chemotherapy.* 2021;65(2). Epub 2020/11/11. doi: 10.1128/aac.00685-20. PubMed PMID: 33168603; PubMed Central PMCID: PMCPCMC7848980.

56. Bassetti M, Echols R, Matsunaga Y, Ariyasu M, Doi Y, Ferrer R, et al. Efficacy and safety of cefiderocol or best available therapy for the treatment of serious infections caused by carbapenem-resistant Gram-negative bacteria (CREDIBLE-CR): a randomised, open-label, multicentre, pathogen-focused, descriptive, phase 3 trial. *The Lancet infectious diseases.* 2021;21(2):226-40. Epub 2020/10/16. doi: 10.1016/s1473-3099(20)30796-9. PubMed PMID: 33058795.

57. Babich T, Naucier P, Valik JK, Giske CG, Benito N, Cardona R, et al. Combination versus monotherapy as definitive treatment for *Pseudomonas aeruginosa* bacteraemia: a multicentre retrospective observational cohort study. *J Antimicrob Chemother.* 2021;76(8):2172-81. Epub 2021/05/17. doi: 10.1093/jac/dkab134. PubMed PMID: 33993273.

58. Ayfan AKS, Macdonald J, Harris PNA, Heney C, Paterson DL, Trembizki E, et al. Rapid detection of NDM and VIM carbapenemase encoding genes by recombinase polymerase amplification and lateral flow-based detection. *Eur J Clin Microbiol Infect Dis.* 2021;40(11):2447-53. Epub 2021/05/12. doi: 10.1007/s10096-021-04267-6. PubMed PMID: 33974185.

59. Axfors C, Janiaud P, Schmitt AM, Van't Hooft J, Smith ER, Haber NA, et al. Association between convalescent plasma treatment and mortality in COVID-19: a collaborative systematic review and meta-analysis of randomized clinical trials. *BMC infectious diseases.* 2021;21(1):1170. Epub 2021/11/22. doi: 10.1186/s12879-021-06829-7. PubMed PMID: 34800996; PubMed Central PMCID: PMCPCMC8605464.

60. Agyeman AA, Rogers KE, Tait JR, Bergen PJ, Kirkpatrick CM, Wallis SC, et al. Evaluation of Meropenem-Ciprofloxacin Combination Dosage Regimens for the Pharmacokinetics of Critically Ill Patients With Augmented Renal Clearance. *Clinical pharmacology and therapeutics.* 2021;109(4):1104-15. Epub 2021/02/08. doi: 10.1002/cpt.2191. PubMed PMID: 33550617.

61. Abdul Rahim N, Zhu Y, Cheah SE, Johnson MD, Yu HH, Sidjabat HE, et al. Synergy of the Polymyxin-Chloramphenicol Combination against New Delhi Metallo- β -Lactamase-Producing *Klebsiella pneumoniae* Is Predominately Driven by Chloramphenicol. *ACS Infect Dis.* 2021;7(6):1584-95. Epub 2021/04/10. doi: 10.1021/acsinfecdis.0c00661. PubMed PMID: 33834753.

62. Vemuri KR, Balcerek MI, McGowan TE, Love A, Chapman PR. VIPoma: an unsuspecting culprit of severe secretory diarrhoea in a human immunodeficiency virus-infected patient. *Intern Med J.* 2022 Jan;52(1):125-129. doi: 10.1111/imj.15655. PMID: 35060282.

Journal Articles (RBWH staff in bold)

63. Chapman PR, Giacomini P, Loukas A, McCarthy JS. Experimental human hookworm infection: a narrative historical review. *PLoS Negl Trop Dis*. 2021 Dec 9;15(12):e0009908. doi: 10.1371/journal.pntd.0009908. PMID: 34882670; PMCID: PMC8659326.
64. Chapman PR, Webster R, Giacomini P, Llewellyn S, Becker L, Pearson MS, De Labastida Rivera F, O'Rourke P, Engwerda CR, Loukas A, McCarthy JS. Vaccination of human participants with attenuated *Necator americanus* hookworm larvae and human challenge in Australia: a dose-finding study and randomised, placebo-controlled, phase 1 trial. *Lancet Infect Dis*. 2021 Dec;21(12):1725-1736. doi: 10.1016/S1473-3099(21)00153-5. Epub 2021 Aug 19. PMID: 34419209.
65. Stewart AG, Sinclair H, Chapman P, Baboolal K, Barber BE, Townsend S. *Cryptococcus neoformans* infection as a cause of severe hyperammonaemia and encephalopathy. *Intern Med J*. 2021 Oct;51(10):1750-1751. doi: 10.1111/imj.15516. PMID: 34664364.
66. Stewart AGA, Boyd SC. Tuberculous bronchopleural fistula. *Respirology Case Reports* 2021;9(4):e00740
67. Bell SFE, Lemoire J, Debattista J, Redmond AM, Driver, G., Durkin I, Coffey L, Warner M, Howard C, Williams OD, Gilks CF, Dean JA Online HIV self-testing (HIVST) dissemination by an Australian community peer HIV organisation: a scalable way to increase access to testing, particularly for suboptimal testers *Int J Environ Res Public Health* 2021;18(21):11252 (research paper)
68. Chung J, McCarthy KL, Redmond AM, Butler J, Scott AP, Stewart AG *Listeria monocytogenes* brain abscess as a late complication of allogeneic haemopoietic stem cell transplantation *Int Med J* 2021;51(6):1005-6 (letter)
69. Hall N, Barnes S, Canuto C, Nona F, Redmond AM Climate sensitive infectious diseases of concern in Australia's Torres Strait Islands *Aust NZ J Pub Health* 2021;45(2):122-8 (research manuscript)
70. Dean JA, Bell SFE, Coffey L, Debattista J, Badman SG, Redmond AM, Whiley DA, Lemoire J, Williams, OD, Howard D, Gilks CF Improved sensitivity from pooled urine, pharyngeal and rectal specimens when using a molecular assay for the detection of chlamydia and gonorrhoea near point-of-care *Sexually Transmitted Infections* 2021;97(6):471-2 (research letter)

Keynote or Plenary Lectures given in 2021

Date	Title
09/2021	Session Chair, Vector Borne Zoonoses, ASID Zoonoses Webinar Series

Internal Medicine Research and Aged Care

The Internal Medicine Research Unit supports clinician led, collaborative research and knowledge translation to improve the quality, experience and outcomes of hospital and post-hospital care. We have a particular interest in improving care of older, frail and/or complex patients, including those in perioperative settings, and in improving appropriate and safe use of medications. We build clinician and health student capacity in research and knowledge translation, to help answer questions that matter to clinicians and patients, and support implementation of evidence into practice.

In 2021, we have continued to support and evaluate expansion and sustainment of “Eat Walk Engage” across Queensland, collecting process evaluation data from 38 wards in 17 hospitals. The program has been featured at the Australasian Delirium Association DECLARED2021 national conference, the Johns Hopkins Activity and Mobility Promotion international conference, a webinar for the International Fragility Fracture Network and on the national SpeakUp Speech Pathology Australia podcast. We are completing evaluation of adapting Eat Walk Engage at Flinders Hospital in South Australia and in Cork in Ireland. We piloted Eat Walk Engage plus staff cognitive care education using “The View From Here” in a rehabilitation unit at Redcliffe hospital under a MRFF Rapid Translation Grant and have demonstrated promising improvements in staff confidence, care practices, and rehabilitation efficiency. This project was featured on the Australian Health Research Alliance website and newsletter: [Improving the Rehabilitation Experience for Older People and Staff - AHRA](#).

We continue to explore better ways to involve consumers in service improvement and research. We have established a state-wide Consumer Advisory Group for Eat Walk Engage, and Karen Lee-Steere (PhD candidate) is leading a program of work regarding patient and carer involvement in delirium prevention strategies. We have consumer investigators involved in our STAR study, and Dr Adrienne Young is leading development of a co-design framework.

We continue to develop and evaluate our perioperative medicine services and are collaborating with surgeons and anaesthetists in co-management models. Professor Mudge has helped to lead the development of the national Perioperative Care Framework [ANZCA | The Perioperative Care Framework](#).

Our researchers mentor clinicians and students from many disciplines in research, implementation and quality improvement. Team members teach in the QUT-MNHHS Graduate Certificate in Health Services Innovation and the Queensland Health Improvement Fellowship, provide mentoring through AH-TRIP Allied Health Translating Research Into Practice (recognised in the Metro North Research Awards) and lead a RBWH implementation science network. Professor Mudge and Dr Young are involved in international studies of capacity building in knowledge translation for health professionals.

In 2021 we have initiated two projects to improve medication management during the transition period from hospital discharge to home. The outcome of these studies is to reduce medication related harm and readmissions/representations to hospital. The first project is the Transition of Care Pharmacy Project, funded by Queensland Health to improve medication management on discharge at Royal Brisbane & Women's Hospital, Princess Alexandra Hospital and Townsville General Hospital. Associate Professor Charles Denaro, Dr Peter Donovan and Professor Ian Coombes from the Department of Pharmacy are leading this project at RBWH. The study protocol has been finalised and implementation to start in 2022.

Secondly, Associate Professor Denaro and Professor Ian Coombes with the Department of Pharmacy at the University of Sydney were successful in securing a \$2.4million Medical Research Future Fund grant to engage with the Metro North Primary Healthcare Network to enhance community-based medication review. Our focus will be on the high risk period of transition from hospital discharge to primary care. This is a stepped-wedge RCT with 4 different sites – 3 in NSW and one at RBWH.

Dr Jonathon Fanning joined the Department as a senior registrar and has been a successful applicant for the Metro North Clinician Researcher Fellowships commencing 2022, as well as a successful Fulbright Visiting Scholar.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Jonathon Fanning	2021 Fulbright Visiting Scholar	

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Alison Mudge, Adrienne Young, Theresa Green, Aparna Arjunan, Mahendran N	Internal Medicine and Aged Care	Stratifying trajectories after rehabilitation (STAR)	RBWH Research Foundation	\$49,346	2 years, 2021-22
Julie Adsett, Alison Mudge, John Atherton, David Fielding, Annabel Hickey	Heart Support Service, Pulmonary rehabilitation program, Internal Medicine and Aged Care, Cardiology, Respiratory	Yesterday, today and tomorrow: using the Heart Failure and Pulmonary Rehabilitation COVID-19 experience to inform models of care at RBWH	RBWH Research Foundation	\$45,152	1 year, 2020-21
Alison Kitson, Sarah Hunter, Rebecca Feo, Jo Nolan, Michael Lawless, Alison Mudge, Prue McRae	Internal Medicine and Aged Care	Translating knowledge for fundamental care: reducing delirium with the Eat Walk Engage program (REDUCE)	Flinders University Translation Grant	\$60,000	2 years 2019-21
Corina Naughton, Helen Cummins, Marguerite de Foubert, Ruth McCulagh.... (program lead); Alison Mudge (international advisor)	Internal Medicine and Aged Care	Implementation of frailty bundle of care for older people in acute care settings: a hybrid effectiveness implementation study	Irish Health Research Board Applied Partnership Award	€244,965	2 years 2019-2021
Assoc Prof Susan Jordan (University of Queensland), Assoc Prof Katrina Spilsbury (Curtin University of Technology), Dr Louise Wilson (University of Queensland), Dr Peter Donovan (RBWH)	Clinical Pharmacology, Internal Medicine and Aged Care	Hysterectomy, Oophorectomy and Long-term chronic Disease - the HOLD study	Australian Government – National Health and Medical Research Council.	\$690,005.60	4yrs 2021-2025

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Dr Susan Jordan (Queensland Institute of Medical Research Berghofer), Prof Sallie-Anne Pearson (University of New South Wales), Dr Nirmala Pandeya (University of Queensland), Assoc Prof Michael Coory (Murdoch Children's Research Institute), Dr Katrina Spillsbury (Curtin University of Technology), Dr Peter Donovan	Clinical Pharmacology, Internal Medicine and Aged Care	IMPROVE – Investigating Medication Re-Purposing to Reduce risk of Ovarian cancer and Extend survival	National Health and Medical Research Council	\$438,313	2017-2021
Chen T, Schneider C, Gnjidic D, Hilmer S, Bennett A, Patanwala A, Cairns R, Coombes I, Denaro C , Magin P, Robinson F, Lyle D, Saurman E, Laba T, Moullin J, Luetsch K, Fujita K. Dr Peter Donovan	Internal Medicine and Aged Care & Department of Pharmacy	<i>2020: Quality, Safety and Effectiveness of Medicine Use and Medicine Intervention by Pharmacists;</i> A systems-approach to enhancing community-based medication review	Medical Research Future Fund	\$2,432,288	4 years: 2020-2024.
Dr Peter Donovan	Clinical Pharmacology	STARS Evaluation Project (STEP)	University of Queensland	\$30,000	6 months
Julie Adsett , Rachel Bowe, Rebecca Kelly, Menaka Louis, Norman Morris, Rita Hwang	Heart Support Service/ Physiotherapy	Feasibility, reliability and validity of sit to stand tests in patients with heart failure	Directors of Physiotherapy Queensland grant	\$6371	1 year 2021

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Alison Mudge	Prue McRae , Elizabeth Beattie, Sandra Jeavons, Ruth Hubbard, Len Gray, Catherine Yelland, Amanda Fox	Reducing harm in older inpatients: an integrated program to meet the Australian Delirium Clinical Care Standards in hospitals	0	Study conducted at Redcliffe hospital

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Alison Mudge	Adrienne Young , Theresa Green, Aparna Arjunan , Niru Mahendran, Julie Adsett, Gio Tornatore, Ian Parker, Penni Burfein, Julia McLeod , Janette Moore, Dan Trestrail	Stratifying trajectories after rehabilitation (STAR)	0	Study conducted at STARS
Julie Adsett	Alison Mudge , John Atherton , David Fielding , Annabel Hickey	Yesterday, today and tomorrow. Using the Heart Failure and Pulmonary Rehabilitation COVID-19 experience to inform models of care at RBWH	22 clinicians	20 patients 22 clinicians
Karen Lee-Steere	Sally Bennett, Jacki Liddle, Alison Mudge	Understanding experiences and perceptions of family carer involvement in preventing delirium in older patients in the acute hospital setting	4 patients 4 care partners	4 patients 4 care partners
Karen Lee-Steere	Sally Bennett, Jacki Liddle, Alison Mudge	Understanding care partner experiences and perceptions of engagement in delirium prevention and care for adult inpatients in the acute hospital setting: a qualitative systematic review and synthesis	Systematic review	Systematic review
Julie Adsett ,	Rachel Bowe, Rebecca Kelly, Menaka Louis, Norman Morris, Rita Hwang	Feasibility, reliability and validity of sit to stand tests in patients with heart failure	13	49
Veronica Costea	Angela Byrnes , Adrienne Young , Nina Meloncelli, Sally Bennett, Alison Mudge , Sally Barrimore, Anna Bergstrom, Sally Eames	Capacity building in knowledge translation for staff working in health services: a systematic review	Systematic review	
Peter Donovan	Nicola Hinton (Cairns Hospital), Gaurav Puri (Cairns Hospital), Clare Cutmore , Heike Krausse , Jade Eccles-Smith , Brent Knack (Clinical Excellence Queensland), Jennifer Abel (Logan Hospital), Kay Dean (West Morteon HHS), Kerry Porter (Princess Alexandra Hospital), Roisine Warwick (Redland Hospital), Lee Allam (Princess Alexandra Hospital), Emma Whittle , Margaret Whillier , Matthew Balcerek	Queensland Inpatient Diabetes Survey		
Champika Pattullo	Benita Suckling , Peter Donovan , Lisa Hall (Queensland University of Technology)	Development, implementation and outcomes of an adaptable OXYCODONE Quality Improvement STRATEGY: Steps towards opioid stewardship		

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Corina Naughton	Helen Cummins, Margeurite de Foubert, Francis Barry, Ruth McCullagh, Teresa Wills, Dawn Skelton, Darne Dahly, Brendan Palmer, Aileen Murphy, Sheen McHugh, Denis O'Mahony, Salvatore Tedesco, Bridie O'Sullivan, Alison Mudge	Implementation of frailty bundle of care for older people in acute care settings: a hybrid effectiveness implementation study	Recruitment in Cork hospitals	0
Jill Campbell	Alison Mudge, Fiona Coyer, Joan Ostaszkiwicz, Theresa Green, Ruth Hubbard	A prospective observational study of hospital-associated and persistent hospital-associated incontinence in older hospital inpatients: secondary analysis of the CHERISH study	N/A: secondary analysis	0
Sally Yin	Prue McRae, Alison Mudge, Julie Adsett	Improving mobility documentation and communication to enhance efficiencies	Staff not patient participants	0
Ian Graham	Mike Brown, Gillian Harvey, Elizabeth Lynch, Jennifer Moore, Julia Moore, Alison Mudge, Dawn Stacey, Sharon Straus, Peter Wyer, Adrienne Young	Exploring the experiential knowledge of knowledge translation and implementation capacity building initiative facilitators: a mixed methods study	International study, staff not patient participants	0
Alison Kitson	Sarah Hunter, Rebecca Feo, Jo Nolan, Michael Lawless, Alison Mudge, Prue McRae	Translating knowledge for fundamental care: reducing delirium with the Eat Walk Engage program (REDUCE)	Recruitment at Flinders Hospital	0
Claire Baldwin	Lucy Lewis, Kasia Bail, Brian Dolan, David Dunstan, Christina Ekegren, Alison Mudge, Zachary Munn, Anna Phillips, Emmanuel Stamatakis, Catherine Turnbull	Recommendations for older adults physical activity and sedentary behaviour during hospitalisation for an acute medical illness: evidence review and grading	No patient recruitment: national guideline development group	0
Anita Plaza	Julie Adsett, Prue McRae	Physical activity levels in hospitalised adults with burn injuries	17	17
Ian Coombes	Charles Denaro, Peter Donovan, Michael Barras, Karen Bettenay, Kelvin Robertson	Transition of Care Pharmacy Project.	Recruitment to start in 2022.	0
Timothy Chen	Schneider C, Gnjjidic D, Hilmer S, Bennett A, Patanwala A, Cairns R, Coombes I, Denaro C, Magin P, Robinson F, Lyle D, Saurman E, Laba T, Moullin J, Luetsch K, Fujita K.	<i>2020; Quality, Safety and Effectiveness of Medicine Use and Medicine Intervention by Pharmacists;</i> A systems-approach to enhancing community-based medication review	Stepped-wedged RCT, Recruitment to start in 2022.	0
Dr Susan Jordan (University of Queensland)	Prof Sallie-Anne Pearson (University of New South Wales), Dr Nirmala Pandeya (University of Queensland), Assoc Prof Michael Coory (Murdoch Children's Research Institute), Dr Katrina Spillsbury (Curtin University of Technology), Dr Peter Donovan	IMPROVE - Investigating Medication re-Purposing to Reduce risk of OVarian cancer and Extend survival		

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Benita Suckling	Champika Pattullo, Peter Donovan , Shirley Hu (University of Queensland), Bill Loveday (Medications and Regulations, Queensland Health)	Rates of Opioid Dispensing and Opioid-related Harms 2010-2018 – The Queensland Experience		
Louise Cullen (Emergency and Trauma Centre)	Nathan Brown, Peter Donovan , Ian Coombes, Jaimi Greenslade, David Hughes, Elizabeth Doran	Prevalence and characteristics of medication-related presentations to the emergency department. Emergency & Trauma Centre, Royal Brisbane and Women's Hospital.		
Phillip Robinson	Peter Donovan , Nicola Dalbeth (University of Auckland, Auckland Hospital)	A Health Economic Analysis Colchicine Therapy for Gout Prophylaxis		
Benjamin Sly	Clair Sullivan (University of Queensland), Anthony Russell (Princess Alexandra Hospital), Sally Shrapnel (University of Queensland), Peter Donovan	Statewide Inpatient Glycaemic Benchmarking (STING)		
Benjamin Sly	Clair Sullivan (University of Queensland), Anthony Russell (Princess Alexandra Hospital), Sally Shrapnel (University of Queensland), Peter Donovan	Statewide Inpatient Glycaemic Dashboard Implementation (STING-DASH)		
Clair Sullivan	Magid Fahim, Danielle Stowasser, Margie Butnoris, Tracy Comans, Peter Donovan , Martin Canning, Champika Pattullo , Ian Parker , Ben Sly, Jodie Austin, Anthony Russell, Oliver Canfell, Lee Woods, Vikki Goldup, Martin Byrne, Wilkin Chan, Yasaman Meshkat, Zack Kodiyattu, Chad Wright, Digby Simposin, Kim-Huong Nguyen, Kristy Rogan, Gloria Wong , Emma Whittle, Richard Friend , Jayden Mifsud, Elizabeth McCourt , Katherine Dekker , Angela North , Panteha Voussoughi	STARS Evaluation Program (STEP)	98	98

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Mudge A, Young A, McRae P**, Graham F, Whiting E, Hubbard R. Qualitative analysis of challenges and enablers to providing age friendly hospital care in an Australian health system BMC Geriatrics 2021; 21(1), 147
- Thillainadesan J, Hilmer SN, **Mudge AM** et al. Understanding the role and value of process quality indicators in older vascular surgery inpatients J Surg Res 2021; 267:91-101
- Mudge A, Lee-Steere K, Treleaven E, Cahill M**, Finnigan S, **McRae P**. Cognitive impairment in older hospital inpatients: prevalence, care needs and carer perceptions" Aust Health Review online ahead of print 2021
- Adsett J**, Pelecanos A, **Mudge A**. Frailty implications for exercise participation and outcomes in patients with heart failure. J Am Geriatr Soc 2021; 69 (9): 2476-85

Journal Articles (RBWH staff in bold)

5. Thillainadesan J, **Mudge AM**, Aitken SJ, et al. The prognostic performance of frailty for delirium and functional decline in vascular surgery patients. *J Am Geriatr Soc* 2021; 69 (3): 688-93

6. Flint K, **Matthews K, Flaws D, Mudge AM, Young A**. Mealtime care and dietary intake in older psychiatric hospital inpatient: a multiple case study. *J Adv Nurs* 2021; 77(3) 1490-1500

7. **Olenski S, Treleaven E, Hewitt M, Young A, McRae P**, Walsh Z, **Mudge A**. Patient-reported experiences of mealtime care and food access in acute and sub-acute hospital settings: a cross sectional survey. *J Human Nutr Diet* 2021; 34 (4):687-94

8. **Roberts N, Mudge A**, Stover A, **Alexander K, Wyld D**, Janda M. The utility of the implementation science framework "Integrated Promoting Action on Research Implementation in Health Services" (i-PARIHS) and the facilitator role for introducing patient reported outcome measures (PROMs) in a medical oncology outpatient department. *Quality of Life Research* 2021;30(11):3063-71

9. **Adsett J**, Morris NR, **Mudge AM**. Impact of exercise training programme attendance and physical activity participation on six minute walk test in patients with heart failure. *Physiotherapy Theory and Practice* 2021; 37 (9):1051-59

10. **Plaza A, Adsett J, Byrnes A, McRae P**. Physical Activity Levels in Hospitalized Adults With Burn Injuries. *Journal of Burn Care & Research*. 2021 Epub ahead of print Dec 8

11. Hickman IJ, Cameron AE, **McRae P**, Wilkinson SA, O'Brien M, **Kozica-Olenski S**, et al. Feasibility and Acceptability of a Pilot Knowledge Translation Telementoring Program for Allied Health Professionals. *The Internet Journal of Allied Health Sciences and Practice*. 2021 Oct 06;19(4), Article 17

12. Leslie S, Tan J, **McRae PJ, O'Leary SP, Adsett JA**. The Effectiveness of Exercise Interventions Supported by Telerehabilitation For Recently Hospitalized Adult Medical Patients: A Systematic Review. *International Journal of Telerehabilitation* 2021; 13(2). <https://doi.org/10.5195/ijt.2021.6356>

13. Wilkinson SA, Hickman I, Cameron A, **Young A, Olenski S, McRae P**, O'Brien, M. 'It seems like common sense now': experiences of allied health clinicians participating in a knowledge translation telementoring program. *JBHI Evidence Implementation*. Oct 29, 2021 doi:10.1097/xe.0000000000000297

14. McLaren-Hedwards, T., D'cunha, K., Elder-Robinson, E., Smith, C., Jennings, C., Marsh, A., & **Young, A.** (2021). Effect of communal dining and dining room enhancement interventions on nutritional, clinical and functional outcomes of patients in acute and sub-acute hospital, rehabilitation and aged-care settings: A systematic review. *Nutrition & Dietetics*, epub ahead of print

15. Zada M, Lo Q, Boyd AC, Bradley S, Devine K, **Denaro CP**, Sadick N, Richards DAB, Tchan MC, Thomas L. Basal segmental longitudinal strain: a marker of subclinical myocardial involvement in Anderson-Fabry disease. *J Am Soc Echocardiogr* 2021;34:405-13.

16. **Donovan PJ, Eccles-Smith J**, Hinton N, Cutmore C, Puri G, Porter K, Abel J, Allam L, Dermedgoglou A. The Queensland Inpatient Diabetes Survey (QuIDS) 2019: the beside audit of practice. *Med J Aust* 2021; 215 (3):119-124

17. **Eccles-Smith J**, Puri G, Hinton N, **Donovan PJ**, Cutmore C, Porter K, Dermedgoglou A. Access to inpatient diabetes resources: hospital characteristics from the inaugural Queensland Inpatient Diabetes Survey. *Internal Med J* 2021 epub ahead of print 18 June

18. **Pattullo C**, Suckling B, Taylor S, **Donovan PJ**. Developing and piloting an adaptable oxycodone quality improvement strategy: steps towards opioid stewardship. *Australian health review*, 2021-01-01, Vol.45 (3), p.353-360

19. **Madan A, Donovan PJ, Risetto T**, Lander CM, **Trenerry H**. Monitoring for Valproate and Phenytoin Toxicity in Hypoalbuminaemia: A Retrospective Cohort Study. *British J Clin Pharmacol* 2021; 87 (11):.4341-4353

20. Finn S, D'Arcy E, **Donovan PJ**, Barras MA, Kanagarajah S. A randomised trial of pharmacist-led discharge prescribing in an Australian geriatric evaluation and management service. *Int J Clin Pharm* 2020; 43 (4):847-857

21. Engstrom T, Baliunas DO, Sly BP, Russell AW, **Donovan PJ**, Krausse HK, Sullivan CM, Pole JD. Toilet Paper, Minced Meat and Diabetes Medicines: Australian Panic Buying Induced by COVID-19. *International journal of environmental research and public health*, 2021; 18 (13):.6954

22. **Pattullo C**, Suckling B, **Donovan PJ**, Hall L. Developing a framework for implementing Opioid Stewardship Programs in Australian Hospital Settings. *Intern Med J* 2021 epub ahead of print June 10

Journal Articles (RBWH staff in bold)

23. Baker A, Clarke L, **Donovan PJ**, Ungerer J, Hartel G, Bruxner G, Cocchi L, Gordon A, Moudgil V, Robinson G, Roy D, Sohal R, **Whittle E**, Scott JG. Cadence discovery: study protocol for a dose-finding and mechanism of action clinical trial of sodium benzoate in people with treatment-refractory schizophrenia. *Trials* 2021; 22 (1): 918-918.
24. **Whitfield K**, **Coombes I**, **Denaro C**, **Donovan P**. Medication Utilisation Program, Quality Improvement and Research Pharmacist – Implementation Strategies and Preliminary Findings. *Pharmacy* 2021;9, 182.<https://doi.org/10.3390/pharmacy9040182>.
25. Fulton R, Millar JE, Merza M, Johnston H, Corley A, Faulke D, Rapchuk IL, Tarpey J, **Fanning JP**, Lockie S, Lockie P, Fraser JF. Prophylactic postoperative high flow nasal oxygen versus conventional oxygen therapy in obese patients undergoing bariatric surgery (OXYBAR) study: a pilot randomised controlled trial. *Obesity Surgery*. 2021;31(9445). <http://doi.org/10.1007/s11695-021-05644-y>
26. Cho SM, Premraj L, **Fanning J**, Huth S, Barnett A, Whitman G, Arora RC, Battaglini D, Bastos Porto D, Choi HM, Suen J, Li Bassi G, Fraser JF, Robba C, Griffiee M. Ischemic and Hemorrhagic Stroke Among Critically Ill Patients with COVID-19: An International Multicenter COVID-19 Critical Care Consortium Study. *Critical Care Medicine*. 2021;49(12):e1223-e1233. <http://doi.org/10.1097/CCM.0000000000005209>
27. **Fanning J**, Roberts S, Merza M, Anstey C, Poon K, Incani A, Natani S, Fraser J. Evaluation of latest viscoelastic coagulation assays in the transcatheter aortic valve implantation setting. *Open Heart*. 2021;8:e001565. <http://doi.org/10.1136/openhrt-2020-001565>
28. Li Bass GL, Suen JY, Dalton H, White N, Shrapnel S, **Fanning JP**, Lique B, Hinton S, Vuorinem A, Booth G, Millar J, Forsyth S, Panigada M, Laffey J, Brodie D, Fan E, Torres A, Chiumello D, Corley A, Elhazmi A, Hodgson C, Ichiba S, Luna C, Murthy S, Nichol A, Yeung P, Ogino M, Pesenti A, Trung Trieu H, Fraser J, on behalf of the COVID-19 Critical Care Consortium. An appraisal of respiratory system compliance in mechanically ventilated COVID-19 patients. *Critical Care*. 2021;25:199. <http://doi.org/10.1186/s13054-021-03518-4>
29. **Fanning JP**, Cohen J, Venkatesh B. Ingelfinger imperative: when speed of release risks quality of research. *Internal Medicine Journal*. 2021;50(12):1595-1596. <http://doi.org/10.1111/imj.15047>
30. Huth S, Cho SM, Robba C, Highton D, Battaglini D, Bellapart J, Suen JY, Li Bassi G, Taccone FS, Arora R, Whitman G, Fraser JF, **Fanning JP**. Neurological manifestations of coronavirus disease 2019: a comprehensive review and meta-analysis. *Frontiers in Neurology*. 2021;12:664599. <http://doi.org/10.3389/fneur.2021.664599>
31. **Fanning JP**, Murthy S, Obonyo NG, Baillie JK, Webb S, Dalton H, Fraser JF. Global infectious disease research collaboration in crises: building capacity and inclusivity through cooperation. *Globalisation and Health*. 2021;17(1):84. <http://doi.org/10.1186/s12992-021-00731-2>
32. Woldendorp K, Indja B, Bannon PG, **Fanning JP**, Plunkett BT, Grieve SM. Silent brain infarcts and early cognitive outcomes after transcatheter aortic valve implantation: a systematic review and meta-analysis. *European Heart Journal*. 2021;42(10):1004-1015. <http://doi.org/10.1093/eurheartj/ehab002>
33. Li Bassi G, Suen JY, White N, Heidi D, **Fanning JP**, Corley A, Shrapnel S, Hinton S, Forsyth S, Parsons R, Laffey J, Fan E, Bartlett R, Brodie D, Burrell A, Chiumello D, Elhazmi A, Giacomo G, Hodgson C, Ichiba S, Luna C, Marwali E, Merson L, Murthy S, Nichol A, Panigada M, Pelosi P, Torres A, Ng PY, Ogino M, Fraser JF. Assessment of 28-Day In-Hospital Mortality in Mechanically Ventilated Patients With Coronavirus Disease 2019: An International Cohort Study. *Critical Care Explorations*. 2021;3(11):e0567.

Books (RBWH staff in bold)

1. Expert Group member for Therapeutic Guidelines (**Jonathon Fanning**): Gastrointestinal: Liver Disorders. Version 7. Melbourne: Therapeutic Guidelines Limited; 2020.

Book Chapters (RBWH staff in bold)

1. **Mudge A**, **Young A**, **Cahill M**, **Treleaven E**, Spigienė L. Nutrition and Delirium. In Geirsdóttir O, Bell J. Interdisciplinary Nutritional Management and Care for Older Adults. Springer 2021. Switzerland. eBook ISBN 978-3-030-63892-4
2. **Fanning J** (2021). Part IV: Neurological manifestations of COVID-19. In Battaglini, D & Pelosi, P (Ed.), *COVID-19 Critical and Intensive Care Medicine Essentials*. Springer (Accepted).

Book Chapters (RBWH staff in bold)

3. **Fanning J** & Li Bassi G (2021). Hot Topics: COVID-19. In Singh, S & Pelosi, P (Ed.), *Oxford Textbook of Respiratory Critical Care*. Oxford University Press (Accepted).

Keynote or Plenary Lectures given in 2021

Date	Title
09/2021	Alison Mudge was co-convenor and session chair, DECLARED2021: national conference of the Australasian Delirium Association
09/2021	Karen Lee-Steere was committee secretariat and session chair, DECLARED2021: national conference of the Australasian Delirium Association
09/2021	Prue McRae, Karen Lee-Steere, Margaret Cahill were invited speakers for symposium session "Eat Walk Engage" at DECLARED2021: national conference of the Australasian Delirium Association
04/2021	Prue McRae was invited speaker and panel member for the Johns Hopkins Activity and Mobility Promotion annual hospital mobility conference "Eat Walk Engage"
05/2021	Jonathon Fanning . Case-control study of risk factors for stroke among critically-ill patients with SARS-CoV-2: Analysis of the COVID-19 Critical Care Consortium (CCCC) global registry. <i>Australian and New Zealand Association of Neurologists (ANZAN) Annual Scientific Meeting</i> , Virtual (2021).
05/2021	Jonathon Fanning . Neurological manifestations of coronavirus disease 2019: a comprehensive review. <i>Australian and New Zealand Association of Neurologists (ANZAN) Annual Scientific Meeting</i> , Virtual (2021).
04/2021	Jonathon Fanning . Stroke Complicating critically-ill patients with SARS-CoV-2: Analysis of the COVID-19 Critical Care Consortium (CCCC) international, multicentre observational study. <i>American Academy of Neurology Annual Meeting</i> , Virtual (2021). Late Breaking Session.
09/2021	Jonathon Fanning . Comparison of viscoelastic haemostatic assays for point of care coagulation assessment. <i>Blood 2021</i> . Adelaide, Australia
07/2021	Jonathon Fanning . Perioperative stroke: an emerging epidemic in non-cardiac surgery? Conjoint <i>Australian Society of Anaesthetists National Scientific Congress & Queensland Anaesthesia Continuing Education Meeting 2021</i> , Virtual (2021). Invited.

Kidney Health Service

The high calibre of researchers in the Kidney Health Service was recognised in 2021, with Professor Ann Bonner's election to Sigma's International Nurse Researcher Hall of Fame, Ms Carla Scuderi awarded the Young Investigator – Clinical Scientist Award at the 56th Annual General Meeting of the Australian and New Zealand Society of Nephrology and Dr Purba Nag winning the highly competitive Millennium Science START single cell Fellowship. These excellent researchers come from the diverse professional backgrounds of nursing, pharmacy and science respectively.

The senior researcher mentorship program continued to grow our young researchers with an advanced trainee first author of a Kidney International (highest ranked kidney journal globally) publication and an RMO first author of a case report, both accepted for publication in 2022. Governance of appointment as one of our Honorary Researchers was harmonised with changes implemented in the RBWH Research Office in 2021. COVID-19 delayed the travel of the next resident Research Fellow in the Conjoint Internal Medicine – Kidney Research Group again in 2021.

Whilst COVID-19 continued to impact the research world, most visibly in physical attendance at scientific meetings, our researchers focused on building collaborations and scientific networks in other ways. As a result, our clinical trials research portfolio has expanded, supporting funded research nurse co-ordinator FTE and providing preliminary data for future collaborations with the Australian Clinical Trials Network. Research Groups expanded their collaborations with successful researchers including the Centre for Advanced Imaging at the University of Queensland (successful Australian Research Council grant to be reported next year) and recruitment of recently appointed nephrologists. These new relationships will deliver research products into the future.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Prof Ann Bonner	2021 International Nurse Researcher Hall of Fame	2021 SIGMA Conference
Purba NAG	Millennium Science START single cell Fellowship	Millennium Science & Jomar Life Research
Carla SCUDERI	Young Investigator Award – Clinical Science Winner	Australian and New Zealand Society of Nephrology Annual Scientific Meeting 2021
Purba NAG	Basic Science award – Finalist	Australian and New Zealand Society of Nephrology Annual Scientific Meeting 2021
Kurt GIULIANI	Winner short talk section	2021 Australian Society of Medical Research Queensland Postgraduate Student Symposium
Purba NAG	Discovery and Innovation award – Finalist	2021 RBWH and RBWH Foundation Grant Awards Ceremony
Kurt GIULIANI	Travel Scholarship to present paper at Brisbane Immunology Group Scientific Meeting August 2021	Faculty of Medicine Travel Scholarship, University of Queensland
Kurt GIULIANI	Winner – Long Oral Presentation	UQ Faculty of Medicine HDR Symposium

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Ann Bonner	Kidney Health Service	Exploration of the Experiences of Renal Healthcare Practitioners Globally during the COVID-19 Pandemic	Northern Ireland Kidney Research Fund	\$81,000	2 years, 2020-2021

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Pedro Franca Gois , Marina Weinstein, Helen Healy , Ann Bonner, Rebecca Saunderson, Vera Yueyue Miao.	Kidney Health Service	Improving the patient experience of kidney biopsy: a RCT evaluating video-assisted consent versus standard consent for percutaneous ultrasound-guided kidney biopsy	Royal Brisbane and Women's Hospital and RBWH Foundation - project grant	\$50,000	2 years 2021-2022
Kirsten Hepburn , Pedro Franca Gois , Helen Healy , Martin Wolley , Carla Scuderi , Dwaraka Ranganathan , Nigel Mott	Kidney Health Service Department of Medical Imaging	Desmopressin Acetate (DDAVP) to prevent post-Biopsy Bleeding in percutaneous kidney biopsy: a randomized, double blind trial	Royal Brisbane and Women's Hospital and RBWH Foundation - project grant	\$50,000	2 years 2020-2021
Andrew Kassianos, Helen Healy	Conjoint Kidney Research Group	Developing therapeutic approaches targeting human unconventional T lymphocytes for the treatment of chronic kidney disease	NHMRC	\$557,127	4 years 2019-2022
Helen MacLaughlin , Margie Conley, Andrea Vieceili, David Johnston, Carel Pretorius, David Mudge, Tammy Tonges, Richard Modderam, Justin Holland	Nutrition and Dietetics	Slowing kidney disease with weight loss: a randomised controlled feasibility study	Kidney Health Australia	\$50,000	2021-2022
Helen MacLaughlin	Nutrition and Dietetics; Exercise and Nutrition Sciences QUT	Creating new synergies to examine kidney-adipose tissue cross-talk during weight loss in adults with obesity and chronic kidney disease	QUT Early and Mid Career Research Grant	\$20,000	2022
Andrew Mallett Mathew Jose, Aaron Chakera, Helen Healy , Randall Faull, Mallowaarachchi A, Stark Z, Chirag Patel , Cathy Quinlan, Hugh McCarthy, Steven Alexander, Lindsay Fowles, Melissa Little, Ian Smyth, Hansen D, John Braithwaite, Goranitis I, Alison Tong, Tiffaney Boughtwood, Nisselle A, Jesudason S	KIDGen Research Group Kidney Health Service	Kid Gen Clinics, Education, Data and Research - KIDGEN – CEDAR	Department of Health Australian Government Action Plan for Kidney Disease	\$700,000	3 years 2020-2022

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Monica Ng	Conjoint Kidney Research Group/Kidney Health Service	A multifaceted screen for personalized precision medicine targets for glomerulonephritides – from genotype to international big data analyses	Royal Brisbane and Women's Hospital and RBWH Foundation – Postdoctoral Research Fellowship	\$100,000	2 years 2020-2021
Sameera Senanayake, Sanjeewa Kularatna, Steven McPhail, Kesh Baboolal, Helen Healy	Kidney Health Service	Budget impact analysis of implementing a soft opt-out system for kidney donation in Australia	Centre for Healthcare Transformation Strategic Initiatives 151000, Queensland University of Technology	\$15,000	1 year 2021
Zaw Thet, Dwarakanathan Ranganathan Thin Han, Jason Roberts	Kidney Health Services, Haematology/Pharmacy	Prospective, Open-Label, Randomized Controlled Trial on Pharmacokinetics of Highly Protein Bound Direct Oral Anticoagulant (Apixaban) in Prevention and Treatment of Primary Nephrotic Syndrome Associated Thromboembolic Disease	Internal Seeding Research Grant - Scale up support CQHHS	2021	2

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Helen Healy	Andrew Kassianos, Purba Nag, Anca Grivei, Xiangju Wang, Kurt Giuliani, Arti Raghubar, George John, Julia Jeffrey,	Conjoint Kidney Research Group - mechanisms of progression in declining kidney function	~80	cumulative over many years
Helen Healy	Sarah Mon, Ann Bonner, Louise Purtell, Gary Chang, Alex Cation	Integration into the community – GPwSI	0	0
Kirsten Hepburn	Ilse Berquier, Helen Healy, Ann Bonner, Carol Douglas, Louise Purtell, Katrina Kramer, Laura Austin, Alice Kennard	KSC program - limited trial of dialysis	0	0
Helen MacLaughlin	Kate Morgan, Andrew Mallett (Renal), Belinda Mason, Julie Brodrick	Mediterranean diet as adjunctive therapy to reduce resistant proteinuria in chronic kidney disease – a proof of concept study	9	
Helen MacLaughlin	Sophie Gouvia (QUT), Chelsea Sharp(QUT), Justine Bastow (COH), Kate Morgan, Julie Brodrick	Healthy Eating in Haemodialysis - a new approach to nutritional care in CKD: a feasibility study	34	

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Helen MacLaughlin	Margie Conley (PAH), Andrea Viecelli (PAH), David Johnston(PAH), Carel Pretorius (PAH), David Mudge (PAH), Tammy Tonges (PAH), Richard Modderman (PAH), Justin Holland (PAH), Kirsten Hepburn	Slowing kidney disease with weight loss: a randomised controlled feasibility study	0	
Martin Wolley	Dr Pedro Henrique Franca Gois	eCONSENT	28	28

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Margie Conley (MSHHS, QUT)	Helen MacLaughlin , Katrina Campbell (MN), Kath McFarlane (SC), David Johnson (MSHHS)	Interventions for weight loss in people with chronic kidney disease who are overweight or obese – systematic review		
Margie Conley (MSHHS, QUT)	AndreaViecelli(MSHHS, UQ), David Johnson (MSHHS,UQ), Hannah Mayr (MSHHS), Mikeeley Hoch (MSHHS), Helen MacLaughlin	Acceptability and adherence of low energy diets for obesity management in chronic kidney disease		
Justin A Ezekowitz (University of Alberta)	John Atherton (Cardiology), Kate Morgan (Nutrition and Dietetics) , Lynda Ross (Griffith), Belinda Mason (Nutrition and Dietetics)	SODIUM-HF (Study of Dietary Intervention Under 100 MMOL in Heart Failure)		
Erynn McAuley (QUT)	Lynda Ross (QUT), Helen MacLaughlin	Diet Quality and Self Efficacy in patients with Chronic Kidney Disease		
Carel Pretorius (Pathology Queensland)	Jacobus Ungerer (Pathology Queensland), Helen Healy , Andrew Kassianos , Xiangju Wang	Precision diagnostics for cardiac troponin in acute myocardial infarction and end-stage kidney disease patients	N/A	N/A
Dwarakanathan Ranganathan	Dr Martin Wolley	ALIGN: CHK01-01	1	1
Dwarakanathan Ranganathan	Dr Martin Wolley	AFFINITY: CHK01-02	2	2
Dwarakanathan Ranganathan	Dr Martin Wolley	ALEXION: ALXN1210	1	1
Dwarakanathan Ranganathan		SPOCS	6	6
Dwarakanathan Ranganathan	Cameron Curley	ALEXION M11-001	1	3
Dwarakanathan Ranganathan		AUSLUPUS	40	40
Dwarakanathan Ranganathan		QRBR	60	60

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Dwarakanathan Ranganathan		ANCAAR	14	14
Sharad Ratanjee	Martin Wolley	Phosphate	7	7
Sharad Ratanjee		ASCEND-D	5	5
David Reutens	Shekhar Chandra, John Bertram, Nyoman Kurniawan, Helen Healy	Advancing the visualisation and quantification of nephrons with MRI	0	0
Sameera Senanayake	Sanjeeva Kularatna, Steven McPhail, Kesh Baboolal, Helen Healy	Health Economics Group - budget impact analysis of implementing a proposed soft opt-out system for kidney donation in Australia: a modelling study	~15	~15
Martin Wolley		Staged PKD	4	4
Martin Wolley		Staged PKD Extension Study	0	0
Martin Wolley		HERA	0	0
Martin Wolley	Kirsten Hepburn; Dharmenaan Palamuthusingam	Eagle 402-C-1803	2	2
Martin Wolley	Kirsten Hepburn; Dharmenaan Palamuthusingam	Falcon 402-C-1808	8	8
Martin Wolley	Dharmenaan Palamuthusingam	PHYOX 3 DCR-PHXC-301	2	2
Martin Wolley	Kirsten Hepburn; Dharmenaan Palamuthusingam	PHYOX 2 DCR-PHXC-201	2	2
Martin Wolley	Prianka Puri	ACHIEVE	6	6
Martin Wolley	Andrew Mallett	IMPEDE	0	0

Research Activity with a Specific Focus on First Nations People

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Dharmenaan Palamuthusingam	Geoff Spurling, Anna Cooney, Antonio Martinez, Garry Torrens, David Johnson, Prabha Lakhan	Health literacy and chronic kidney disease in Aboriginal and Torres Strait Islander peoples.	0	0

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Anpalahan A**, Malacova E, Hegerty K, Mallett A, **Ranganathan D**, **Healy H**, **Gois P**. Bleeding complications in percutaneous kidney biopsy: Does gender matter?.. Kidney360 2021;2:1308-1312 open access
- Burke J**, Pham T, May S, Okano S, **Ratanjee S**, Thet Z, Wong J, Venuthurupalli S, **Ranganathan D**. Kidney biopsy practice amongst Australasian nephrologists. BMC Nephrology. 2021; 22(1):291.doi: 10.1186/s12882-021-02505-9 open access

Journal Articles (RBWH staff in bold)

3. Chandler S, Oliver K, Tan KS, 4. **Palamuthusingam D**. Should we biopsy? Internal Medicine Journal. 2021;51(8):1359-60.

4. Conley MM, McFarlane CM, Johnson DW, Kelly JT, Campbell KL, **MacLaughlin HL**. Interventions for weight loss in people with chronic kidney disease who are overweight or obese. Cochrane Database Syst Rev. 2021;3(3):Cd013119.

5. **Doucet BP**, Cho Y, Campbell SB, Johnson DW, Hawley CM, Teixeira-Pinto ARM, Isbel NM. Kidney Transplant Outcomes in elderly Recipients: An Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry Study. Transplant Proc. 2021;53(6):1915-1926. doi:10.1016/j.transproceed.2021.06.024. Epub 2021 Jul 15. PMID: 34275599.

6. Farkas A, Oikonomou K, Ghanbar M, Villasurda P, Varghese J, Lipman J, Sassine J, **Ranganathan D**, **Roberts JA**. Population pharmacokinetics of intra-peritoneal gentamicin and the impact of varying dwell times on pharmacodynamic target attainment in patients with acute peritonitis undergoing peritoneal dialysis. Antimicrobial Agents Chemotherapeutics 2021 Dec 13;AAC0167921. doi: 10.1128/AAC.01679-21.

7. Forbes JM, McCarthy DA, **Kassianos AJ**, Baskerville T, Fotheringham A, **Giuliani KTK**, **Grivei A**, Murphy AJ, Flynn MC, Sullivan M, Chandrashekar P, Whiddett R, Radford K, Flemming N, Beard SS, De Silva N, Nisbet J, Morton A, Teasdale S, Russell A, Isbel N, Jones T, Couper J, **Healy H**, Harris M, Donaghue K, Johnson DW, Cotterill A, Barrett H, O'Moore Sullivan T. T cell expression and release of kidney injury molecule-1 in response to glucose variations initiate kidney injury in early diabetes. Diabetes 2021;70(8):1754-1766.

8. Jayne DRW, Merkel PA, Schall TJ, Bekker P; ADVOCATE Study Group (incl **Ranganathan D**). Avacopan for the Treatment of ANCA-Associated Vasculitis. New England Journal of Medicine 2021 Feb 18;384(7):599-609. doi: 10.1056/NEJMoa2023386.PMID: 33596356

9. Kalla S, Ellis RJ, Campbell SB, **Doucet B**, Isbel N, Tie B, Jegatheesan D. Thrombotic Microangiopathy Associated with Pazopanib in a Kidney Transplant Recipient. J Kidney Cancer VHL. 2021;8(1):25-31. doi: 10.15586/jkcvhl.v8i1.161. PMID: 33850692; PMCID: PMC8017890.

10. **Kearney N**, **Berquier I**, Purtell L, **Healy H**, Bonner A, **Douglas C**, **Hepburn K**. Advance care planning in a kidney supportive care clinic. Kid Int Rep, 2021;6(S1-362): 294-295.

11. Lim CC, Tan HZ, Tan CS, Healy H, Choo J, Gois PHF. Desmopressin acetate (DDAVP) to prevent bleeding in percutaneous kidney biopsy: a systematic review. Internal Medicine Journal. 2021;51(4):571-579 open access

12. **MacLaughlin HL**, Friedman AN, Ikizler TA. Nutrition in Kidney Disease: Core Curriculum 2022. Am J Kidney Dis. 2021. doi: 10.1053/j.ajkd.2021.05.024

13. Makhzoum JP, Grayson PC, Ponte C, Robson J, Suppiah R, Watts RA, Luqmani R, Merkel PA, Pagnoux C; DCVAS Collaborators.(incl **Ranganathan D**). Pulmonary involvement in primary systemic vasculitides..Rheumatology (Oxford). 2021 Dec 24;61(1):319-330.

14. Mathias-Shah J, Ramsbotham J, **Bonner A**. A scoping review of the role of health literacy in chronic kidney disease self-management. J Ren Care. 2021;47(4):221-233.

15. McIntyre D, Havas K, **Bonner A**. Monitoring for intradialytic hypotension: An audit of nursing practice. J Ren Care. 2021;47(1):27-33.

16. McKie A, **Green T**, **Bonner A**. Sexual health, wellbeing, and function in people with end stage kidney disease: A scoping review. J Ren Care. 2021;47(3):184-192.

17. **Milazi M**, Douglas C, **Bonner A**. A bundled phosphate control intervention (4Ds) for adults with end-stage kidney disease receiving haemodialysis: A cluster randomized controlled trial. J Adv Nurs. 2021;77:1345-1356.

18. Mc Keaveney C, Reid J, Carswell C, **Bonner A**, de Barbieri I, Johnston W, Maxwell P, O'Riordan J, Strini V, Walsh I, Noble H. Experiences of renal healthcare practitioners during the COVID-19 pandemic: A multi-methods approach. BMC Neph. 2021; 22:301.

19. Monti S, Craven A, Klersy C, Montecucco C, Caporali R, Watts R, Merkel PA, Luqmani R; DCVAS Collaborators (incl **Ranganathan D**). Association between age at disease onset of anti-neutrophil cytoplasmic antibody-associated vasculitis and clinical presentation and short-term outcomes Rheumatology (Oxford). 2021 Feb 1;60(2):617-628.

Journal Articles (RBWH staff in bold)

20. Nath K, Reyalden R, Mack K, Sistla L, **Palamuthusingam D**, Zahir SF, et al. A retrospective analysis of the investigative practices of acute limb ischaemia presenting with an unknown aetiology. *ANZ Journal of Surgery*. 2021

21. **Palamuthusingam D**, Nadarajah A, Johnson DW, Pascoe EM, Hawley CM, Fahim M. Morbidity after elective surgery in patients on chronic dialysis: a systematic review and meta-analysis. *BMC nephrology*. 2021;22(1):1-15

22. **Palamuthusingam D**, Ratnayake G, Kuenstner K, Hawley CM, Pascoe EM, Jose MD, et al. Identifying new-onset conditions and pre-existing conditions using lookback periods in Australian health administrative datasets. *International Journal for Quality in Health Care*. 2021;33(1):mzaa154

23. **Palamuthusingam D**, Reyalden R, Johnson DW, Hawley CM, Pascoe EM, Wahi S, et al. Assessment of cardiac structure and function in kidney failure: understanding echocardiography and magnetic resonance imaging for the nephrologist. *International Urology and Nephrology*. 2021;53(4):699-712.1

24. Rheault H, **Coyer F**, **Bonner A**. Chronic disease health literacy in Australia's First Nation peoples: A mixed methods study. *J Clin Nurs*. 2021;30(17-18):2683-2695.

25. Rheault H, Coyer F, Bonner A. Time to listen: Chronic disease yarning with Aboriginal and Torres Strait Islander peoples living in remote Australia. *Collegian*. 2021;28:10-17.

26. Sandhu SA, Angel CA, Campbell KL, Hickman IJ, **MacLaughlin HL**. Standardised Outcome Reporting for the Nutrition Management of Complex Chronic Disease: A Rapid Review. *Nutrients*. 2021;13(10).

27. Senanayake S, Graves N, Barnett A, **Healy H**, **Baboolal K**, Kularatna S. Time-to-event analysis in economic evaluations: a comparison of modelling methods to assess the cost-effectiveness of transplanting a marginal quality kidney. *Health Economics Review* 2021;11;13 doi.org/10.1186/s13561-021-00312-4 open access

28. Sowa PM, Venuthurupalli SK, Hoy WE, Zhang J, Cameron A, Cameron A, **Healy HG**, Connelly LB. Identification of factors associated with high cost use of inpatient care in chronic kidney disease: a registry study. *BMJ Open* 2021;11: e049755. doi:10.1136/bmjopen-2021-049755 open access

29. Thet Z, Lam AK, Ng SK, Aung SY, Han T, **Ranganathan D**, Borg J, Pepito C, Khoo TK. Comparison of skin cancer awareness and sun protection behaviours between renal transplant recipients and patients with glomerular disease treated with immunosuppressants. *Nephrology (Carlton)*. 2021 Apr;26(4):294-302. doi: 10.1111/nep.13840.

30. Thet Z, Lam AK, **Ranganathan D**, Aung SY, Han T, Khoo TK. Reducing non-melanoma skin cancer risk in renal transplant recipients. *Nephrology (Carlton)*. 2021 Nov;26(11):907-919. doi: 10.1111/nep.13939

31. Wainstein M, Shrapnel S, Clark C, Hoy W, **Healy H**, Katz I. Machine learning and chronic kidney disease risk prediction. *African Journal of Nephrology* 2021;24(1):58-67

32. Wang X, Wilkinson R, Kilday K, Ungerer J, Hill MM, Shan AK, Mohammed A, Dutt M, Molendijk J, **Healy H***, **Kassianos A.*** Molecular and functional profiling of apical versus basolateral exosomes derived from primary human proximal tubular epithelial cells under inflammatory conditions. *Journal of Extracellular Vesicles* 2021;10:e12064. open access

33. **Wembenyui C**, Douglas C, **Bonner A**. Validation of the Australian version of chronic kidney disease self-management instrument. *Intl J Nurs Prac*. 2021;27(2):e12857.

34. Yapa Eranga H, Purtell A, Chambers S, **Bonner A**. Alterations in symptoms and health-related quality of life as kidney function deteriorates: A cross-sectional study. *J Clin Nurs*, 2021;30:1787-1796

35. Zhang J, Wang Z, Cameron A, Sowa M, Vishal D, Venuthurupalli SK, **Healy HG**, Connelly LB, Hoy WE. The CKD.QLD data linkage framework: chronic kidney disease and health services utilisation in Queensland, Australia. *F1000Research* 2021;10:1107 DOI (10.12688/f1000research.53782.1) open access

36. Chan S, Au E, Johnson DW, Hawley CM, Tong A, Pascoe EM, Craig JC, Sautenet B, Blumberg EA, Brennan D, Campbell SB, Cao C, Francis RS, Huuskens B, Isbel NM, Knoll G, Kotton CN, Mamode N, Muller E, An Ha Phan H, Tedesco-Silva H, White DM, **Wolley MJ**, Vieceilli AK. Range and Consistency of Infection Outcomes Reported in Trials Conducted in Kidney Transplant Recipients: A Systematic Review. *Transplantation*. 2021;105(12):2632-2638

37. Wu A, **Wolley MJ**, Wu Q, Gordon RD, Fenton RA, Stowasser M. The Cl-/HCO₃- exchanger pendrin is downregulated during oral co-administration of exogenous mineralocorticoid and KCl in patients with primary aldosteronism. *J Hum Hypertens*. 2021;35(10):837-848

Books (RBWH staff in bold)

1. **Bonner A**, Douglas B, Brown L, Harvie B, Lucas A, Tomlins M. (2021). Nephrology specific clinical performance indicators for nurse practitioner education in Australia. (2nd ed.). Brisbane: Griffith University; 2021. ISBN 978-1-922361-14-1.
2. Hoy WE, **Healy HG**, Connelly L, Mitchell G, Panaretto K, Endre Z, Coombes JS, Gobe G, Bonner A, Fassett RG. and on behalf of the Centre collaborators. The NHMRC CKD.CRE final report 2015-2020: Advancing Australia's knowledge of chronic kidney disease. Brisbane: The University of Queensland. Available from: <https://cre-ckd.centre.uq.edu.au/>

Book Chapters (RBWH staff in bold)

1. **Bonner A**, Brown L. Chronic kidney disease. In Chang E, Johnson A, editors. Chronic Illness and Disability: Principles of Nursing Practice. 4th ed. Sydney: Elsevier; 2021. p. 375-390.
2. **Gois PHF, Healy H, Ranganathan D**, Mallett A, Webster AG, Kanellis J, Barraclough K, Wainstein M, Johnson DW, Kerr PG. Nephrology in Australia. In: Moura-Neto JA, Divino-Filho JC, Ronco C, editors. Nephrology Worldwide. Basel: Springer Nature Switzerland AG; 2021. p. 701-721

Keynote or Plenary Lectures given in 2021

Date	Title
01/2021	Health Literacy and Renal Healthcare Adherence: What is the Connection?
08/2021	Kidney Replacement Therapy (Nephkids 2021) Supported by International Society of Nephrology
09/2021	Defining Epidemiology of Glomerulonephritis (Glomcon Fellowship Program)
08/2021	Evaluating data quality in a clinical quality registry (Australian and New Zealand Dialysis and Transplant Registry) with hospital admission datasets using data-linkage' 2021 Australia and New Zealand Society of Nephrology (ANZSN) Annual Scientific Meeting (Invited speaker)

Department of Neurology

The Department of Neurology hosts active clinician scientists across a range of key neurological areas including Neuromuscular and Motor Neurone Disease (MND), Movement disorders and Dementia, Multiple Sclerosis, Stroke and Epilepsy. Research projects active in the Department involve collaborations with University of Qld (UQ) Centre for Advanced Imaging, UQ Institute for Molecular Bioscience, the Queensland Brain Institute, Herston Imaging Research Facility and UQ Centre for Clinical Research (UQCCR).

The RBWH Movement Disorder and Dementia Research is led by Associate Professor John O'Sullivan and Dr Robert Adam in collaboration with the Queensland Drug Repurposing Initiative (QDRI) with Dr Richard Gordon, and the Dementia and Neuro Mental Health Research Unit led by Associate Professor Nadeeka Dissanayaka and supported by Dr Dennis Yeow as the research fellow both in Movement Disorder and Neuromuscular research.

There are several active movement disorder clinical trials ongoing at present coordinated through the Queensland Drug Repurposing Initiative QDRI (QDRI) in conjunction with the RBWH involving Parkinson's disease (PD), Progressive Supranuclear Palsy, Friedreich's Ataxia (FA) with Huntington's disease (HD) and have utilised the RBWH multidisciplinary HD and FA Clinics for recruitment and coordination. Dr Adam contributes to the Prospective Imaging Study of Ageing (PISA) through QIMR Berghofer and is the Screening and Clinical Trials Lead for Queensland for the Australian Dementia Network (ADNeT).

The RBWH MND and neuromuscular research team comprises three neurologists, Associate Professor Robert Henderson, Professor Pamela McCombe and Dr Matthew Katz, 3 research nurses Susan Heggie, Kathryn Thorpe and Robyn Tuffley and Dr Dennis Yeow.

In 2021 there was successful completion of 3 neuromuscular clinical trials that are awaiting results, with ongoing involvement in 4 significant MND studies. Other research highlights include;

- Active clinical research involvement in other neuromuscular areas including autonomic neuropathy and chemotherapy-induced peripheral neuropathy and looking forward to 2 major clinical trials in inclusion body myopathy.
- Development of neuromuscular disease collaborations locally (University of Qld and Qld University of Technology), nationally (Brain & Mind Research Centre in Sydney) and internationally (Utrecht Netherlands, Phoenix USA).
- Ongoing research into the metabolic basis for MND led by Dr Shyuan Ngo and Dr Derik Steyn at UQCCR. The team has explored muscle and skin biopsies, cultured motor neurones and shown the important effect of metabolism on survival. The team has expanded, with a strong track record of PhD students and has close collaborations with leading international MND researchers. This project also contributed to the development of imaging studies at HIRF, with a focus on loss of appetite as a cause for weight loss in patients with MND, and the development of biomarker studies that consider the use of point of care technology for improved monitoring of loss of muscle mass in patients with MND.
- Members and contributors to the Sporadic Amyotrophic Lateral Sclerosis Australia Systems Genomics Consortium (SALSA-SGC) which brings together established ALS researchers, ALS research clinicians and researchers with expertise in analysis of genomics big data with a view to discovering genes and functional pathways that contribute to ALS pathogenesis and progression by exploiting genome-wide genetic and epigenetic profiling methods. The consortium is led by Prof Naomi Wray from the UQ and Associate Prof Ian Blair from Macquarie University, NSW.
- 2022 MND Australia grant in collaboration with QUT
- Dr Rob Nona – MPhil enrolment

Key outcomes for the RBWH epilepsy research team in 2021 included obtaining MRFF funding in the Stem Cell Therapies Mission. The project was entitled 'Transforming the paradigm of epilepsy care with precision medicine'. This PERSIST project involves personalising epilepsy regimes with stem cells and artificial intelligence for superior treatment outcomes.

Another milestone in 2021 has been the establishment of a UCB collaborative research project entitled 'A multicentre, open-label, longitudinal, prospective, pharmacokinetic phase 1b study in pregnant women with epilepsy treated with Lacosamide, to commence recruitment in 2022.

A Brain Foundation grant was also successful entitled '3D brain organoid models of epilepsy patients with cortical dysplasia as personalised medicine platforms' for commencement in 2022.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Andrew Wong	Excellence in Clinical Practice: SPIDER EEG Stroke research project	2021 Council of Ambulance Authorities Awards for Excellence
RBWH MND Group	Winner – Complex Health Challenges	Metro North Research Excellence Awards
RBWH MND	2 nd place in fundraising	RBWH Foundation 'Raise it for the Royal'

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
MNDA	Neurology	Astrocyte dysfunction and glutamate re-uptake in MND	MND Australia	\$100,000	2021-22
J O'Sullivan, R Gordon, R Adam	Neurology	The Queensland Drug Repurposing Initiative	Qld Government Advance Queensland Innovation Partnership	\$2,209,715	5y 2018-2022
L Leow, T Carroll, E Reuter, R Adam , S Riek	Neurology	The role of dopamine in age-related deficits in sensorimotor adaptation	Brain Foundation Research Gift	\$27,500.00	3yrs 2019–2022
R Adam	Neurology	The Australian Dementia Network (ADNeT): Bringing together Australia's dementia stakeholders	NHRMC Boosting Dementia Grant administered by University of Melbourne	\$132,000	4yrs 2020–2023
N Dissanayaka G Byrne, J O'Sullivan, R Adam , KL McMahon, A Bakker	Neurology	Uncovering a novel therapeutic target to reduce dementia risk in Parkinson's disease (TRIP study)	RBWH Foundation	\$50,000	1y 2021
R Gordon, JD O'Sullivan , A Kanthasamy	Neurology	Validating the functional role of the pathogenic microbiome metabolite Trimethylamine (TMA) at the gut-brain axis in Parkinson's disease	Michael J Fox Foundation	\$142,232	3y 2021-2023
R Coll, JD O'Sullivan , N Jayabalan, R Gordon	Neurology	Validating a novel glycolipid receptor as a disease-modifying therapeutic target for Parkinson's disease	Michael J Fox Foundation	\$232,905	3y 2021-2023
R Gordon TM Woodruff, A Kanthasamy; J O'Sullivan , M Cooper, K Schroeder	Neurology	Pharmacological targeting of inflammasome activation mechanisms in synuclein models of Parkinson's disease	Michael J Fox Foundation	\$99,848	3y 2019-2022
T O'Brien, K Bertram, L Vivash,, A Evans, T Kimber, J O'Sullivan , C Malpas, J Fielding, D Velakoulis, M Law	Neurology	Sodium Selenate as a Disease Modifying Treatment for Progressive Supranuclear Palsy (Sodium Selenate for PSP) (MRFF RCRDUN Neurological Disorders Grant administered by Monash University)	Medical Research Future Funds	\$2,639,490	5y 2020-2024

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
R Gordon, J O'Sullivan	Neurology	Drug repurposing using artificial intelligence and machine learning	Advance Queensland Mid-Career Fellowship	\$632,251	4y 2018 – 2022
R Gordon, J O'Sullivan	Neurology	CNS-targeted inhibitors of neuroinflammation for disease modification in Parkinson's disease	Michael J Fox Foundation	\$689,737	2y 2021-2023
A Kanthasamy, R Gordon, J O'Sullivan	Neurology	Comparative and Cross Validation of alpha-Synuclein Seeding Assays in Peripheral Biomaterials.	Michael J Fox Foundation Synuclein Biomarkers Program	\$664,459.71	3y 2021-2024
D Reutens, C J Bertram, N Kurniawan, H Healy	Neurology	Advancing the visualisation and quantification of nephrons with MRI	Australian Research Council	\$485,575	
D Reutens, J Bennett	Neurology	National facility for targeted alpha particle therapeutics	National Imaging Facility	\$1,170,000	
D Reutens, W S Price	Neurology	Terrestrial ecosystems and agricultural imaging hub	National Imaging Facility	\$1,900,000	
L Vadlamudi, E Wolvetang	Neurology/UQ-AIBN	A functional genomics approach to personalise refractory epilepsy management	RBWH Scholarship	\$40,000	1y 2021
E Wolvetang, P Kwan, L Vadlamudi, T O'Brien, Z Ge, A Anderson, M Shaker, A Antonic-Baker, H Leeson, B Rollo, M Javaid, Z Hunter, C Bennett	Neurology UQ Monash University	Personalising epilepsy regimes with stem cells and artificial intelligence for superior treatment outcomes	MRFF Stem Cells Mission	\$999,808	3y 2021-2024
L Vadlamudi	Neurology UQ	Developing a Queensland neuro-genomics service to underpin the era of precision-based medicine	MN Clinician Research Fellowship	\$742,793	4y 2021-2024
D Reutens (CIA) and 23 other applicants	Neurology	ARC Training Centre for Innovation in Biomedical Imaging Technology	ARC Industrial Transformation Training Centres	\$4,744,000	6y 2017-2023
D Reutens, T Woodruff, M Ruitenber, M Chen, G McLachlan	Neurology	Targeting complement in post-traumatic epileptogenesis	United States Department of Defense Congressionally Directed Medical Research Programs 2016	\$696,000	5y 2017-2022
M Bromwich, A Ward, C Bishop, D Reutens, V Vegh, M Angliss	Neurology	Portable bedside low field magnetic resonance imaging	BioMedTech Horizons	\$1,000,000	2y 2020-2022
D Reutens (CIA) and 34 other PIs	Neurology	ACRF Facility for Targeted Radiometals in Cancer	Australian Cancer Research Foundation	\$1,200,000	7y 2020-2027

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
F Nasrallah, D Reutens , S Chandra, J Walsham, T Russell, S Bhuta, J Ross, C Winter , J Bellapart-Rubio , S Senthiran	Neurology	PREDICT-TBI – PREdiction and Diagnosis using Imaging and Clinical biomarkers Trial in Traumatic Brain Injury: the value of Magnetic Resonance Imaging	Medical Research Future Fund	\$1,765,000	3y 2020-2023
D Reutens , F Nasrallah, B Ziegelaar, M Appleby, M Chen	Neurology	Danger signalling, traumatic brain injury and epileptogenesis	United States Department of Defense Congressionally Directed Medical Research Programs 2020	\$995,024	3y 2021-2024

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
JD O'Sullivan	R Gordon, R Adam , A Lehn, S Heshmat, G Radford-Smith , M Chatfield	Double-blind, placebo-controlled, cross-over trial of Livaux™ for the treatment of functional constipation and restoration of the microbiome in Parkinson's disease.	6	6
RJ Adam	Elizabeth Arnold	ADNeT Screening & Trials	29	17
R Henderson	D Yeow , S Heggie , K Thorpe , R Tuffley , J Wilson	A Phase3, Multi-Centre, Double-Blind, Randomised, Placebo-Controlled Trial to Evaluate the Efficacy and Safety of Reldesemtiv in Patients with Amyotrophic Lateral Sclerosis (ALS)	2	2 (ongoing recruitment)
R Henderson	D Yeow , S Heggie , K Thorpe , R Tuffley , J Wilson	A Phase 2, randomised, double-blind, placebo-controlled multi-centre study to evaluate the efficacy and safety of Pegcetacoplan in subjects with Amyotrophic Lateral Sclerosis (ALS)	3	3 (ongoing recruitment)
R Henderson	D Yeow , S Heggie , K Thorpe , R Tuffley , J Wilson	A Phase 1, Single Ascending Dose (SAD) and Multiple Ascending Dose (MAD), First-in-Human Study to Evaluate the Safety, Tolerability, Pharmacokinetics, and Efficacy of mEphA4-Fc in Healthy Volunteers and Patients with Amyotrophic Lateral Sclerosis (ALS)	6	6(ongoing recruitment)
D Wyld	R Henderson , D Yeow , S Heggie , K Thorpe , R Tuffley , J Wilson	The use of duloxetine for the treatment of chemotherapy-induced peripheral neuropathy	3	4

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
R Henderson	D Yeow, S Heggie, K Thorpe, R Tuffley, J Wilson	A Treatment Continuation Study for Patients with Amyotrophic Lateral Sclerosis/ Motor Neurone Disease Who Have Successfully Completed Study CMD-2019-001	8	19
R Henderson	D Yeow, S Heggie, K Thorpe, R Tuffley, J Wilson	A Phase 3 Open-label Extension Study to Assess the Long-term Safety and Efficacy of Intravenous ATB200Co administered with Oral AT2221 in Adult Subjects with Late onset Pompe Disease	0	4
R Henderson	D Yeow, S Heggie, K Thorpe, R Tuffley, J Wilson	A Phase 3, 4-week, Multicentre, Randomised, Double-Blind, Placebo-controlled, Parallel-group Study of TD-9855 in Treating Symptomatic neurogenic Orthostatic Hypotension in Subject with Primary Autonomic Failure	2	2

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Kate Hayward	Andrew Wong et al.	UPLIFT – a Phase IIa multicentre umbrella trial of integrated Upper limb and Language Impairment and Functional Training (UPLIFT) after stroke	0	0
M Delatycki	N Cranswick,, P Lockhart, J O’Sullivan, E Yiu	A randomised placebo-controlled crossover trial of micronised resveratrol as a treatment for Friedreich ataxia	2	4
N Dissanayaka	G Byrne, J O’Sullivan, R Adam , K McMahon, A Lehn, M Chatfield, R Littleford, D Copland, A Bakker, G Pontone, Z Mari, P Nestor, A Fazlollahi	Uncovering a Novel Therapeutic Target to Reduce Dementia Risk in Parkinson’s disease (TRIP)	0	5
N Dissanayaka	J O’Sullivan, G Byrne, R Marsh , D Copland, A Angwin, N Pachana, A Lehn, P Silburn, G Mellick	Parkinson’s Disease Research	0	19
N Dissanayaka	G Byrne, J O’Sullivan, R Adam , K McMahon, A Lehn, D Copland, N Pachana, L Mitchell, P Silburn, G Mellick	Markers and mechanisms of mild cognitive impairment in Parkinson’s disease	0	13
N Dissanayaka	G Byrne, J O’Sullivan, R Marsh , N Pachana	Anxiety in Parkinson’s Disease: Assessment, Intervention and Caregivers	0	3

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
N Dissanayaka	G Byrne, J O'Sullivan, R Adam , N Pachana, S Bennett, T Comans, T Russell, M Chatfield, A Broome, L Mitchell, V Wuthrich, K Appadurai, E Beattie, J Oram, M Cations, M MacAndrew, R Littleford, GWallis, A Lehn, D Copland	Cognitive Behaviour Therapy with Virtual Reality for Anxiety in Parkinson's Disease	0	0
A Ceslis	G Robinson, R Henderson, P McCombe, K Thorpe, S Heggie , A Henders, N Wray	Cognition and Behaviour in MND	5	115
F Garton	R Henderson, P McCombe, K Thorpe, S Heggie , A Henders, N Wray, S Ngo, F Steyn	Understanding Rare Disease Mechanisms; Clinical Presentation and Prediction	10	86
F Steyn	Z Castles, S Ngo, C Holdom	Endocrine and Appetite Targets and Therapies for Motor Neuron Disease; A prospective observational Study; Investigating the role of energy metabolism, lipid storage and appetite in MND	10	
S Ngo	F Steyn	Investigating the role of energy metabolism and lipid storage in MND; Studying responses of patient neurones and muscle derived from patient skin and muscle biopsies	10	
D Reutens	S Ghosh, TJ Phamnguyen , Q Yu, C Lander, L Vadlamudi, A-A Sullivan, J Pelekanos, K Irwin , J McGraughan, L Fink, X Liu	Imaging genomics of focal epilepsy: a pilot study	14	14
D Reutens	E Kuan, V Vegh, TJ Phamnguyen , K Thompson, C Lander, L Vadlamudi, X Chen, A-A Sullivan, S Walsh, K Irwin	Localising language cortex using task-free fMRI and naturalistic stimuli	Project open to recruitment 2022	n/a
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		A Randomised Double-Blind, Placebo-Controlled, Parallel Group, Multicentre Trial of CVL-865 as Adjunctive Therapy in Adults with Drug-Resistant Focal Onset Seizures (Realize Trial)	Project opened to recruitment 2021	2
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		E2007-G000-338 A Multicenter, Double-Blind, Randomized, Placebo-Controlled Trial With an Open-label. Extension Phase of Perampanel as Adjunctive Treatment in Subjects at Least 2 Years of Age With Inadequately Controlled Seizures Associated With Lennox Gastaut Syndrome	Nil, project completed	3

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		OPTALERT Seizure detection from eyelid movement using a wearable device in epilepsy	27	67
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		YKP3089C021 An Open Label, Multicentre, Safety and Pharmacokinetic Study of YKP3089 as Adjunctive Therapy in Subjects with Partial Onset Seizures	Nil project completed	
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		ES-481-C201 A Phase 2A, Randomized, Double-Blind, Placebo-Controlled Study to Evaluate the Efficacy, Safety and Pharmacokinetics of ES-481 in Adult Patients with Drug	Project opened to recruitment 2022	
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		A Phase 2, Double-Blind, Randomized, Placebo-Controlled Study to Assess Intracerebroventricular (ICV) Delivery of CT-010 via an Implantable Pump and a Cranial Port and Double Lumen Catheter (ICVRX) in Subjects with Focal Seizures, with Temporal Lobe Onset with or without Secondary Generalization	1	
DC Reutens Dr C Lander, Dr A Sullivan, Dr S Walsh, Dr. X Chen, L Vadlamudi, T Phamnguyen, W Rivlin		A 57-week, multicenter, active-treatment, Open-label extension trial of cvl-865 as adjunctive Therapy in adults with drug-resistant focal onset seizures	1	

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Wang Y, Pan Y, Li H, et al., for the THALES Investigators (incl. **Wong A.**), Efficacy and Safety of Ticagrelor and Aspirin in Patients with Moderate Ischemic Stroke: An Exploratory Analysis of the THALES Randomized Clinical Trial. 2021; 78: 1091-1098.
- Dissanayaka NN, Forbes E., Yang JHJ, Pourzinal D, **O'Sullivan JD**, Mitchell LK, Copland DA, McMahon KL, Byrne GJ. Anxiety disorders are associated with verbal memory impairment in patients with Parkinson's disease without dementia. J Neurology 2021 Aug 4: doi: 10.1007/s00415-021-10736-x Epub ahead of print

Journal Articles (RBWH staff in bold)

3. Michelle K Lupton, Gail A Robinson, **Robert J Adam**, Stephen Rose, Gerard J Byrne, Olivier Salvado, Nancy A Pachana, Osvaldo P Almeida, Kerrie McAloney, Scott D Gordon, Parnesh Raniga, Amir Fazlollahi, Ying Xia, Amelia Ceslis, Saurabh Sonkusare, Qing Zhang, Mahnoosh Kholghi, Mohan Karunanithi, Philip E Mosley, Jinglei Lv, Léonie Borne, Jessica Adsett, Natalie Garden, Jurgen Fripp, Nicholas G Martin, Christine C Guo, Michael Breakspear, A prospective cohort study of prodromal Alzheimer's disease: Prospective Imaging Study of Ageing: Genes, Brain and Behaviour (PISA) NeuroImage: Clinical 29, 102527

4. Vivash L, Bertram KL, Malpas CB, Marotta C, Harding IH, Kolbe S, Fielding J, Clough M, Lewis SJG, Tisch S, Evans AH, **O'Sullivan JD**, Kimber T, Darby D, Churilov L, Law M, Hovens CM, Velakoulis D, O'Brien TJ. Sodium selenate as a disease-modifying treatment for progressive supranuclear palsy: protocol for a phase 2, randomised, double-blind, placebo-controlled trial. *BMJ Open*. 2021 Dec 16;11(12):e055019. doi: 10.1136/bmjopen-2021-055019.

5. Zech M, Kumar KR, Reining S, Reunert J, Tchan M, Riley LG, Drew AP, **Adam RJ**, Berutti R, Biskup S, Derive N, Bakhtiari S, Jin SC, Kruer MC, Bardakjian T, Gonzalez-Alegre P, Keller Sarmiento IJ, Mencacci NE, Lubbe SJ, Kurian MA, Clot F, Méneret A, de Sainte Agathe JM, Fung VSC, Vidailhet M, Baumann M, Marquardt T, Winkelmann J, Boesch S. Biallelic APOEP Loss-of-Function Variants Cause Progressive Dystonia with Prominent Limb Involvement. *Mov Disord*. 2021 Oct 1. doi: 10.1002/mds.28804. Epub ahead of print. PMID: 34596301.

6. Forbes EJ, Byrne GJ, **O'Sullivan JD**, Yang J, **Marsh R**, Dissanayaka NN. Defining Atypical Anxiety in Parkinson's Disease. *Mov Disord Clin Pract* 2021 Apr 4;8(4):571-581.

7. Yang J, Pourzinal D, McMahon KL, Byrne GJ, Copland DA, **O'Sullivan JD**, Dissanayaka NN. Neural correlates of attentional deficits in Parkinson's disease patients with mild cognitive impairment. *Parkinsonism Relat Disord*. 2021 Feb 22;85:17-22.

8. Höglinger GU, Litvan I, Mendonca N, Wang D, Zheng H, Rendenbach-Mueller B, Lon HK, Jin Z, Fisseha N, Budur K, Gold M, Ryman D, Florian H; Arise Investigators (include **O'Sullivan JD**) Safety and efficacy of tilavonemab in progressive supranuclear palsy: a phase 2, randomised, placebo-controlled trial. *Lancet Neurol*. 2021 Mar;20(3):182-192.

9. Evans A, Fung VSC, **O'Sullivan JD**, Stell R, White R, Williams DR, Femia S, Onuk K. Characteristics of advanced Parkinson's disease patients seen in movement disorder clinics - Australian results from the cross-sectional OBSERVE study *Clinical Parkinsonism & Related Disorders*. 2021;4:100075

10. Swayne A, Warren N, Prain K, Gillis D, O'Gorman C, Tsang BK, **Muller C**, Broadley S, **Adam RJ**, **McCombe P**, Wong RC, Blum S. An Australian State-Based Cohort Study of Autoimmune Encephalitis Cases Detailing Clinical Presentation, Investigation Results, and Response to Therapy. *Front Neurol*. 2021 Feb 22;12:607773. doi: 10.3389/fneur.2021.607773.

11. Restuadi, R, Steyn, FJ, Kabashi E, Ngo, ST, **Henderson RD**, **McCombe PA** et al. Functional characterisation of a GWAS risk locus identifies *GPX3* as a lead candidate gene in ALS. *SSRN Electronic Journal* 2021. doi.org/10.2139/ssrn.3741233

12. **Henderson RD**, Agosti JM, **McCombe PA**, **Thorpe K**, **Heggie S**, Heshmat S, Appleby MW, Ziegelaar BW, T Crowe DT, Redlich GL. Phase 1b Dose-Escalation, Safety and Pharmacokinetic Study of IC14, a monoclonal antibody against CD14 for the treatment of amyotrophic lateral sclerosis. *Medicine (Baltimore)* 2021 Oct 22;100(42):e27421.

13. Sleutjes B, Jacobsen AB, Tankisi H, Gorkem Sirin NG, Oge AE, **Henderson RD**, van Doorn PA, van den Berg LH, van Eijk RPA. Advancing disease monitoring of amyotrophic lateral sclerosis with the compound muscle action potential scan. *Clinical Neurophysiology* 2021; 132: 3152-3159. <https://doi.org/10.1016/j.clinph.2021.09.014>

14. **Henderson RD**, Devine MS. Assessing the upper motor neurone – novel UMN biomarkers are needed for clinical trials. *J Neurol Neurosurg Psychiatry* 2021;1–1. doi: jnnp-2021-327948

15. Van Rheenen W, van der Spek RAA, Bakker MK, **Henderson RD**, **McCombe PA** et al. Common and rare variant association analyses in Amyotrophic Lateral Sclerosis identify 15 risk loci with distinct genetic architectures and neuron-specific biology *Nature Genetics* 2021; doi: 10.1038/s41588-021-00973-1

16. Vucic S, Wray N, Henders A, **Henderson RD**, Talman P, Mathers S et al. MiNDAUS partnership: a roadmap for the cure and management of motor Neurone disease. *ALS & FTD*; Accepted Sept 2021

17. Holdom CJ, van Mantgem MRJ, van Eijk RPA, Howe S, van den Berg LH, **McCombe PA**, **Henderson RD**, Ngo ST, Steyn FJ. Venous creatinine as a biomarker for loss of fat-free mass and disease progression in patients with amyotrophic lateral sclerosis. Accepted in *European Journal of Neurology* 2021; 2021 Nov;28(11):3615-3625. doi: 10.1111/ene.15003

18. Vucic S, **Henderson RD**, Mathers S, Needham M, Schultz D, Kiernan MC, for the TEALS study group. Safety and efficacy of dimethyl fumarate in ALS: randomized controlled study. *Annals of Clinical and Translational Neurology* 2021 Ann Clin Transl Neurol. 2021 Oct; 8(10): 1991–1999. Published online 2021 doi.org/10.1002/acn3.51446

Journal Articles (RBWH staff in bold)

19. McGill RB, Steyn FJ, Ngo ST, K.A. **Thorpe KA, Heggie S, Henderson RD, McCombe PA**, Woodruff TM. (2021) Monocyte CD14 and HLA-DR expression increases with disease duration and severity in amyotrophic lateral sclerosis, Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration, DOI: 10.1080/21678421.2021.1964531

20. Lee A, Arachchige BJ, **Henderson R**, Pow D, Reed S, Aylward J, **McCombe PA**. Elevated plasma levels of D-serine in some patients with amyotrophic lateral sclerosis. Amyotrophic Lateral Sclerosis and Frontotemporal Dementia, 2021;22(3-4):206-210

21. Restaudi R, Garton F, McRae... **McCombe PA, Henderson RD** et al. Polygenic risk score analysis for amyotrophic lateral sclerosis leveraging cognitive performance, educational attainment and schizophrenia. European Journal of Human genetics April 2021; 1-8. <https://doi.org/10.1038/s41431-021-00885-y>

22. Nabais MF, Laws SM, Lin T...**Henderson RD** et al Meta-analysis of genome-wide DNA methylation identifies shared associations across neurodegenerative disorders. Genome Biology 2021 22: 1-30

23. Van Rheenen W, van der Spek R, Bakker M.... **Henderson RD** et al. Common and rare variant association analyses in Amyotrophic Lateral Sclerosis identify 15 risk loci with distinct genetic architectures and neuron-specific biology. Nature Portfolio 2021 DOI: 10.21203/rs.3.rs-322430/v1

24. Holdom C, Ngo, ST, **McCombe PA, Henderson RD**, Steyn FJ, Low plasma hyaluronan is associated with faster functional decline in patients with amyotrophic lateral sclerosis. Accepted Amyotroph Lateral Scler Frontotemporal Degener 2021 Sep 27;1-7. doi: 10.1080/21678421.2021.1918721

25. Hop PJ, **Henderson RD, McCombe PA** et al. Genome-wide study of DNA methylation in Amyotrophic Lateral Sclerosis identifies methylated differentially loci and implicates metabolic, inflammatory and cholesterol pathways. Accepted Genome Biology March 2021 <https://doi.org/10.1101/2021.03.12.21253115>

26. Caggiano C, Celona B, Garton F, Mefford J, Black BL, **Henderson R**, Lomen-Hoerth C, Dahl A, Zaitlen N CelFiE: Comprehensive cell type decomposition of circulating cell-free DNA. Nature Communications 2021; 12:1-13

27. Ngo ST, Wang H, **Henderson RD**, Bowers C, Steyn FJ. Ghrelin as a treatment for amyotrophic lateral sclerosis J Neuroendocrinol. 2021 Jan 29:e12938. doi: 10.1111/jne.12938.

28. Mizrahi D, Park SB, Li T, Timmins HC...**Henderson RD** et al. Hemoglobin, Body Mass Index, and Age as Risk Factors for Paclitaxel- and Oxaliplatin-Induced Peripheral Neuropathy. JAMA Netw Open. 2021 Feb 1;4(2):e2036695. doi:10.1001/jamanetworkopen.2020.3669

29. Comet investigator group (**incl Henderson, R**) Safety and efficacy of avalglucosidase alfa versus alglucosidase alfa in patients with late-onset Pompe disease (COMET): a phase 3, randomised, multicentre trial. Lancet Neurology 2021 Vol.20 (12), p.1012-1026

30. PROPEL Study Group (**incl Henderson, R**): Safety and efficacy of cipaglucosidase alfa/miglustat versus alglucosidase alfa/placebo in late-onset Pompe disease (PROPEL): a global, double-blind, randomised phase 3 trial. Lancet Neurology 2021; 20: 1027-1037.

31. Refals Investigators (**incl Henderson, R**): Safety and efficacy of oral levosimendan in people with amyotrophic lateral sclerosis (the REFALS study): a randomised, double-blind, placebo-controlled phase 3 trial. Lancet Neurology 2021; 20:821-831.

32. Shefner, JM, Andrews, JA, Genge, A, **Henderson RD** et al. , A Phase 2, Double-Blind, Randomized, Dose-Ranging Trial Of Reldesemtiv In Patients With ALS. Amyotroph Lateral Sclerosis Frontotemporal Degener. 2021 May;22(3-4):287-299.

33. Lawrence S, Llewellyn S, Hunt H, Cowin G, Sturgess DJ, **Reutens D**. Anatomy of the lumbar interspinous ligament: findings relevant to epidural insertion using loss of resistance. Reg Anesth Pain Med 2021;46:1085-1090.

34. Lawrence S, Malacova E, **Reutens D**, Sturgess DJ. Increased maternal body mass index is associated with prolonged anaesthetic and surgical times for caesarean delivery but is partially offset by clinician seniority and established epidural analgesia. Aust N Z J Obstet Gynaecol 2021;61:394-402.

35. Lim TX, Ahamed M, **Reutens DC**. The aryl hydrocarbon receptor: A diagnostic and therapeutic target in glioma. Drug Discov Today 2021.

36. Lim TX, Pierens GK, Bernhardt PV, Ahamed M, **Reutens DC**. Synthesis, isolation and characterisation of fluorinated-benzimidazoisoquinoline regioisomers. Magn Reson Chem 2021;59:1154-1159.

Journal Articles (RBWH staff in bold)

37. Marstaller L, Fynes-Clinton S, Burianova H, **Reutens DC**. Salience and default-mode network connectivity during threat and safety processing in older adults. *Hum Brain Mapp* 2021;42:14-23.
38. Moinian S, Vegh V, O'Brien K, **Reutens D**. Magnetic resonance fingerprinting residual signals can disassociate human grey matter regions. *Brain Struct Funct* 2022;227:313-329.
39. **Phamnguyen TJ**, Szekely A, Swinburn S, et al. Usefulness and yield of routine electroencephalography: a retrospective study. *Intern Med J* 2021.
40. Ziaei M, Bonyadi MR, **Reutens DC**. Age-related differences in structural and functional prefrontal networks during a logical reasoning task. *Brain Imaging Behav* 2021;15:1085-1102.
41. Ziaei M, Oestreich L, **Reutens DC**, Ebner NC. Age-related differences in negative cognitive empathy but similarities in positive affective empathy. *Brain Struct Funct* 2021;226:1823-1840.
42. **Thienan John Phamnguyen**, Manori Wijayath, Andrew Bleasel, Zebunnessa Rahman, Melissa Bartley, Mark Dexter, Chong Wong. (2021). Localisation and stimulation of the parietal eye field. *Epilepsy Disorders Journal*. <https://www.jle.com/10.1684/epd.2021.1386>
43. **Thienan John Phamnguyen**, Alison Szekely, Samuel Swinburn, Sangamithra Babu, Robert Boland-Freitas, David Reutens, Nigel Wolfe. (2021). Usefulness and yield of routine electroencephalography: a retrospective study. *Internal Medicine Journal*. <https://doi.org/10.1111/imj.15556>
44. Vajda FJE, Perucca P, O'Brien TJ, **Lander CM, Eadie MJ**. Teratogenic effects of zonisamide Seizure, 2021, Oct;91:490. doi: 10.1016/j.seizure.2021.07.030. Epub 2021 Jul 30.
45. Vajda FJ, O'Brien TJ, Graham JE, Hitchcock AA, **Lander CM, Eadie MJ**. Pregnancy outcomes in women with surgically treated epilepsy, *Acta Neurol. Scand.* 2021 Nov;144(5):473-477.
46. Vajda FJE, O'Brien TJ, Graham JE, Hitchcock AA, **Lander CM, Eadie MJ**. The contribution of non-drug factors to fetal malformation in anti-seizure-medication-treated pregnancy. *Epilepsy Behav.* 2021, 118:May;118:107941.doi: 10.1016/j.yebeh.2021.107941.
47. Vajda FJE, Brien TJO, Graham JE, Hitchcock AA, Perucca P, **Lander CM, Eadie MJ**. The control of treated generalized and focal epilepsies during pregnancy
Epilepsy Behav. 2021 Dec;125:108406. doi: 10.1016/j.yebeh.2021.108406. Epub 2021 Nov 11
48. Madan A, Donovan PJ, Risetto T, Trenerry H, **Lander CM** Monitoring for valproate and phenytoin toxicity in hypoalbuminaemia: A retrospective cohort study
49. *Br J Clin Pharmacol.* 2021 Nov;87(11):4341-4353.doi: 10.1111/bcp.14853. Epub 2021 May 4
50. Hunter Z., Leeson H. C., Shaker M., Wolvetang E. J., **Vadlamudi L**. Generation of induced pluripotent stem cell lines from peripheral blood mononuclear cells of three drug resistant and three drug responsive epilepsy patients. *Stem Cell Research* 2021, <https://doi.org/10.1016/j.scr.2021.102564>
51. Rodriguez-Acevedo A.J., Gordon L.G., Waddell N., Hollway G., **Vadlamudi L**. Developing a gene panel for pharmacoresistant epilepsy: a review of epilepsy pharmacogenetics. *Pharmacogenomics.* 2021 Mar;22(4):225-234. doi: 10.2217/pgs-2020-0145. Epub 2021 Mar 5.
52. Cook D, **Brown H**, Widanapathirana I, Shah D, Walsham J, Trakic A, Zhu G, Zamani A, Guo L, Brankovic A, Al-Saffar A, Stancombe A, Bialkowski A, Nguyen P, Bialkowski K, Crozier S and Abbosh A (2021) Case Report: Preliminary Images From an Electromagnetic Portable Brain Scanner for Diagnosis and Monitoring of Acute Stroke. *Front. Neurol.* 12:765412. doi: 10.3389/fneur.2021.765412
53. Yassi N, Zhao H, Churilov L, Campbell BCV, Wu T, Ma H, Cheung A, Kleinig T, **Brown H**, Choi P, Jeng JS, Ranta A, Wang HK, Cloud GC, Grimley R, Shah D, Spratt N, Cho DY, Mahawish K, Sanders L, Worthington J, Clissold B, Meretoja A, Yogendrakumar V, Ton MD, Dang DP, Phuong NTM, Nguyen HT, Hsu CY, Sharma G, Mitchell PJ, Yan B, Parsons MW, Levi C, Donnan GA, Davis SM. Tranexamic acid for intracerebral haemorrhage within 2 hours of onset: protocol of a phase II randomised placebo-controlled double-blind multicentre trial. *Stroke Vasc Neurol.* 2021 Nov 30;svn-2021-001070. doi: 10.1136/svn-2021-001070. Epub ahead of print. PMID: 34848566.

Book Chapters (RBWH staff in bold)

1. **Adam, Robert**, Marshall, Charles and Birns, Jonathan (2020). Neurology. In Rupa Bessant, Jonathan Birns and Charlotte Ford (Ed.), Medicine for MRCP, Oxford, United Kingdom: Oxford University Press.

Keynote or Plenary Lectures given in 2021

Date	Title
10/2021	Session Chair: Decision-making in hyperacute stroke management, Stroke Society of Australasia ASM (virtual)
10/2021	Session Chair: Abstract Session: Health Systems of Care, Stroke Society of Australasia ASM (virtual)
10/2021	Session Chair: Neuroimaging, Stroke Society of Australasia ASM (virtual)
06/2021	Conference Chair: Australasian Stroke Academy Annual Meeting, Newcastle NSW
01-02/2021	Eight-Year Experience of Stereoelectroencephalography at Westmead Hospital and The Children's Hospital at Westmead. 7th Asian-Oceanian Congress on Clinical Neurophysiology (AOCCN), Kuala Lumpur, Malaysia
11/2021	2021 Peter Bladin Prize Lecture awarded by the Epilepsy Society Australia, Women with Epilepsy
07/2021	Society of Obstetric Medicine Australia and New Zealand Scientific Meeting Epilepsy and Pregnancy
11/2021	Epilepsy Society of Australia Annual Scientific meeting Integrating genomics into clinical epilepsy care
08/2021	UCB Neurology Day, Panel Discussion Optimizing the management of women with epilepsy

Department of Nuclear Medicine

The Department of Nuclear Medicine at the Royal Brisbane and Women's Hospital (RBWH) is one of the largest in Australia. It provides a referral, diagnostic and therapeutic nuclear medicine service with four SPECT/CT gamma cameras, one solid state cardiac camera, BMD dual energy X-ray absorptiometry (DEXA) and a pQCT scanner. Research interests in nuclear medicine include image reconstruction methodologies, application of gating and bone mineral densitometry in various disease states.

The department hosts the state-wide Specialised PET Services Queensland, which operates two state-of-the-art PET/CT scanners and Q-TRaCE, a TGA accredited radiopharmaceutical laboratory operating a cyclotron. It offers research facilities to a wide variety of investigators. In addition to conventional tracers such as fluorodeoxyglucose (18FDG), the Service also conducts research using [18F]DOPA, [18F]MISO, [18F]PSMA-1007, [18F]GE180 and [68Ga]Ga-DOTA TATE, [68Ga]Ga-PSMA-11 and [68Ga]Ga-Pentixafor. There is also ongoing research interest in image reconstruction algorithms, respiratory gating and image analysis techniques.

The department also provides a radionuclide therapy service for patients with inoperable neuroendocrine tumours as well as sites in multi-centre trials for the treatment of metastatic prostate cancer. Whilst predominantly focussed upon clinical service delivery, retrospective analysis of patients previously treated in our statewide NET service aims to more effectively tailor our treatment to patients most likely to benefit and minimise the risk of side effects.

- TheraP Lu-PSMA multicentre RCT: recruited ahead of schedule, RBWH was 3rd highest recruitment of 11 national sites. Results were presented at American Society of Clinical Oncology meeting in 2020 and published in The Lancet 2021.
- Karen Lindsay (Nuclear Medicine Technologist) successful in LINK funding application for ROLLIS implementation.
- Ongoing support for Herston Imaging Research Facility projects including joint appointment of a NIF Radiochemistry Fellow (UQ/HIRF) who will work in the Q-TRaCE laboratories.
- In collaboration with Cancer Care Services, RBWH nuclear medicine is participating in 3 multicentre radionuclide therapy trials:
 - UpFront PSMA study (prostate cancer)
 - ENZA-p study (prostate cancer)
 - GoTHAM study (Merkel cell carcinoma)
- New radiopharmaceuticals implemented and used in clinical research studies in 2021
 - [18F]FDGalactose in LiverMap study (imaging at HIRF)
 - [18F]NAV4694 for Australian Dementia Network screening (imaging at HIRF and Calvary Mater Newcastle hospital)
 - [68Ga]-FAPI-46 for pancreatic cancer imaging (imaging at HIRF)
- Research contract with CSIRO completed in 2021 (Ga-68 and Cu-64 of novel pharmaceutical).

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Candice Nish	Radpharm Award	ANZSNM National Conference
Dr Evyn Arnfield	AANMS Registrar Research Award	ANZSNM National Conference

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Pattison DA,	Dept of Nuclear Med Specialised PET Services, RBWH	I-124 PET Directed Redifferentiation Therapy for Radioiodine Refractory Thyroid Cancer: the I-First Study	Medical Research Future Fund (MRFF)	\$2.7 million	2021 ongoing
Ramsay SC	Dept of Nuclear Med Specialised PET Services, RBWH	XSPECT QUANT bone scan for cardiac amyloidosis	ARTnet multicentre trial grant	\$120,000	2021 ongoing
Thomas P, Hooper J, Munro T, Wyld D, Perrin L, Lourie R, Rose S, Puttick S	Department of Nuclear Medicine, Medical Oncology	A new radio-imaging agent to guide targeted therapy for epithelial ovarian cancer	2020 Medical research future fund	\$1.9 million	2020-2023
Azad A, Hofman M, Murphy D, Vela I, Risbridger G, Taylor R, Trapani J, Sandhu S, Williams S, Violet J, Lawrentschuk N, Pattison DA, Francis R.	Dept of Nuclear Med Specialised PET Services, RBWH	"Up-Front PSMA" Alliance: Using Theranostics Early to Eradicate Prostate Cancer and Developing Novel Strategies for PSMA-negative disease	Prostate Cancer Research Alliance Grant (Movember / Cancer Australia)	\$4 million	2019-2022
Sandhu S, Scolyer R, Atkinson V, Poulsen M, Emmett L, Tothill R, Neeson P, Pattison DA, Guminski A	Dept of Nuclear Med Specialised PET Services, RBWH	TarGeted Therapy and Avelumab in Merkel Cell Carcinoma (GoTHAM) Trial	MRFF – Low Survival Cancers & Diseases	\$1.8 million	2018 - 2022

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Stuart Ramsay	Manoj Bhatt, John Atherton, Annmarie Bosco, Eva Wagner, Shankar Vamadevan, Roslyn Francis, William MacDonald	Multicentre registry of individuals undertaking bone scans to assess for suspected transthyretin (ATTR) cardiac amyloidosis	0	0

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Emmett L	Goh JC, Pattison DA, Dhiantravan N, Ramsay SC, Thomas P, Suder A, Al-Saig H, Kuchel A.	ENZA-P Trial	11	12

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Azad A	Suder A, Pattison DA, Dhiantravan N, Ramsay SC, Thomas P, Suder A, Al-Saig H, Kuchel A.	UpFrontPSMA Trial	4	4
Sandhu S	Wyld DK, Pattison DA, Eastgate M, Lin C, Chua B, Al-Saig H.	TarGeted Therapy and Avelumab in Merkel Cell Carcinoma (GoTHAM) Trial	1	1

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. **Arnfield EG, Thomas PA, Roberts MJ**, Pelecano AM, **Ramsay SC, Lin CY, Latter MJ, Garcia PL, Pattison DA**. Clinical insignificance of [18F]PSMA-1007 avid non-specific bone lesions: a retrospective evaluation. *European Journal of Nuclear Medicine and Molecular Imaging* 2021. Accepted for publication 07/06/2021. <https://doi.org/10.1007/s00259-021-05456-3>
2. **Pattison DA, Debowski M**, Gulhane B, **Arnfield EG**, Pelecanos AM, **Garcia PL, Latter MJ, Lin CY, Roberts MJ, Ramsay SC, and Thomas PA**. Prospective intra-individual blinded comparison of [18F]PSMA-1007 and [68Ga]Ga-PSMA-11 PET/CT imaging in patients with confirmed prostate cancer. *European Journal of Nuclear Medicine and Molecular Imaging*.
3. Emmett L, Buteau J, Papa N, Moon D, Thompson J, **Roberts M**, Rasiah K, **Pattison DA, Yaxley J, Thomas P**, Hutton A, Agrawal S, Amin A, Blazeovski A, Chalasani V, Ho B, Nguyen A, Liu V, Lee J, Sheehan-Dare G, Kooner R, Coughlin G, Chan L, Cusick T, Namdarian B, Kapoor J, Alghazo O, Woo H, Lawrentschuk N, Murphy D, Hofman M, Stricker P. The additive diagnostic value of Prostate Specific Membrane Antigen PET-CT to multiparametric MRI triage in the diagnosis of prostate cancer (PRIMARY): A prospective multi-centre study. *European Urology* (2021) <https://doi.org/10.1016/j.eururo.2021.08.002>
4. **Chikatamarla VA**, Okano S, **Jenvey P**, Ansaldo A, **Roberts M, Ramsay S, Thomas PA., Pattison DA**. Risk of metastatic disease using [18F]PSMA-1007 PET/CT for primary prostate cancer staging. *European Journal of Nuclear Medicine and Molecular Imaging* Res 11, 128 (2021). <https://doi.org/10.1186/s13550-021-00869-5>
5. **Cuda TJ**, He Y, Kryza T, Khan T, Tse BW, Sokolowski KA, Liu C, Lyons N, Gough M, Snell CE, **Wyld DK**, Rose S, Riddell AD, Stevenson ARL, **Thomas PA**, Clark DA, Puttick S, **Hooper JD**. Preclinical molecular PET-CT imaging targeting CDCEP1 in colorectal cancer. Preclinical molecular PET-CT imaging targeting CDCEP1 in colorectal cancer. *Contrast Media Mol Imaging Volume* 2021, Article ID 3153278; doi 10.1155/2021/3153278
6. **McGeorge S, Kwok M**, Jiang A, Emmett L, **Pattison DA, Thomas PA, Yaxley JW, Roberts MJ**. Dual-Tracer Positron-Emission Tomography Using Prostate-Specific Membrane Antigen and Fluorodeoxyglucose for Staging of Prostate Cancer: A Systematic Review. *Advances in Urology Volume* 2021, Article ID 1544208, <https://doi.org/10.1155/2021/1544208>
7. Woodford J, Gillman A, **Jenvey P**, Roberts J, Woolley S, Barber BE, Fernandez M, Rose S, **Thomas P**, Anstey NM, McCarthy JS. Positron emission tomography and magnetic resonance imaging in experimental human malaria to identify organ-specific changes in morphology and glucose metabolism: A prospective cohort study. *PLOS Medicine*. 26 May 2021. <https://doi.org/10.1371/journal.pmed.1003567>
8. **Lin C**, Ballah T, **Nottage M**, Hay K, **Chua B, Kenny L, Thomas P, Teng M**, Keller J, Le T, Edmunds J, **Hughes B**. A Prospective Study Investigating the Efficacy and Toxicity of Definitive ChemoRadiation and Immunotherapy (CRIO) in Locally and/or Regionally Advanced Unresectable Cutaneous Squamous Cell Carcinoma. *Radiation Oncology*. 2021;16:69.
9. Crowe SB, Charles PH, Cassim N, Maxwell SK, Sylvander SR, **Smith JG**, Kairn T. Predicting the required thickness of custom shielding materials in kilovoltage radiotherapy beams. *Phys Med*. 2021 Jan;81:94-101. doi: 10.1016/j.ejmp.2020.12.008. *Epub* 2021 Jan 11. PMID: 33445126.
10. Gillman A, Rose S, **Smith J**, Dowling J, Dowson N. (2021). A Comparison of Techniques for PET Data-Driven Tracking of Head Motion. 10.21203/rs.3.rs-202051/v1.

Journal Articles (RBWH staff in bold)

11. **Nalder M, Ladwa R, Raina A, Burge ME, Love A, Pattison DA, Ramsay S and Wyld D.** 177Lu-DOTATATE peptide receptor radionuclide therapy (PRRT) in patients with somatostatin-expressing neuroendocrine tumors: A real-world retrospective review of efficacy and safety from an Australian tertiary cancer centre. *Journal of Clinical Oncology* 2021; 39:15_suppl, e16198-e1619.
12. Bennett O, **Ramsay S**, Malacova E et al. The Ketogenic Diet and Cerebral FDG Uptake. *Int Med J* 2021; 51:15-16.
13. **Dhiantravan N**, Emmett L, Joshua AM, **Pattison DA**, Francis RJ, Williams S, Sandhu S, David ID, Vela I, Neha N, Bressel M, Murgphy DG, Hofman MS, Azad AA. UpFrontPSMA: a randomized phase 2 study of sequential ¹⁷⁷Lu-PSMA-617 and docetaxel vs docetaxel in metastatic hormone-naïve prostate cancer (clinical trial protocol). *BJU International* 2021; doi: 10.1111/bju.15384.
14. Chan DL, Ulaner GA, **Pattison DA, Wyld D**, Ladwa R, Kirchner J, Li BT, Lai WV, Pavlakis N, Roach PJ, Bailey DL. Dual Positron Emission Tomography imaging in bronchial neuroendocrine neoplasms (NENs): The NETPET score as a prognostic biomarker. *Journal of Nuclear Medicine* 2021; doi: 10.2967/jnumed.120.257659.
15. **Arnfield E, Pattison DA.** Identification of Isolated Hepatic Sarcoidosis With 18F-FDG PET/CT and MRI. *Clinical Nuclear Medicine* 2021; doi: 10.1097/RLU.0000000000003613.
16. **Wong BZY, Dickie G, Garcia P, Scott D, Pattison DA.** 124I-PET/CT-Guided Diagnosis and Personalized Treatment of Metastatic Papillary Thyroid Cancer to the Pancreas. *Clinical Nuclear Medicine* 2021; 46: 337-339.
17. **Ryder SJ, Love AJ**, Duncan EL, **Pattison DA.** PET detectives: Molecular imaging for pheochromocytomas and paragangliomas in the genomics era. *Clinical Endocrinology (Oxf)* 2021; 95: 13-28.
18. **Roberts MJ**, Morton A, Donato P, **Kyle S, Pattison DA, Thomas P**, Coughlin G, **Esler R, Dungalison N**, Gardiner RA, Doi SA, Emmett L, **Yaxley J.** 68Ga-PSMA PET/CT tumour intensity pre-operatively predicts adverse pathological outcomes and progression-free survival in localised prostate cancer. *European Journal of Nuclear Medicine & Molecular Imaging* 2021; 48: 477-482.
19. **Tariq A, Kwok M, Pearce A**, Rhee H, **Kyle S**, Marsh P, Raveenthiran S, Wong D, McBean R, Westera J, **Dungalison N, Esler R, Navaratnam A, Yaxley JW, Thomas P, Pattison DA, Roberts MJ.** The role of dual tracer PSMA and FDG PET/CT in renal cell carcinoma (RCC) compared to conventional imaging: A multi-institutional case series with intra-individual comparison. *Urol Oncol* 2021; 8:S1078-1439(21)00502-0. doi: 10.1016/j.urolonc.2021.11.006.
20. Hofman MS, Emmett L, Sandhu S, Iravani A, Joshua AM, **Goh JC, Pattison DA**, Tan TH, Kirkwood ID, Ng S, Francis RJ, Gedye C, Rutherford NK, Weickhardt A, Scott AM, Lee ST, Kwan EM, Azad AA, Ramdave S, Redfern AD, Macdonald W, Guminski A, Hsiao E, Chua W, Lin P, Zhang AY, McJannett MM, Stockler MR, Violet JA, Williams SG, Martin AJ, Davis ID. [¹⁷⁷Lu]Lu-PSMA-617 versus cabazitaxel in patients with metastatic castration-resistant prostate cancer (TheraP): a randomised, open-label, phase 2 trial. *Lancet* 2021; 397: 797-804.
21. Kalff V, Iravani A, Akhurst T, **Pattison DA**, Eu P, Hofman MS, Hicks RJ. Utility of ⁶⁸Ga-DOTA-Exendin-4 positron emission tomography-computed tomography imaging in distinguishing between insulinoma and nesidioblastosis in patients with confirmed endogenous hyperinsulinaemic hypoglycaemia. *Intern Med J.* 2021 Oct;51(10):1657-1664. doi: 10.1111/imj.15141.

Keynote or Plenary Lectures given in 2021

Date	Title
11/2021	Experiences from the RBWH Radiopharmaceutical Laboratory, Melissa Latter Engineering and Physical Sciences in Medicine (EPSM) 2021
11/2021	Dosimetry Software, Steven Goodman. Engineering and Physical Sciences in Medicine (EPSM) 2021

Supportive and Palliative Care

Due to the impact of COVID-19 we have had another quiet year of research in palliative care this year. We did complete recruitment to the Med Cann1 trial which is now being prepared for publication.

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Prof Janet Hardy	Dr Alison Kearney	Oral Medicinal Cannabinoids to Relieve Symptom Burden in the palliative care of patients with advanced cancer; a double blinded,	9	18
Dr Robert Greaves	A Prof Carol Douglas	The Intensive Care Palliative Liaison Study	250	250

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Prof David Currow, Palliative Care Clinical Studies Collaborative	Alison Kearney, Carol Douglas	Alison Kearney, Carol Douglas	4	31

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. **Dr Justin Kutzko**, Defining the expected 30 day mortality for patients undergoing palliative radiotherapy :a meta-analysis ;Journal: Radiotherapy and Oncology accepted for publication 19/01/22

Pharmacy

The Pharmacy Department at RBWH has had another year of building up on its program of research by undergraduate students as a component of quality use of medicine projects, through research projects by pharmacy trainees at intern and foundation residency level, and projects that are being undertaken as higher degree research at Masters and doctorate levels being undertaken in collaboration with researchers at University of Queensland Schools of pharmacy and Schools of medicine, Queensland Universities of Technology and overseas Universities in Europe and Sri Lanka.

Exciting novel research has included Dr Karen Davies development and validation of a nursing safe medication administration evaluation and feedback tool associated with 3 peer reviewed publications so far. The cancer care research team continues its collaborative work with the Bone Marrow Transplant team in management of mucositis secondary to chemotherapy. Cancer Care Pharmacy started regular "research and education" meeting this year

This year saw a number of new research collaborations with Abby Yu beginning a project funded by a RBWH Scholarship investigating the impact of a clinical pharmacist joining the medical and nursing team to optimise the management of patients with diabetes pre- and post-surgery. Nic Anning initiated a PhD associated with his collaborative research with upper GI Surgical team to investigate the impact of various gastric diversion or reduction surgeries on the absorption of certain medications with narrow therapeutic ranges.

To further enhance safe and effective medication primary and translational research the Centre for Safe and Effective Medication Management has been established conjointly between University of Queensland School of Medicine and School of Pharmacy and the position of an Associate Professor and 3 post doctorate fellow position established. The centre comes with a range of funding which will further support higher degree research and post doctorate research in the area of Safe and Effective medication practice, with a focus on translational research.

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Lia Paradissis	Pharmacy	Medication harm in patients after Acute Myocardial Infarction	University PhD Scholarship	\$90,000	3 years in 2 nd year
Kylie Mueller, Karen Whitfield, Ian Coombes	Pharmacy	Impact of early discharge, follow up in high risk cardiac patients	RBWH, Foundation Scholarship	\$38,082	1 year
Nic Anning, Karen Whitfield	Pharmacy	Pre and post-operative medication management in bariatric patients	RBWH Foundation Scholarship	\$38,082	1 year
Midori Nakagaki	Pharmacy/ Cancer Care	Improving oral mucositis management in patients undergoing haematopoietic stem cell transplantation	RBWH Foundation Scholarship	\$116,585	3 yrs (2019-2021)
Karen Davies, Peter Donovan, Ian Coombes, Karen Whitfield	Pharmacy, clinical pharmacology	Evaluation of Nurse Medication Administration Evaluation Feedback Tool -	MN Collaborative Research	\$105,000	3 years
Tim Chen, Sarah Hilmer, Ian Coombes, Charles Denaro	Pharmacy + Internal medicine	ASPIRE <u>A</u> Systems <u>a</u> Pproach to enhancing community-based medication <u>R</u> evue	MRFF	\$2.7 Million (RBWH + MN PHN is 1 of 4 sites)	5 years
Roberts J, Lipman J, Peake S, Turnidge J, Slavin M, Hopkins P, Paul S, De Waele J, Joynt G.	ICU	Centre of Research Excellence - REduce the burden of antimicrobial reSistance through oPtimal, persONalised Dosing (RESPOND).	(NHMRC APP2007007)	\$2,500,000	2021-25

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Roberts J, Lipman J, Paterson D, Abdul-Aziz MH	ICU	Continuous vs intermittent infusion of β -lactam antibacterial drugs: impact on resistance and outcomes in sepsis	US Food and Drug Administration (FDA)	\$535,640.	2021-23
Roberts JA.	ICU	PERSONA: PERSONalised Anti-infective treatment solutions: all patients, all ages, all countries.	University of Queensland Strategic Initiatives Fund	\$780,000.	2021-24,
Roberts JA	ICU	REDEFINING ANTIMICROBIAL USE TO REDUCE RESISTANCE AND PROLONG THEIR CLINICAL UTILITY	Queensland Advancing Clinical Research Fellowship, Queensland Health	\$499,950	2020-24
Cree M, Mattke A, Schlapbach L, Parker S, Roberts JA	CHQ	Pharmacokinetic modelling of antibiotics and antifungals (antimicrobials) in critically ill children on life saving therapies (extracorporeal therapies).	Study Research and Trust Account, Children's Health Queensland,	\$20,450	2020-2021
Carla Scuderi	Kidney Health Service	Improving patient centred outcomes in kidney transplant recipients	RBWH Scholarship	\$117,000	2019-2021
Lipman J, Abdul-Aziz MH, Dhanani J, Fourie C, Roberts JA.	ICU	Developing evidence-based antimicrobial dosing guidelines during extracorporeal therapies using advanced pharmacometric methods: pharmacokinetics of cefepime, ceftriaxone and ceftolozane/tazobactam during extracorporeal membrane oxygenation (ECMO) and/or renal replacement therapy (RRT).	RBWH Foundation Research Project Grant,	\$49,315	2020-2021
Roberts JA, Lipman J, De Waele J, Koulenti D.	ICU	Novel dosing regimens to maximise antibiotic effectiveness for treatment of pneumonia in the intensive care unit	NHMRC Project Grant (APP1162281)	\$815,403	2019-22
Wainwright C, Bell SC, Wason J, Thomson R, Roberts JA , Coin L, Byrnes J, Tiddens H, Grimwood K, Ahern S.,	ICU	A platform clinical trial approach to the management of Mycobacterium abscessus complex.	Medical Research Futures Fund Lifting Clinical Trials and Registries Capacity (LCTRC) grant	\$2,091,178	2018-22
Lipman J, Roberts JA, Myburgh J, Peake S, Dulhunty J, Paterson D, McGuinness S, Rhodes A, DeWaele J, Finfer S.	ICU	BLING III: A phase III randomised controlled trial of continuous beta-lactam infusion compared with intermittent beta-lactam dosing in critically ill patients.	NHMRC APP1121481	\$3,269,942	2017-21

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Roberts JA	ICU	Redefining antibiotic dosing to reduce bacterial resistance	National Health and Medical Research Council of Australia Practitioner Fellowship (NHMRC APP1117065)	\$474,512.	2017-21

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Adrienne Kostellar	Prof Ian Coombes, A/Prof Andrew Hale , Dr Michael Barras, A/Prof Neil Cottrell	Evaluation of High-Risk Discharge Pharmacist role	Not yet commenced recruitment	
Kylie Mueller	A Prof Karen Whitfield, Prof Ian Coombes, John Atherton	To investigate the impact of a pharmacist medication management across the continuum	Not Yet Recruited	
Elizabeth Doran	A/ Prof Karen Whitfield, Prof Ian Coombes, Prof Louise Cullen	The Role of the Emergency Department Pharmacist (EDP) in the Management of Drug Toxicities	Not yet commenced	
Abby Yu	Dr Michael D'Emden, A Prof Karen Whitfield, Dr Andrew Hale	Impact of a multidisciplinary Preoperative Diabetes Optimisation Clinic on patients' perioperative glycaemic control and other surgical-related outcomes	19 patients	27 patients
Midori Nakagaki	A/Prof Glen Kennedy, A/Prof Karen Whitfield	Improving oral mucositis management in patients undergoing haematopoietic stem cell transplantation		
Midori Nakagaki	A/Prof Glen Kennedy, A/Prof Karen Whitfield , Alexandra Clavarino	A Randomised Trial of Topical Polaprezinc to Prevent Oral Mucositis in Patients Undergoing Haematopoietic Stem Cell Transplantation (ToPaZ Study)	71	71
Danielle Silvestro	Vivian Day, Grant Partridge	Implementation and assessment of competency standards for key skill requirements for RBWH Cancer Care staff	N/A	N/A
Midori Nakagaki	Nicole Gavin, Karen Whitfield , Alexandra Clavarino, Glen Kennedy	A real-world accuracy of oral mucositis grading in patients undergoing hematopoietic stem cell transplantation	Retrospective study	
Midori Nakagaki	Nicole Gavin, Karen Whitfield , Alexandra Clavarino, Glen Kennedy	The incidence of severe oral mucositis and taste disturbance in patients undergoing different hematopoietic stem cell transplantation regimens	Retrospective study	

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Midori Nakagaki	Nicole Gavin, Therese Hayes, Rebecca Fichera, Caroline Stewart, Leonie Naumann, Justine Brennan, Natasha Perry, Emma Foley, Erin Crofton, Christie Brown, Jenni Leutenegger, Glen A Kennedy	Implementation and evaluation of a nurse- allied health clinic for patients after allogeneic haematopoietic stem cell transplantation	Completed	
Melissa Jensen	Shannon Pallett	Assessing Pentamidine usage as Pneumocystis jiroveci Prophylaxis (PJP) in Royal Brisbane and Women's Hospital Cancer Care Population: A Quality Assurance Project	Retrospective audit Completed	
Midori Nakagaki,	Jessica McIlwain, Fang Min Foo	Initial dose of Ciclosporin A in obese patients undergoing haematopoietic stem cell transplantation: Safety of actual weight based dosing	Retrospective Audit	
Midori Nakagaki, Laura Kurucz	Paul Klages, Nicole Gavin, Kieren Barker, Vivian Day	Routine scheduling of post-bone marrow transplant vaccination at the Post-BMT outpatient clinic	Service improvement	
Nic Anning	Karen Whitfield, G Hopkins, A Clavarino, Peter Donovan	Pre and post-operative medication management in bariatric patients		
Paul Firman	Karen Whitfield	Pharmacist-led therapeutic drug monitoring		
Jared Dodds	Hannah Knowles	Audit of use of botulinum toxin within RBWH for PBS and non-PBS indications	Retrospective audit Completed	
Alessandra Rose	William Franks, Christopher Accornero	Evaluation of IV acyclovir usage and adherence with local and state-wide guidelines	Retrospective audit Completed	
Liza-Jane Raggatt	Brett Sweeney, Karen Whitfield	Improving efficiency to track high-cost medicines to ensure financial and clinical optimisation	Retrospective audit Completed	
Catherine Greig	Karen Whitfield	Intravenous fluid usage and adherence to guidelines	Retrospective audit Completed	
Aislinn Kennedy	Minnie Park	Melatonin usage in adolescents mental health unit at RBWH	Retrospective audit Completed	
Clare Spicer-Brown	Stephanie Hoy, Karen Whitfield	A retrospective audit of the use of poractant alfa in critically ill neonates	Retrospective audit Completed	
Emma Hadwen, Alanna Platz	Nicolas Anning, Karen Whitfield, Gareth Collins	An audit of the inpatient use of sustained release tapentadol to treat acute pain in the surgical service line at RBWH	Retrospective audit Completed	

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Courtney Hill	A/prof Michael Barras, Dr Naz Ghahreman-Falconer, Prof Ian Coombes	Patient-Centred Pharmacy Care in the hospital setting	Not recruited yet	
Lia Paradisiss	A Prof Neil Cottrell, A Prof Michael Barras, Prof Ian Coombes	Medication harm in patients after Acute Myocardial Infarction	Not recruited yet	
Karen Bettenay	Ian Coombes , Michael Barras, Kelvin Roberston, Charles Denaro	Co-Design of Transition of Care models of care	Not recruited yet	

Research Activity with a Specific Focus on First Nations People

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Carleigh Tongs	Cherian Sajiv, Basant Pawar, Suzanne Parker, Steven Wallis, Steven Tong, Jason Roberts , Danny Tsai	Optimising Cefazolin and Ceftriaxone Dosing in Australian Indigenous Patients Requiring Intermittent Haemodialysis	0	0

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Real S, Lee T, Bishop J, Mirkov S, Johnson J, **McCourt E**, Hughes J, Pont L, Page AT and Penm J. Attitudes, barriers and facilitators of hospital pharmacists conducting practice-based research: a systematic review. J Pharm Pract Res. 2021 51: 192-202. <https://doi.org/10.1002/jppr.1741>
2. **McCourt, E.** (2021) 'Calamity before the storm: How can we bridge the gap between primary and secondary care in a disaster?' *Pharmacy Growth, Research, Innovation, and Training*, 4(4), 250-254.
3. **M^cCourt, E.**, Singleton, J., Tippet, V., & Nissen, L. (2021) Exploring the preparedness of Australian pharmacists to respond to disasters and emergencies. *Journal of Pharmacy Practice and Research*, 51 (145-153)
4. **M^cCourt, E.**, Singleton, J., Tippet, V., & Nissen, L. (2021). Evaluation of disaster preparedness and preparedness behaviours among pharmacists: A cross-sectional study in Australia. *Prehospital and Disaster Medicine*, 36(3), 354-361. doi: 10.1017/S1049023X21000133.
5. Reducing Medical Admissions and Presentations Into Hospital through Optimising Medicines (REMAIN HOME): a stepped wedge, cluster randomised controlled trial Freeman, Christopher R., Scott, Ian A., Hemming, Karla, Connelly, Luke B., Kirkpatrick, Carl M., **Coombes, Ian**, Whitty, Jennifer, Martin, James, Cottrell, Neil, Sturman, Nancy, Russell, Grant M., Williams, Ian, Nicholson, Caroline, Kirs, Sue and Foot, Holly (2021). Reducing Medical Admissions and Presentations Into Hospital through Optimising Medicines (REMAIN HOME): a stepped wedge, cluster randomised controlled trial. *The Medical Journal of Australia*, 2021. 214 (5), 212-217. doi: 10.5694/mja2.50942
6. **K Whitfield, I Coombes, C Denaro, P Donovan.** Medication Utilisation Program, Quality Improvement and Research Pharmacist—Implementation Strategies and Preliminary Findings. *Pharmacy* 2021. 9 (4), 182

Journal Articles (RBWH staff in bold)

7. **KM Davies, ID Coombes**, S Keogh, K Hay, **KM Whitfield**. Medication administration evaluation and feedback tool: Inter-rater reliability in the clinical setting
Collegian 2021. 28 (4), 369-375

8. **C Paradissis**, N Cottrell, **I Coombes**, I Scott, W Wang, M Barras Patient harm from cardiovascular medications Therapeutic Advances in Drug Safety 2021. 12, 20420986211027451

9. Tanvir, E.M., Mahmood, S., Islam, M.N., Khatun, M., Afroz, R., Islam, S.S., Afrin, S., Khalil, M.I., Chowdhury, M.A.Z., Ng, J.C. and **Whitfield, K.M.**, 2021. Environmental Exposure to Metals and Metalloids in Primary School-Aged Children Living in Industrialised Areas of Eastern South Asian Megacity Dhaka, Bangladesh.

10. Midori Nakagaki, Nicole C. Gavin, Therese Hayes, Rebecca Fichera, Caroline Stewart, Leonie Naumann, Justine Brennan, Natasha Perry, Emma Foley, Erin Crofton, Christie Brown, Jenni Leutenegger, Glen A. Kennedy. Implementation and evaluation of a nurse-allied health clinic for patients after haematopoietic stem cell transplantation. Supportive Care in Cancer 2021 <https://doi.org/10.1007/s00520-021-06461-w>

11. **Nakagaki M, Gavin NC, Clavarino A, Kennedy GA, Whitfield K**. A real-world accuracy of oral mucositis grading in patients undergoing hematopoietic stem cell transplantation. Supportive Care in Cancer. 2021 Nov 25:1-8.

12. Davidson J, Simmonds C, **Whitfield K**, Wilby KJ. Students' proposed self-management strategies in response to written cases depicting situations of adversity. Pharmacy Education. 2021 Dec 2;21:810-6.

13. O'Conner K, Davies M, Koorts P, Cartwright D, **Whitfield K** (2021) Gentamicin dosing in neonates with normal renal function: trough and peak levels. European Journal of Drug Metabolism and Pharmacokinetics (in press)

14. **Whitfield K**, Wilby KJ. (2021) Developing grit, motivation, and resilience: to give up, on giving in. Pharmacy special edition Motivation, Grit, and Resilience in Pharmacy Education and Practice. Pharmacy, 9(2), 109. <https://doi.org/10.3390/pharmacy9020109>

15. Sime F, Lassig-Smith M, Starr T, Stuart J, Pandey S, Parker S, Wallis S, **Lipman J, Roberts JA**. Cerebrospinal fluid penetration of ceftolozane/tazobactam in critically ill patients with an indwelling external ventricular drain. Antimicrob Agents Chemother 2021 : 65 : e01698-20 doi:10.1128/AAC.01698-20

16. Beraldi-Magalhaes F, Parker SL, Sanches C, Garcia LS, Carvalho BKS, Fachi MM, de Liz MV, Pontarolo R, **Lipman J, Cordeiro-Santos M, Roberts JA**. Is dosing of ethambutol as part of a fixed dose combination product optimal for mechanically ventilated ICU patients with TB? A population pharmacokinetic study. Antibiotics 2021 : 10 : 1559 doi: 10.3390/antibiotics10121559

17. Garbez N, Mbatchesi LC, Louart G, Wallis SC, Muller L, **Lipman J, Roberts JA**, Lefrant J-V, Roger C. Micafungin population PK analysis in healthy and septic pig: Can the septic porcine model predict the micafungin PK in septic patient? Pharm Res 2021 : 38 : 1863-1871 doi: 10.1007/s11095-021-03137-2

18. Garbez N, Mbatchesi LC, Maseda E, Luque S, Grau S, Wallis SC, Muller L, **Lipman J, Roberts JA**, Lefrant JY, Roger C. A loading micafungin dose in critically ill patients under continuous veno-venous hemofiltration or continuous veno-venous hemodiafiltration: A population pharmacokinetic analysis. Ther Drug Monit 2021 : 43 : 747-755 doi: 10.1097/FTD.0000000000000874

19. Heffernan AJ, Lim S, **Lipman J, Roberts JA**. A personalised approach to antibiotic pharmacokinetics and pharmacodynamics in critically ill patients. Anaesth Crit Care Pain Med 2021 : 40 : 100970. doi.org/10.1016/j.accpm.2021.100970

20. Dhanani J, **Lipman J**, Pincus J, Townsend S, Livermore A, Wallis SC, Abdul-Aziz MH, **Roberts JA**. Pharmacokinetics of fluconazole and ganciclovir as combination antimicrobial chemotherapy on ECMO- A case report. Int J Antimicrob Agents 2021 : 58 : 106431 doi: 10.1016/j.ijantimicag.2021.106431

21. Guerra Valero Y, Dorofaeff T, **Roberts JA, Lipman J**, Coulthard M, Sparkes L, Wallis S, Parker S. Development, validation and application of a UHPLC-MS/MS method to measure cefotaxime and metabolite desacetylcefotaxime in 2.8 µL of plasma samples obtained from critically ill children using capillary microsampling. Anal Bioanal Chem 2021 : 413 : 4483-4491. doi: 10.1007/s00216-021-03411-7.

Journal Articles (RBWH staff in bold)

22. Heffernan A, Sime FB, Lim SMS, Naicker S, Andrews KT, Ellwood D, **Lipman J**, Grimwood K, **Roberts JA**. Pharmacodynamics of once- versus twice-daily dosing of nebulised amikacin in an in vitro Hollow-Fiber Infection Model against three clinical isolates of *Pseudomonas aeruginosa*. *Diagn Microbiol Infect Dis* 2021 : 100 : 115329
23. doi: 10.1016/j.diagmicrobio.2021.115329.

24. Irwin AD, Coin LJM, Harris PNA, Cotta MO, Bauer MJ, Buckley C, Balch R, Lipman J, Kruger P, Meyer J, Shekar K, Brady K, Fourie C, Sharp N, Vlad L, Whiley D, Bialasiewicz S, Beatson S, Paterson DL, Clark JE, Raman S, Hajkowicz K, Schlapbach LJ, **Roberts JA** Optimising treatment outcomes for children and adults through rapid genome sequencing of sepsis pathogens. A study protocol for a prospective, multi-centre trial (DIRECT)
25. *Front Cell Infect Mi* 2021 : 11 : 667680. doi: 10.3389/fcimb.2021.667680

26. Garbez N, Mbatchi L, Wallis S, Muller L, Lipman J, **Roberts J**, Lefrant JY, Roger C. Prospective Cohort Study of Micafungin Population Pharmacokinetic Analysis in Plasma and Peritoneal Fluid in Septic Patients with Intra-abdominal Infections *Antimicrob Agents Chemother* 2021 : 65 : e0230720 doi: 10.1128/AAC.02307-20

27. Heffernan AJ, Sime FB, Lim SMS, Naicker S, Andrews KT, Ellwood D, Lipman J, Grimwood K, **Roberts JA**. Impact of the epithelial lining fluid milieu on amikacin pharmacodynamics against *Pseudomonas aeruginosa* *Drugs R D* 2021 : 21 : 203-215. doi: 10.1007/s40268-021-00344-5

28. Heffernan AJ, Curran RA, Denny K, Sime F, Stanford C, McWhinney B, Ungerer J, **Roberts J**, Lipman J. Ceftriaxone dosing in patients admitted from the Emergency Department with sepsis *Eur J Clin Pharmacol* 2021 : 77 : 207-214. doi: 10.1007/s00228-020-03001-z

29. Sime FB, **Roberts JA**, Jeffree RL, Pandey S, Adiraju S, Livermore A, Butler J, Parker SL, Wallis SC, Lipman J, Cotta MO. Population pharmacokinetics of levetiracetam in patients with traumatic brain injury and subarachnoid hemorrhage exhibiting augmented renal clearance. *Clin Pharmacokinet* 2021 : 60 :655-664 doi: 10.1007/s40262-020-00979-8

30. **Roberts JA**, Joynt G, Lee A, Choi G, Bellomo R, Kanji S, Mudaliar MY, Peake S, Stephens D, Taccone FS, Uldemolins M, Valkonen MM, Agbeve J, Baptista J, Bekos V, Boidin C, Brinkmann A, Buizen L, Castro P, Cole CL, Creteur J, De Waele JJ. The effect of renal replacement therapy and antibiotic dose on antibiotic concentrations in critically ill patients: Data from the multinational SMARTT Study. *Clin Infect Dis* 2021 : 72 :1369-1378 doi: 10.1093/cid/ciaa224

31. Agyeman AA, Rogers KE, Tait JR, Bergen PJ, Kirkpatrick CM, Wallis SC, Bulitta JB, Paterson DL, Lipman J, Nation RL, **Roberts JA**, Landersdorfer CB. Evaluation of meropenem-ciprofloxacin combination dosage regimens for the pharmacokinetics of critically ill patients with augmented renal clearance. *Clin Pharmacol Ther* 2021 : 109 :1104-1115 doi:10.1002/cpt.2191

32. Roger C, Louart B, Elotmani L, Barton G, Escobar L, Koulenti D, Lipman J, Leone M, Muller L, Boutin C, Amour J, Banakh I, Cousson J, Bourenne J, Constantin JM, Albanese J, **Roberts JA**, Lefrant JY; Azurea Network. An international survey on aminoglycoside practices in critically ill patients: the AMINO III study. *Ann Intensive Care* 2021 : 11 : 49 doi: 10.1186/s13613-021-00834-4

33. Kumta N, **Roberts JA**, Lipman J, Wong WT, Joynt GM, **Cotta MO**. A systematic review of studies reporting antibiotic pharmacokinetic data in the cerebrospinal fluid of critically ill patients with uninflamed meninges. *Antimicrob Agents Chemother* 2021 : 65 e01998-20 doi: 10.1128/AAC.01998-20

34. Cheng V, Abdul-Aziz MH, Burrows F, Buscher H, Cho YJ, Corley A, Gilder E, Kim HS, Lim SY, McGuinness S, Parke R, Reynolds C, Rudham S, Wallis SC, Welch SA, Fraser JF, Shekar K, **Roberts JA**. Population pharmacokinetics and dosing simulations of ceftriaxone in critically ill patients receiving extracorporeal membrane oxygenation (an ASAP ECMO study). *Clin Pharmacokinet* 2021; in press (date accepted 22nd December 2021; CPKA-D-21-00261R1).

35. Rawson TM, Wilson RC, Moore LSP, Macgowan AP, Lovering AM, Bayliss M, Kyriakides M, Gilchrist M, **Roberts JA**, Hope WW, Holmes AH. Exploring the pharmacokinetics of phenoxymethylpenicillin (Penicillin V) in adults: a healthy volunteer study. *Open Forum Infect Dis* 2021; 8(12): ofab573.

36. Pant N, **Roberts JA**, Wallis SC, Eisen D. In-vitro effect of synovial fluid from patients undergoing arthroplasty surgery on methicillin resistant *Staphylococcus aureus* biofilm formation. *J Antimicrob Chemother* 2021; in press (date accepted 10th December 2021; JAC-2021-1367.R1).

37. Al-Shaer M, Goutelle S, Santevecchi B, Shoulders B, Venugopalan V, Cherabuddi K, Liu J, Kiel P, **Roberts JA**, Sime F, Scheetz M, Neely MN, Peloquin C. Cefepime precision dosing tool: From Standard to Precise Dose Using Nonparametric Population Pharmacokinetics. *Antimicrob Agents Chemother* 2021; in press (date accepted 8th December 2021; AAC02046-21R1).

Journal Articles (RBWH staff in bold)

38. De Oliveira D, Forde B, Phan MD, Steiner B, Zhang B, Zuegg J, El Deeb I, Li G, Keller N, Brouwer S, Harbison-Price N, Cork A, Bauer M, Alquethamy S, Beatson S, **Roberts JA**, Paterson DL, McEwan A, Blaskovich M, Schembri M, McDevitt C, von Itzstein M, Walker M. Rescuing tetracycline class antibiotics for the treatment of multidrug resistant *Acinetobacter baumannii* pulmonary infection. *mBio* 2021; in press (date accepted 30th November 2021; mBio03517-21).
39. Setiawin E, **Cotta MO**, Abdul-Aziz MH, **Roberts JA**. Indonesian Healthcare providers' perceptions and attitude on antimicrobial resistance, prescription, stewardship program. *Future Microbiol* 2021; in press (date accepted 10th December 2021; FMB-2021-0193.R1).
40. Axfors C,..., **Roberts JA**, ...Hemkens LG. Association of convalescent plasma treatment with mortality in COVID-19 patients: an international collaborative meta-analysis of randomized clinical trials. *BMC Infect Dis*; 2021 21: 1170.
41. Cheng V, Abdul-Aziz MH, Burrows F, Buscher H, Cho YJ, Corley A, Diehl A, Gilder E, Jakob S, Kim HS, Levkovich B, Lim SY, McGuinness S, Parke R, Pellegrino V, Que YA, Reynolds C, Rudham S, Wallis S, Welch S, Zacharias D, **Roberts JA**, Shekar K, Fraser J. Population pharmacokinetics of cefepime in critically ill adult patients receiving extracorporeal membrane oxygenation (an ASAP ECMO study). *Int J Antimicrob Agents* 2021; in press (date accepted 18th October 2021; IJAA-D-21-00879R2).
42. Cheng V, Abdul-Aziz MH, Burrows F, Buscher H, Cho YJ, Corley A, Diehl A, Gilder E, Jakob S, Kim HS, Levkovich B, Lim SY, McGuinness S, Parke R, Pellegrino V, Que YA, Reynolds C, Rudham S, Wallis S, Welch S, Zacharias D, Fraser J, Shekar K, **Roberts JA**. Population pharmacokinetics of vancomycin in critically ill adult patients receiving extracorporeal membrane oxygenation (an ASAP ECMO study). *Antimicrob Agents Chemother* 2021; in press (date accepted 25th September 2021; AAC01377-21R1).
43. Smith E, Gwee A, **Roberts JA**, Molton J, Wurzel D, Hughes CM, Rogers B. Prospective Study of Policies and Use of Therapies for COVID-19 Disease Amongst Australian Health Services during 2020 . *Intern Med J* 2021; in press (date accepted 5th September 2021; IMJ15510).
44. Sandaradura I, Alfenaar JW, Cotta MO, Daveson K, Day RO, Van Hal S, Lau C, Marriott DJE, Penm J, Roberts JA, Tabah A, Williams P, Imani S. Emerging therapeutic drug monitoring of anti-infective agents in Australian hospitals – availability, performance and barriers to implementation. *Br J Clin Pharmacol* 2021; in press (date accepted 4th July 2021; MP-00229-21.R2).
45. Zylbersztajn BL, Parker SL, Montoya DN, Izquierdo G, Ortiz P, Torres JP, Fajardo C, Diaz R, Valverde C, Roberts JA. Population pharmacokinetics of vancomycin and meropenem in pediatric extracorporeal membrane oxygenation support. *Frontiers Pharmacol* 2021; in press (date accepted 4th August 2021; 709332).
46. Cheng V, Abdul-Aziz MH, Burrows F, Buscher H, Cho YJ, Corley A, Diehl A, Gilder E, Jakob S, Kim HS, Levkovich B, Lim SY, McGuinness S, Parke R, Pellegrino V, Que YA, Reynolds C, Rudham S, Wallis S, Welch S, Zacharias D, Fraser J, Shekar K, **Roberts JA**. Population pharmacokinetics of piperacillin and tazobactam in critically ill patients receiving extracorporeal membrane oxygenation (an ASAP ECMO study). *Antimicrob Agents Chemother* 2021; in press (date accepted 24th August 2021; AAC01438-21R1).
47. Wallenburg E, Bruggemann R, **Roberts JA**, Jager N, Uldemolins M, Wilkes S, Schouten J, Chin P, ter Heine R. A meta-analysis of protein binding of flucloxacillin in healthy volunteers and hospitalized patients. *Clin Microbiol Infect* 2021; in press (date accepted June 26th 2021; CLM-21-20836.R2).
48. Chiriac U, Richter D, Frey OR, Rohr AC, Helbig S, Preisenberger J, Hagel S, **Roberts JA**, Weigand MA, Brinkmann A. Personalized piperacillin dosing for the critically ill: a retrospective analysis of clinical experience with dosing software and therapeutic drug monitoring to optimize antimicrobial dosing. *Antibiotics* 2021; in press (date accepted June 1st 2021; antibiotics-1223022).
49. Blassmann U, Roehr AC, Frey OR, **Roberts JA**, Brinkmann A. Personalized β -lactam dosing in patients with coronavirus disease 2019 (COVID-19): A retrospective analysis on pharmacokinetics, pharmacokinetic target attainment and use of resources. *Medicine* 2021; in press (date accepted 21st May 2021; MD-D-21-01318R1)
50. Evans L, Rhodes A, Alhazzani W, Antonelli M, Coopersmith CM, French C, Machado FR, McIntyre L, Ostermann M, Prescott HC, Schorr C, Simpson S, Wiersinga WJ, Alshamsi F, Angus DC, Arabi Y, Azevedo L, Beale R, Beilman G, Belle-Cote E, Burry L, Cecconi M, Centofanti J, Coz Yataco A, De Waele J, Dellinger RP, Doi K, Du B, Estenssoro E, Ferrer R, Gomersall C, Hodgson C, Møller MH, Iwashyna T, Jacob S, Kleinpell R, Klompas M, Koh Y, Kumar A, Kwizera A, Lobo S, Masur H, McLaughlin S, Mehta S, Mehta Y, Mer M, Nunnally M, Oczkowski S, Osborn T, Papathanassoglou E, Perner A, Puskarich M, **Roberts JA**, Schweickert W, Seckel M, Sevransky J, Sprung CL, Welte T, Zimmerman J, Levy M. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. *Crit Care Med*. 2021 Oct 4. doi: 10.1097/CCM.0000000000005337.

Journal Articles (RBWH staff in bold)

51. Abdul-Aziz MH, Brady K, **Roberts JA**. Therapeutic drug monitoring of antibiotics: defining the therapeutic range. *Ther Drug Monit* 2021; in press (date accepted 1st October 2021; TDM21-175-R1).
52. Matusik E, Boidin C, Friggeri Am Richard JC, Bitke L, **Roberts JA**, Goutelle S. Therapeutic drug monitoring of antibiotic drugs in patients receiving continuous renal replacement therapy or intermittent hemodialysis: a critical review. *Ther Drug Monit* 2021; in press (date accepted 16th September 2021; TDM21-159-FIR1).
53. Heffernan A, **Roberts JA**. Dose optimisation of antibiotics used for meningitis. *Curr Opin Inf Dis* 2021; in press (date accepted 2nd September 2021; QCO340616).
54. Tu Q, Cotta MO, Raman S, Graham N, Schlapbach L, **Roberts JA**. Individualized precision dosing approaches to optimize antimicrobial therapy in pediatric populations. *Exp Rev Clin Pharmacol* 2021; in press (date accepted 26th July 2021; ERF-2021--0114.R1).
55. Cheng V, Abdul-Aziz MH, **Roberts JA**. Applying antimicrobial pharmacokinetic principles for complex patients: critically ill adult patients receiving extracorporeal membrane oxygenation and renal replacement therapy. *Curr Infect Dis Reports*; 2021 in press (date accepted 24th June 2021; INFT-D-21-00032R1).
56. Zhu YG, Monsel A, **Roberts JA**, Pontikis K, Mimoz O, Rello J, Qu J, Rouby JJ. Nebulized Colistin in Ventilator-Associated Pneumonia and tracheobronchitis: Historical Background, Pharmacokinetics and Perspectives. *Microbiol* 2021; in press (date accepted 21st May 2021; 1227934).
57. Rawlins MDM, Misko J, **Roberts JA**. Antimicrobial dosing in prolonged intermittent renal replacement therapy (PIRRT): a systematic review. *J Pharm Pract Res* 2021; in press (date accepted 11th March 2021; JPPR-2020-Dec-219.R1).
58. Khanina A, Cairns KA, Kong DCM, Thursky K, Slavn M, **Roberts JA**. The Impact of Pharmacist-led Antifungal Stewardship Interventions in the Hospital Setting – A Systematic Review. *J Pharm Pract Res* 2021; in press (date accepted 9th March 2021; JPPR-2021-Dec-009.R1).
59. Burke A, Smith D, Coulter C, Bell SC, Thomson R, **Roberts JA**. Clinical Pharmacokinetic and Pharmacodynamic Considerations in the Drug Treatment of Non-Tuberculous Mycobacteria in Cystic Fibrosis. *Clin Pharmacokinet* 2021; in press (date accepted 22nd February 2021; CPKA-D-20-00199R1).
60. Rayner C, Smith P, Andes D, Andrews K, Derendorf H, Friberg L, Hanna D, Lepak A, Mills E, Polasek T, **Roberts JA**, Schuck V, Shelton M, Wesche D, Rowland Yeo K. Model-Informed Drug Development for Anti-Infectives: State of the Art and Future. *Clin Pharmacol Ther* 2021; in press (date accepted 5th February 2021; 20200685CR).
61. Johnston K, Ankravs M, Badman B, Choo CL, Cree M, Fyfe R, **Roberts JA**, Xu J, Munro C. Standards of practice in intensive care for pharmacy services. *J Pharm Pract Res* 2021; 51: 165-83.
62. Raza A, Miles JA, Sime FB, Ross BP, Cabot PJ, **Roberts JA**, Popat A, Kumeria T, Falconer JR. PLGA encapsulated γ -cyclodextrin-meropenem inclusion complex formulation for oral delivery. *Int J Pharmaceut* 2021; in press (date accepted 8th January 2021; IJP-D-20-03261R1).
63. Li J, **Roberts JA**. Antibiotic pharmacokinetics/pharmacodynamics: where are we heading? *Int J Antimicrob Agents* 2021; in press
64. Gijzen M, Annaert P, Shekar K, **Roberts JA**, Wauters J, Spriet I. Ceftriaxone exposure in patients undergoing extracorporeal membrane oxygenation. *Int J Antimicrob Agents* 2021; in press (date accepted 20th March 2021; IJAA-D-20-02632R1).
65. Chau MM, Daveson K, Alfenaar JWC, Gwee A, Ho SA, Marriott DJE, Trubiano JA, Zhao J, **Roberts JA**. Consensus guidelines for optimising antifungal drug delivery and monitoring to avoid toxicity and improve outcomes in patients with haematological malignancy, 2021. *Internal Med J* 2021; in press (date accepted 12th October 2021; IMJ15587).
66. Evans L, Rhodes A, Alhazzani W, Antonelli M, Coopersmith CM, French C, Machado FR, McIntyre L, Ostermann M, Prescott HC, Schorr C, Simpson S, Wiersinga WJ, Alshamsi F, Angus DC, Arabi Y, Azevedo L, Beale R, Beilman G, Belley-Cote E, Burry L, Cecconi M, Centofanti J, Coz Yataco A, De Waele J, Dellinger RP, Doi K, Du B, Estenssoro E, Ferrer R, Gomersall C, Hodgson C, Møller MH, Iwashyna T, Jacob S, Kleinpell R, Klompas M, Koh Y, Kumar A, Kwizera A, Lobo S, Masur H, McGloughlin S, Mehta S, Mehta Y, Mer M, Nunnally M, Oczkowski S, Osborn T, Papathanassoglou E, Perner A, Puskarich M, **Roberts JA**, Schweickert W, Seckel M, Sevransky J, Sprung CL, Welte T, Zimmerman J, Levy M. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. *Intensive Care Med*. 2021 Oct 2:1-67.
67. Kato H, Parker S, **Roberts JA**, Hagihara M, Asai N, Yamagishi Y, Paterson DL, Mikamo H. Population pharmacokinetics analysis of amikacin initial dosing regimen in elderly patients. *Antibiotics* 2021; in press (date accepted 19th January 2021; antibiotics-1047952).

Journal Articles (RBWH staff in bold)

68. Alawie J, Heffernan A, Wallis SC, **Roberts JA**, Sime FB. Pharmacodynamic evaluation of a single dose versus a 24-hour course of multiple dose of cefazolin for surgical prophylaxis. *Antibiotics* 2021; in press (date accepted 16th April 2021; antibiotics-1205358).
69. Islam K, Heffernan AJ, Naicker S, Henderson A, Chowdhury MAH, **Roberts JA**, Sime FB. Epidemiology of extended-spectrum beta-lactamase and metallo-beta-lactamase-producing *Escherichia coli* in South Asia. *Future Microbiol* 2021; in press (date accepted 30th March 2021; FMB-2020-0193.R2)
70. Raza A, Alavi SE, Sime FB, Han FY, **Roberts JA**, Popat A, Falconer JR, Kumeria T. Microfluidic assembly of pomegranate-like hierarchical microspheres for efflux regulation in oral drug delivery. *Acta Biomaterialia* 2021; in press (date accepted 19th March 2021; AB-20-3210R2).
71. Mohd Sazly Lim S, Heffernan A, **Roberts JA**, Sime FB. Semi-mechanistic PK/PD modelling of fosfomycin and sulbactam combination against carbapenem-resistant *Acinetobacter baumannii*. *Antimicrob Agents Chemother* 2021; in press (date accepted 3rd March 2021; AAC02472-20R1)
72. Cairns KA, Avent M, Buono E, Cheah R, Devchand M, Khumra S, Rawlins M, **Roberts JA**, Xenos K, Munro C. Standard of practice in infectious diseases for pharmacy services. *J Pharm Pract Res* 2021; 51:247-64.
73. Barreto EF, Rule AD, MD; Alshaer MH, **Roberts JA**, Abdul-Aziz MH, Scheetz M, Mara KC, Jannetto PJ, Gajic O, O'Horo JC, Boehmer KR. Provider perspectives on beta-lactam therapeutic drug monitoring programs in the critically ill: a protocol for a multicenter mixed-methods study. *Implement Sci Comm* 2021; in press (date accepted 9th March 2021; ISCM-D-21-00066).

Keynote or Plenary Lectures given in 2021

Date	Title
05/2021	Pharmacy workforce development Goals for hospital pharmacists, International Pharmacy federation (FIP) and Indonesian Pharmacy Council conference (virtual) Indonesia. Prof Ian Coombes
2021	Neonatal Inotropes Workshop – Neonatal Nurse Practitioners, Australian College of Neonatal Nurses, Brisbane. A/Prof Karen Whitfield
10/2021	Session chair & Moderator: 'FIP Setting goals for the decade ahead: Competency Development '. Dr Elizabeth McCourt
11/2021	Roberts JA , "Antibiotic Dosing in ICU". International Conference on the Combating Antimicrobial Resistance, Manipal, India, <i>Virtual</i> ,
11/2021	Roberts JA , "TDM of beta-lactams". Asia Pacific Congress of Clinical Microbiology and Infection (APCCMI), Singapore,
09/2021	Roberts JA , "Dosing optimisation of antibiotic therapy in augmented renal clearance". 11th Annual Conference of the South African Society of Clinical Pharmacists. <i>Virtual</i> ,
07/2021	Roberts JA , "Antibiotic dosing in RRT and ECMO". European Conference on Clinical Microbiology and Infectious Diseases. <i>Virtual</i> ,
06/2021	Roberts JA , "Optimising drug therapy for resistant infections in critical illness". Pre-ECCMID Course for European Conference on Clinical Microbiology and Infectious Diseases. <i>Virtual</i> ,
07/2021	Roberts JA , "Antimicrobial Dose Optimisation". Infectious Diseases Masterclass, Society of Hospital Pharmacists of Australia,
08/2021	Roberts JA , "Advanced Infection Management". Critical Care Extension Seminar, Society of Hospital Pharmacists of Australia,.
08/2021	Roberts JA , "COVID-19 Therapeutics: anti-virals and anticoagulants". Critical Care Extension Seminar, Society of Hospital Pharmacists of Australia,

Department of Rheumatology

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Steven Truong, Tim McEwan, Paul Bird, Irwin Lim, Nivene Saad, Lionel Schachna, Andrew Taylor, **Philip C. Robinson**. Australian Consensus Statements for the assessment and management of Non-Radiographic Axial Spondylarthritis. **Rheumatology & Therapy** 2021; e-published 30th December
2. Michael Putman... **Philip C. Robinson** ... Jeffrey A. Sparks, Julia F. Simard. COVID-19 vaccine perceptions and uptake in people with rheumatic disease: Results from the COVID-19 Global Rheumatology Alliance Vaccine Survey. **Lancet Rheumatology** 2021 in press
3. Vicky Tai, **Philip C. Robinson** and Nicola Dalbeth. Gout and the COVID-19 Pandemic. **Current Opinion in Rheumatology** 2021; e-published 13th of December
4. Ruth K Topless, Angelo Gaffo, Lisa K Stamp, **Philip C Robinson**, Nicola Dalbeth, Tony R Merriman. A population-based study of gout and coronavirus disease-19 (COVID-19): the risk of gout for diagnosis and death in the UK Biobank. **Lancet Rheumatology** 2021 in press
5. David FL Liew and **Philip C Robinson**. What does endemic COVID-19 mean for the future of rituximab? **Lancet Rheumatology** 2021; e-pub 16th Nov
6. Jeffrey R. Curtis· Xiaofeng Zhou· David T. Rubin· Walter Reinisch· Jinoos Yazdany· **Philip C. Robinson**· Yan Chen· Birgitta Benda· Ann Madsen· and Jamie Geier. Characteristics, Comorbidities, and Outcomes of SARS-CoV-2 Infection in Patients with Autoimmune Conditions Treated with Systemic Therapies: a Population-based Study. **Journal of Rheumatology** 2021; e-pub 15th Nov
7. Dominique F. Jimenez, Garret Duron, Joshua Hendin, Eduardo M. Cardoso, Maria Valenzuela, Sebastian Vallejo, Ali Duarte-Garcia, Paul Sufka, Samuel L. Whittle, **Philip C. Robinson**, Larry J Prokop, Michael S. Putman. Industry involvement in rheumatology consensus-based recommendations: a systematic review. **Lancet Rheumatology** 2021; e-published 17th of December
8. Sebastian E. Sattui, Richard Conway, Michael S. Putman, Andrea M. Seet, Milena A Gianfrancesco... Jinoos Yazdany, **Philip Robinson**. Outcomes of COVID-19 infection in patients with primary systemic vasculitis or polymyalgia rheumatica: Results from the COVID-19 Global Rheumatology Alliance Physician Registry. **Lancet Rheumatology** 2021 e-published 5th November 2021
9. Su-Ann Yeoh... **Philip C Robinson**... Arundathi Jayatileke. Rapid adoption of telemedicine in rheumatology care during the COVID-19 pandemic highlights training and supervision concerns among rheumatology trainees. **ACR Open Rheumatology** 2021, e-published November 17th 2021
10. Richard Conway... **Philip Robinson**, Sebastian Sattui. Giant cell arteritis and SARS-CoV-2 vaccination – let's not draw premature conclusions. **Journal of Rheumatology** 2021; e-pub 1st October
11. Sebastian Sattui, Jean Liew... **Philip Robinson**... Jeffrey Sparks. Early experience of COVID-19 vaccination in adults with systemic rheumatic diseases: Results from the COVID-19 Global Rheumatology Alliance Vaccine Survey. **RMD Open** 2021;7:e001814
12. Zara Izadi, Erica J Brenner... **Philip C Robinson**... Michael D Kappelman. TNF Inhibitors and the Risk of Adverse COVID-19 Outcomes in Patients with Immune-Mediated Inflammatory Disease: Pooled Data from Three Global Registries. **JAMA Network Open** 2021;4(10):e2129639
13. Steven L Truong, Jasmine Chin, David FL Liew, Syeda Farah Zahir, Elizabeth G. Ryan, Diana Rubel, Graham Radford-Smith and **Philip C Robinson**. Systematic review and meta-analysis of inflammatory bowel disease adverse events with anti-interleukin 17A agents and tumour necrosis factor inhibitors in rheumatic disease and skin psoriasis. **Rheumatology & Therapy** 2021;8(4):1603-1616
14. Samuel Whittle, Glen Hazlewood, **Philip Robinson**... Rachelle Buchbinder. COVID-19 Vaccination for people with autoimmune inflammatory rheumatic diseases on immunomodulatory therapies. **Cochrane Database of Systemic Reviews** 2021;6

Journal Articles (RBWH staff in bold)

15. **Philip C Robinson**, Robert Terkeltaub, Michael Pillinger... Mark Nidorf. Consensus statement regarding the efficacy and safety of long-term low dose colchicine in gout and cardiovascular disease. **The American Journal of Medicine** 2021, e-published 17th of August

16. Bonnie Bermas, Milena Gianfrancesco, Helen Tanner ... **Philip Robinson**. COVID-19 in women with rheumatic disease who are pregnant: Data from the COVID-19 Global Rheumatology Alliance. **The Journal of Rheumatology** 2021 e-published 1st of September 2021

17. Sebastian E. Sattui and **Philip C Robinson**. The COVID-19 pandemic and Rheumatology: Impact on providing care in Latin America and around the world. **Journal of Rheumatology** 2021;48(10):1501-1503

18. Joshua Tam, Peter Nash, **Philip C Robinson**. The effect of etanercept in non-radiographic axial spondyloarthritis (nr-axSpA) by stratified C-reactive protein levels. **ACR Open Rheumatology** 2021;10(3):699-706

19. Jeffrey A. Sparks, Zachary S. Wallace and **Philip C Robinson**. Coronavirus disease 2019: update on coronavirus disease 2019 outcomes and vaccine efficacy in patients with immune-mediated inflammatory disease

20. **Philip C Robinson**, Christopher Frampton, Amanda Phipps-Green, Tuhina Neogi, Lisa Stamp, William Taylor, Tony R. Merriman, Nicola Dalbeth. Longitudinal development of incident gout from low-normal baseline serum urate concentrations: individual participant data analysis. **BMC Rheumatology** 2021;5:Article 33

21. Jeff Sparks, Zach Wallace .. **Philip C Robinson**, Pedro Machado, Jinoos Yazdany. Associations of baseline use of biologic or targeted synthetic DMARDs with COVID-19 severity in rheumatoid arthritis: Results from the COVID-19 Global Rheumatology Alliance Physician Registry. **Annals of the Rheumatic Diseases** 2021;80(9):1137-1146

22. Jonathan S. Hausmann ...**Philip C. Robinson**, Paul Sufka, Zachary S Wallace, Emily Sirotych. Impact of the COVID-19 Pandemic on Patient Health, Healthcare Utilization and Behaviours: Results from an International Survey of People with Rheumatic Diseases. **The Lancet Rheumatology** 2021 July 22nd e-published

23. Jason D. Goldman, **Philip C. Robinson**, Thomas S. Uldrick, Per Ljungman. COVID-19 in Immunocompromised Populations: Implications for Prognosis and Repurposing of Immunotherapies. **Journal for ImmunoTherapy of Cancer** 2021;9:e002630

24. Lai-Shan Tam, Yoshiya Tanaka... **Philip C Robinson**.. Syed Atiqul Haq. Updated APLAR recommendations on care for patients with rheumatic diseases during the COVID-19 pandemic. **International Journal of Rheumatic Diseases** 2021;24(6):733-745

25. Richard Conway... **Philip Robinson**... Geraldine McCarthy. Predictors of Hospitalisation in Patients with Rheumatic Disease and COVID-19 in Ireland: data from the COVID-19 Global Rheumatology Alliance physician-reported registry. **Rheumatology Advances in Practice** 2021;5(2):rkab031

26. Adam Rischin...**Philip Robinson**, Catherine Hill. Healthcare access and attitudes towards telehealth during the early phase of the COVID-19 pandemic among an Australian cohort with inflammatory arthritis. **Internal Medicine Journal** 2021;51(5):788-792

27. David F. Liew, Jonathan Dau, **Philip C. Robinson**. Value Based Healthcare in Rheumatology: Axial Spondyloarthritis and Beyond. **Current Rheumatology Reports** 2021;23:36

28. Ruth K Topless, Amanda Phipps-Green, Megan Leask, Nicola Dalbeth, Lisa K Stamp, **Philip C Robinson**, Tony R Merriman. Gout, rheumatoid arthritis and the risk of death from COVID-19: an analysis of the UK Biobank. **ACR Open Rheumatology** 2021; 3(5):333-340

29. Nicola Dalbeth and **Philip C Robinson**. Patients with gout: an under-recognised group with high COVID-19 risk. **The Lancet Rheumatology** 2021; 3(5):e317-318

30. **Philip C. Robinson** & Alfred HJ Kim. Addressing the challenges of the SARS-CoV-2 pandemic in patients affected by autoimmune and rheumatic disease. **Best Practice & Research Clinical Rheumatology** 2021;35(1):101664.

31. Milena Gianfrancesco & **Philip C Robinson**. Changing COVID-19 outcomes in patients with rheumatic disease—are we really getting better at this? **The Lancet Rheumatology** 2021;3(2):E88-90 [Invited editorial]

Journal Articles (RBWH staff in bold)

32. Anja Strangfeld... **Philip Robinson***, Jinoos Yazdany*, Pedro Machado*. Factors associated with COVID-19-related death in people with rheumatic diseases: results from the COVID-19 Global Rheumatology Alliance physician-reported registry. **Annals of the Rheumatic Diseases** 2021;80:930-942 [Equal Senior Author]

33. **Philip C Robinson** and Eric F Morand. Divergent effects of acute versus chronic glucocorticoids in COVID-19. **The Lancet Rheumatology** 2021; 3(3):E168-e170

34. **Philip C. Robinson**, Kinoos Yazdany, Pedro M. Machado. Global research collaboration in a pandemic - challenges and opportunities: The COVID-19 Global Rheumatology Alliance. **Current Opinion in Rheumatology** 2021;33(2):111-116

35. Kylan Pathmanathan, **Philip C. Robinson**, Catherine Hill, Helen Keen. The Prevalence of Gout and Hyperuricaemia in Australia: An Updated Systematic Review. **Seminars in Arthritis and Rheumatism** 2021;51(1):121-128

36. Milena Gianfrancesco...**Robinson, Philip**, Jinoos Yazdany. Race/ethnicity association with COVID-19 outcomes in rheumatic disease: Data from the COVID-19 Global Rheumatology Alliance Physician Registry. **Arthritis & Rheumatology** 2021;73(3):374-380

37. Rebecca Grainger, Pedro Machado, **Philip Robinson**. Novel coronavirus disease-2019 (COVID-19) in people with rheumatic disease: epidemiology & outcomes. **Best Practice & Research Clinical Rheumatology** 2021;35(1):101657

38. Sarah L. Mackie, Elisabeth Brouwer, Richard Conway, Kornelis S. M. van der Geest, Puja Mehta, Susan P. Mollan, Lorna Neill, Michael Putman, **Philip C. Robinson**, Sebastian E. Sattui. Giant cell arteritis clinical pathways during the COVID-19 pandemic: an international perspective. **The Lancet Rheumatology** 2021;3(1):E71-E82

39. Puja Mehta, Sebastian E. Sattui, Kornelis van der Geest, Elisabeth Brouwer, Richard Conway, Michael S. Putman, **Philip C. Robinson**, Sarah L. Mackie. Giant cell arteritis and COVID-19: similarities and discriminators, a systematic literature review. **Journal of Rheumatology** 2021;48(4):

40. **Philip C Robinson**, Sjef van der Linden, Muhammad Khan, William J Taylor. Axial Spondyloarthritis: Concept, construct, classification and implications for therapy. **Nature Reviews Rheumatology** 2021;17:109-118

41. **Philip C. Robinson**, Nicola Dalbeth and Peter Donovan. Colchicine Prophylaxis of Gout Flares When Commencing Allopurinol is Very Cost Effective. **Arthritis Care & Research** 2021;73(10):1537-1543

42. Kevin Winthrop... **Philip C Robinson**...Jeffrey Curtis. SARS CoV-2 Infection among Patients using Immunomodulatory Therapies. **Annals of the Rheumatic Diseases** 2021; 80(2):269-271

43. Jean Liew... **Philip C Robinson**... Rebecca Grainger. The COVID-19 Global Rheumatology Alliance: Evaluating the rapid design and implementation of an international registry against best practice. **Rheumatology (Oxford)** 2021; 60(1):353-358

Department of QASIS

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. **Lane M**, Lane Steven. Protecting Our Most Vulnerable: Vaccine Responses in Patients with Blood Cancers. The Haematologist. 2021, Oct. 11; 18(6) Available from: <https://ashpublications.org/thehematologist/article/doi/10.1182/hem.V18.6.202163/477252/Protecting-Our-Most-Vulnerable-Vaccine-Responses>. Doi:10.1182/hem.V18.6.202163
-

Sexual Health & HIV Services

Two phase 3 global pharmaceutical (Merck Sharp & Dohme Corp) HIV investigational drug randomized controlled trials have continued despite the ongoing challenges of COVID 19 pandemic onsite at Sexual Health and HIV Services (SHHS - Biala) in collaboration with Infectious Diseases Research Department (RBWH):

MK8591A-018

A Phase 3, Randomized, Active-Controlled, Double-Blind Clinical Study to Evaluate a Switch to Doravirine/Islatravir (DOR/ISL) Once-Daily in Participants With HIV- 1 Virologically Suppressed on Bictegravir/Emtricitabine/Tenofovir Alafenamide (BIC/FTC/TAF).

MK8591A-017

A Phase 3 Randomized, Active-Controlled, Open-Label Clinical Study to Evaluate a Switch to Doravirine/Islatravir (DOR/ISL) Once-Daily in Participants With HIV-1 Virologically Suppressed on Antiretroviral Therapy.

Successful participant retention for the site for both studies during the ongoing challenges and uncertainties of the COVID 19 pandemic throughout the active treatment phase for these studies. Funding received from participation in these clinical trials has financially supported the Clinical Nurse Research position at 0.5 FTE.

CEASE-D

Control and Elimination within Australia of Hepatitis C from people living with HIV (CEASE).

A Hepatitis C virus surveillance study in its final clinical data follow up phase, which was delayed due to the COVID pandemic. SHHS is now actively assessing this cohort for their last trial visits for HCV viraemia analysis, behavioural and quality of life assessments.

START

The strategic timing of Antiretroviral Treatment (START) study.

What started in 2006 as an international HIV treatment RCT is now in its final year of longitudinal follow up, which is continuing to demonstrate how early treatment has benefitted people living with HIV. SHHS has now completed this final year's data collection and results will be published in the coming months.

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Dr Emily Bryan	Sexual Health and HIV Service	Sexually transmitted infections in men: are current diagnostics only detecting the tip of the iceberg?	QUT research Grant	\$30,000	2yrs, 2020-2021

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Julian Langton-Lockton	Emma Knowland Simon Holz Arron Sparkes Eugene Priscott Sara Yegenah Theo Van Lieshout Andrew Redmond Krispin Hajkowicz Graham Neilsen	MK8591A-017	0 (closed)	5
Julian Langton-Lockton	Emma Knowland Simon Holz Arron Sparkes Eugene Priscott Sara Yegenah Theo Van Lieshout Andrew Redmond Krispin Hajkowicz Graham Neilsen	MK8591A-018	0 (closed)	

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Julian Langton-Lockton	Emma Knowland Simon Holz Arron Sparkes Eugene Priscott Sara Yegenah Theo Van Lieshout	MK8591A-017 A Phase 3 Randomized, Active-Controlled, Open-Label Clinical Study to Evaluate a Switch to Doravirine/Islatravir (DOR/ISL) Once-Daily in Participants With HIV-1 Virologically Suppressed on Antiretroviral Therapy	0	5
Julian Langton-Lockton	Emma Knowland Simon Holz Arron Sparkes Eugene Priscott Sara Yegenah Theo Van Lieshout	MK8591A-018 study A Phase 3, Randomized, Active-Controlled, Double-Blind Clinical Study to Evaluate a Switch to Doravirine/Islatravir (DOR/ISL) Once-Daily in Participants With HIV- 1 Virologically Suppressed on Bictegravir/Emtricitabine/Tenofovir Alafenamide (BIC/FTC/TAF)	0	4
Julian Langton-Lockton	Emma Knowland	Australian HIV Observational Database (AHOD)	0	73
Theo Van Lieshout	Emma Knowland	CEASE-D Control and Elimination within Australia of Hepatitis C from people living with HIV	0	13
Theo Van Lieshout	Emma Knowland	START Strategic Timing and initiation of early Anti-Retroviral Treatment	0	7

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Emily Bryan	Ken Beagley Alison Carey Logan Trim Andrew Redmond Julian Langton-Lockton Luke Coffey David Whiley Jacob Tickner Emma Sweeney	Sexually transmitted infections in men: are current diagnostics only detecting the tip of the iceberg?	0 (SHHS not a recruitment site)	0

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Ekanayake Weeramange C, Tang KD, Vasani S, **Langton-Lockton J**, Kenny L, Punyadeera C. DNA Methylation Changes in Human Papillomavirus-Driven Head and Neck Cancers. Cells [Internet]. 2020 May 31 [cited 2022 Jan 25];9(6). Available from: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,athens&db=mdc&AN=32486347&site=eds-live>
2. Ekanayake Weeramange C, Liu Z, Hartel G, Li Y, Vasani S, **Langton-Lockton J**, et al. Salivary High-Risk Human Papillomavirus (HPV) DNA as a Biomarker for HPV-Driven Head and Neck Cancers. The Journal of Molecular Diagnostics [Internet]. 2021 Oct 1 [cited 2022 Jan 25];23(10):1334–42. Available from: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,athens&db=edselp&AN=S1525157821002117&site=eds-live>
3. Brazier E, Maruri F, Duda SN, Tymejczyk O, Wester CW, Somi G, **Rowling, D**, et al. Implementation of “Treat-all” at adult HIV care and treatment sites in the Global IeDEA Consortium: results from the Site Assessment Survey. JOURNAL OF THE INTERNATIONAL AIDS SOCIETY [Internet]. 2019 Jul 1 [cited 2022 Jan 25];22(7):e25331. Available from: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,athens&db=edswsc&AN=000478602900009&site=eds-live>
4. Herbert S, Puhr R, Petoumenos K, Lewis DA, Varma R, Couldwell DL, **Rowling, D**, et al. Characteristics of heterosexually-acquired compared to homosexually-acquired HIV and implications for clinical practice: results from the Australian HIV Observational Database. AIDS care [Internet]. 2021 Apr 15 [cited 2022 Jan 25];1–7. Available from: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,athens&db=mdc&AN=33856950&site=eds-live>
5. Bansi-Matharu L, Phillips A, Oprea C, Grabmeier-Pfistershammer K, Günthard HF, De Wit S, **Rowling, D**, et al. Contemporary antiretrovirals and body-mass index: a prospective study of the RESPOND cohort consortium. The lancet HIV [Internet]. 2021 Nov [cited 2022 Jan 25];8(11):e711–22. Available from: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,athens&db=mdc&AN=34555326&site=eds-live>
6. Baxter J, Dunn D, Tostevin A, Marvig R, Bennedbæk M, Cozzi LA, Rowling, D et al. Transmitted HIV-1 drug resistance in a large international cohort using next-generation sequencing: results from the Strategic Timing of Antiretroviral Treatment (START) study. HIV Medicine [Internet]. 2021 May [cited 2022 Jan 25];22(5):360–71. Available from: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,athens&db=asx&AN=149846730&site=eds-live>

Department of Thoracic Medicine

Highlights:

- ❖ Ongoing building of a national research network based at RBWH thoracic Medicine- the Debutant network, involving 2 other state sites and 4 interstate sites. For the purpose of specimen collection from expert bronchoscopic units and transfer for ongoing research in molecular analysis of lung cancer.
- ❖ Publication of novel research in blood testing to assist in classifying lung nodules- highly predictive of benign or malignant disease
- ❖ Completion of novel research on patient comfort at bronchoscopy
- ❖ A range of novel / home based sleep research programs have started for home based sleep testing locally and across the state, ideally suited to the era of telemedicine

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Peter Simpson(UQ) David Fielding Karin Steinke Katia Nones (QIMR B) Nic Waddell (QIMR B)	Thoracic Medicine	Improving genomic testing rates for inoperable lung cancer patients	NHMRC- MRFF	\$2.49 million	4 years 2021-2025
Peter Simpson(UQ) Andrew Dalley David Fielding	Thoracic Medicine	How best to guide Metastatic Lung Cancer Treatment	RBWH Foundation	\$40,000	2020-2022
Sarju Vasani David Fielding Chamindie Punyadeera	ENT Thoracic Medicine	Saliva testing in lung nodule discrimination	Metro North	\$40,000	2021-2
Tony Chen Miao Xu Robert Boots	Thoracic Medicine	Collaborated Learning with medical data making high-stake decision without information leakage	Cyber Security research grant. University of Queensland	\$1.4 million	2019-present
				\$74,923	2021
Darren O'Brien,	Thoracic and Sleep Medicine	<i>TeleSleep Case Test and Service</i>	Qld Technology Future Fund,	\$530,616	<i>Pilot</i> 2021-22
Courtney Jarrett	Thoracic and Sleep Medicine	<i>Evaluation of the TeleSleep Pilot Model for the delivery of sleep services to regional patients</i>	Allied Health Professions' Office of Queensland (AHPOQ) Health Practitioner Research Scheme (HPRS).	\$23,631	2022
Courtney Jarrett, Collaborative for recipient.	Thoracic and Sleep Medicine	Pre-RHD Scholarship	Allied Health Research, Learning and Innovation (CAHRLI)		2021-22
Joanne Wex, Laura Marriott, Darren O'Brien,	Thoracic and Sleep Medicine	Grant recipients	Allied Health Professional Enhancement Program (AHPEP)		October 2021

Current RBWH Department / Research Group Led Research Activity

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
David Fielding	Jung Hwa Son Farzad Bashirzadeh	PET First- a prospective study of ordering of investigations in lung nodules	70	115
David Fielding	Jung Hwa Son Farzad Bashirzadeh	Debutant study- extended molecular analysis of EBUS TBNA samples in lung cancer	100	250
David Fielding	Jung Hwa Son Farzad Bashirzadeh	Immunohistochemistry of EBUS TBNA samples for co-markers of PDL1	40	40
Robert Boots,	Oliver Rawashdeh, Judith Bellapart, Craig Winter, Shane Townsend, Dylan Flaws, Darren O'Brien, Chris Zappala, Pierre Clement, Nerman Karamujic, Gemma Crawley, Hervey Lau,	Sleep and Chronotype following aneurysmal Subarachnoid Haemorrhage.		
Hervey Lau	Geoffrey Fanning, Dinithi Samaratunga, Darren O'Brien,	Factors associated with non-adherence to CPAP therapy: an audit of the Queensland Health Sleep Disorders Program		

Collaborative Research Activity Involving RBWH Department / Research Group

Lead Investigator Name (RBWH staff in bold)	Other Study Investigators (RBWH staff in bold)	Research Project Title	Number of RBWH Patients Recruited in 2021	Total number of RBWH Patients Recruited
Kekoolani Visan,	Andreas Moller David Fielding Jung Hwa Son Farzad Bashirzadeh	Extracellular microvesicles in lung nodule discrimination	50	75
Rob Boots	Tony Chen Miao Xu, UQ	Collaborated Learning with medical data making high-stake decision without information leakage		
Jennifer Paratz,	Peter Thomas, Norman Morris, Robert Boots, Louise Gustafsson, Judith Hough, Julie Hides, Anthony Trojman,	Morbidity Post COVID-19: Investigation and Call to Action.		

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Torrenso A, Herth F, ..., **Fielding D**, Niven RM. Bronchial Thermoplasty Global Registry (BTGR): 2-year results. BMJ Open 11(12):e053854 December 2021 [10.1136/bmjopen-2021-053854](https://doi.org/10.1136/bmjopen-2021-053854)
- Kapp CM; Akulian JA; Yu DH; Chen A; Cárdenas-García J; Molena D; Vachani A; Wahidi MM; Maldonado F; **Fielding D**; Yarmus LB; Lee H, Cognitive Load in Electromagnetic Navigational and Robotic Bronchoscopy for Pulmonary Nodules. ATS scholar [ATS Sch], ISSN: 2690-7097, 2020 Dec 23; Vol. 2 (1), pp. 97-107;

Journal Articles (RBWH staff in bold)

3. Skinner TR; Churton J; Edwards TP; **Bashirzadeh F; Zappala C; Hundloe JT; Tan H; Pattison AJ; Todman M; Hartel GF; Fielding DI**, A randomised study of comfort during bronchoscopy comparing conscious sedation and anaesthetist-controlled general anaesthesia, including the utility of bispectral index monitoring.
ERJ open research [ERJ Open Res], ISSN: 2312-0541, 2021 May 31; Vol. 7 (2); PMID: 34084784

4. Visan KS, Lobb RJ, Wen SW, Justin Bedo, ...Lakhani SR, **Fielding D**, Andreas Möller A. Blood-Derived Extracellular Vesicle-Associated miR-3182 Detects Non-Small Cell Lung Cancer Patients. *Cancers* 2022, 14, 257. <https://doi.org/10.3390/cancers14010257>

5. **Boots R**, Mead G, Rawashdeh O Bellapart, J Townsend S, Paratz J, Garner N, Clement P, Oddy D, Leong M, Zappala C. Temperature Rhythms and ICU Sleep: The TRIS Study. *Minerva Anesthesiol* 2021; 87:994-802

6. Yue L, Shen H, Wang S, **Boots R**, Long G. Exploring BCI Control in Smart Environments: Intention Recognition Via EEG Representation Enhancement Learning *ACM Transactions on Knowledge Discovery from Data* 15(5):1-20 doi: 10.1145/3450449

7. Holley, AD, Dulhunty, J Udy, A, Midwinter, M, Lukin, B, Stuart, J, **Boots, R**, Lassig-Smith, M, Holley, R, Paratz, J, Lipman, J. Early Sequential Microcirculation Assessment In Shocked Patients as a Predictor of Outcome: A Prospective Observational Cohort Study. *Shock*. 2021; 55:581-586. doi: 10.1097/SHK.0000000000001578

8. Bellapart J, Nasrallah F, Winearls J, Lassig-Smith M, Stuart J, **Boots R**, Winter C, Flaws D, Bulmer A, Jones L, Laupland KB. Diagnostic Sensitivity of Plasma Endothelin-1 for Cerebral Vasospasm After Subarachnoid Hemorrhage, a Multicentre Double-Blind Study. *J Intensive Care Med*. 2021; 47:1-7 doi: 10.1177/08850666211056568.

9. Shields, Linda, Manning, Jennifer, McAllister, Margaret, **O'Brien, Darren**, Shields, Kirril, Emeto, Theophilus I., Lee Brien, Donna, Murray, John and Benedict, Susan (2021). Nursing ethics and the Holocaust: pilot of an innovation in teaching. *Holocaust Studies*, 1-22. doi: 10.1080/17504902.2021.1906077

Keynote or Plenary Lectures given in 2021

Date	Title
10/2021	European Congress Bronchology and Interventional Pulmonology- Robotic Bronchoscopy. D Fielding
06/2021	Post Asco National symposium. Astra Zeneca. Lung cancer studies commentary. D Fielding
07/2021	Plenary Lecture Thoracic Society Qld Lung Cancer Diagnosis. D Fielding
11/2021	Brisbane Lung Cancer Conference- Breath testing in lung cancer- where are we? D Fielding

Queensland Statewide Antimicrobial Stewardship Program

The Queensland Statewide Antimicrobial Stewardship Program (QSAMSP) saw its five year anniversary in 2021. This signalled a great opportunity to study the outcomes of the program over sequential years of implementation across a range of quality improvement initiatives over a length time series. This culminated in the first of two publications of the program outcomes in collaboration with other health service stakeholders.

The **first** was an analysis of one of the first program roll-out sites for QSAMSP in conjunction with the local health service demonstrating the utility of our unique program in engaged rural and regional health services in the area of antimicrobial stewardship. The **second** was a multi-site Queensland wide quality improvement program demonstrating the utility of centrally support but rural and regionally delivered paediatric antimicrobial stewardship program.

Core elements of our program is antimicrobial stewardship surveillance, focussed strategic policy and stakeholder engagement. This year saw publications emerge from our ongoing collaborative research initiative with other far North Queensland antimicrobial resistance and also national antimicrobial stewardship stakeholders. The **first** was a review of the resistance profile of the far north and its implications for treatment guidelines. This was the first time any analysis of resistance patterns had been done cross regionally, highlight unique resistance issues for the far north of Australia. The **second** helped shape our strategic policy directions through stakeholder engagement, demonstrating the utility of a world café methodology in thematic analysis.

The program is a key partner in the establishment and delivery of the inaugural HOT NORTH Antimicrobial Academy, a Quality Assurance project initially supported by HOT North research funding and now, a multi-site collaboration that aims to further knowledge and capability of health practitioners (medical, pharmacy, nurses and health workers) embedded in clinical care in Aboriginal and Torres Strait Islander communities in the use of antimicrobial stewardship tools and surveillance to address the burden of antimicrobial resistance.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Avent ML , Lee XJ, Irwin AD, Graham N, Brain D, Fejzic J, van Driel M, Clark JE.	Runner up - Health Services and Implementation Research An innovative Antimicrobial Stewardship Program for children in remote and regional areas: optimizing antibiotic use through early intravenous-to-oral conversion	2021 Research Excellence Awards

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Minyon Avent, William Franks, Andrew Edmond, Kathryn Daveson	QLD Statewide AMS Program; Pharmacy Department; Infectious Diseases Unit	Optimising vancomycin therapy for MRSA blood stream infections	CAHRLI Innovation Challenge	\$ 7,000	December 2021 to July 2022
Asha Bowen, Steven Tong, Lorraine Anderson, Trent Yarwood, Kathryn Daveson , Mike Stephens	QLD Statewide AMS Program	HOT NORTH Antimicrobial Academy	HOT NORTH Program	\$25,000	January 2020 to Dec 2021

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body	Total Awarded (whole all years)	Length of Awards in years and years active
Asha Bowen, Steven Tong, Lorraine Anderson, Trent Yarwood, Kathryn Daveson , Mike Stephens	QLD Statewide AMS Program	HOT NORTH Antimicrobial Academy	Tropical Australian Academic Health Centre (TAAHC)	\$20,000	Oct 2020 to Dec 2022

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Merlo G, **Avent ML, Yarwood T, Smith B**, van Driel M, Hall L. Where to from here? Identifying and prioritising future directions for addressing drug-resistant infection in Australia. *Antimicrob Resist Infect Control*, 2021 May 29; 10(1): 85. doi: 10.1186/s13756-021-00953-4.
2. **Avent ML**, Lee XJ, Irwin AD, Graham N, Brain D, Fejzic J, van Driel M, Clark JE. An innovative antimicrobial stewardship programme for children in remote and regional areas in Queensland, Australia: optimising antibiotic use through timely intravenous-to-oral switch, *Journal of Global Antimicrobial Resistance*, Volume 28, 2022, Pages 53-58, ISSN 2213-7165, <https://doi.org/10.1016/j.jgar.2021.11.014>.
3. **Avent ML**, Walker D, Yarwood T, Malacova E, Brown C, Kariyawasam N, Ashley S, Daveson K. Implementation of a novel antimicrobial stewardship strategy for rural facilities utilising telehealth. *International Journal of Antimicrobial Agents*, 2021, 106346, ISSN 0924-8579, <https://doi.org/10.1016/j.ijantimicag.2021.106346>.
4. Cairns KA, **Avent ML**, Buono E, Cheah R, Devchand M, Khumra S, Rawlins M, Roberts JA, Xenos K, Munro C. Standard of practice in infectious diseases for pharmacy services. *Journal of Pharmacy Practice and Research*. In press. DOI: 10.1002/jppr.1744
5. **Avent ML**, Lee XJ, Irwin AD, Graham N, Brain D, Fejzic J, van Driel M, Clark JE. An innovative antimicrobial stewardship programme for children in remote and regional areas in Queensland, Australia: optimising antibiotic use through timely intravenous-to-oral switch, *Journal of Global Antimicrobial Resistance*, Volume 28, 2022, Pages 53-58, ISSN 2213-7165, <https://doi.org/10.1016/j.jgar.2021.11.014>.

Keynote or Plenary Lectures given in 2021

Date	Title
03/2021	ASID: Virtual conference: Optimising antibiotic use through timely intravenous- to- oral switch: Speaker Minyon Avent
10/2021	Antimicrobials 2022: Optimising Antimicrobial Therapy: Chair Minyon Avent
11/2021	Antimicrobial Awareness Week: How to use data ASID: Optimising antibiotic use through timely intravenous-to- oral switch: Speaker Minyon Avent
11/2021	Antimicrobial Awareness Week: Rural and Remote settings: AMS nursing strategies – implementing a Statewide AMS nurse education program: Speaker Stephen Nocher Antimicrobial Awareness Week: Rural and Remote Settings: SMART NAPping: Revitalising rural AMS with QI NAPS: Speaker Gabrielle Grosfeld