

2021

RBWH Research Report

SURGICAL AND
PERIOPERATIVE
SERVICES

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Published by the State of Queensland (Metro North Hospital and Health Service), July 2022

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Surgical and Perioperative Services

Research activity was strongly maintained by Surgical and Perioperative Services in 2021, despite a continuing focus on the response to the COVID 19 pandemic. Some departments engaged in collaborative global COVID surgery studies to better understand its impact on surgical outcomes and guide management.

Highlights of the year included the awarding of Doctorates in Philosophy (PhD) to Dr Julie Lee (Anaesthesia and Perioperative Medicine), Associate Professor David Clark (General Surgery – Colorectal unit) and Dr Timothy Liu (Oral and Maxillofacial Surgery). Associate Professor Clark's endeavour was especially noteworthy, given his role as a Visiting Surgeon with busy private and public clinical practice.

As well as traditional affiliations with the University of Queensland, Queensland University of Technology and QIMR Berghofer, newer collaborations with the Jamieson Trauma Institute, Herston Biofabrication Institute and the Comprehensive Breast Cancer Institute flourished, increasing the volume and quality of research activity.

Many departments were successful in obtaining research funding grants in 2021. Of particular note, the department of Neurosurgery received over \$6 million, including funding for three medical Research Future Fund projects aimed at improving traumatic brain injury management.

Publications in peer reviewed journals was again impressive in 2021. This included General Surgery (49), Urology (36), Anaesthesia and Perioperative Medicine (35), Orthopaedic Surgery (27), Neurosurgery (27) and Oral and Maxillofacial Surgery (23).

I would like to thank and pay tribute to all clinical and research staff who have worked individually and collaboratively to generate this outstanding body of research output.

Department of Anaesthesia and Perioperative Medicine

The year 2021 was once again dominated by the COVID-19 pandemic. Science and research endeavours were significantly hampered however, COVID-19 also had a positive impact, advocating modifications in airway management to protect both the patient and the anaesthetist.

Nonetheless, the Department of Anaesthesia and Perioperative Medicine saw many staff undertaking research and participate in the Research Interest Group in Anaesthesia chaired by A/Prof Victoria Eley, fostering a research culture that is growing in maturity, producing improved patient-centred scientific outcomes.

The department acknowledges all research outcomes in this report and would like to highlight a few key achievements of our researchers. Dr. Julie Lee and her team have for the last 5 years produced numerous publications on *Rotational Thromboelastometry in Obstetrics* and in 2021 Julie obtained her doctorate from the University of Queensland. Julie is a true scholar and was awarded three prizes this year, the Robin Smallwood Bequest Award, the Jeanette Thirlwell Anaesthesia and Intensive Care Best Paper Award and the Best Paper Award in The International Journal of Obstetric Anaesthesia. We would also like to note that Dr. Anthony Hodge was granted the Provisional/New Fellow Research Award for his project *Pharmacokinetic profile of sugammadex in the obstetric population* whilst Dr Michelle Roets was selected as one of the best abstracts of the year at the 21st NATA (virtual) Symposium for her presentation, *Intraoperative cell salvage as an alternative to allogenic (donated) blood transfusion*.

Several staff members obtained grant funding for their ongoing studies, amounting to just over \$821,000 covering a large range of topics with the aim to improve our care to patients and deliver high-quality healthcare. This has resulted in 35 publications, showing the impact of our research team on the international forum of anaesthesia. Conference presentations have been online for the most part which has been embraced by the department with over 50 lectures delivered and several staff being asked to participate as expert panel members.

We are very proud of all these milestones and achievements for our department.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award
Julie Lee	The Robin Smallwood Bequest Award for high-ranking research project grant 2021
Anthony Hodge	Provisional/New Fellow Research Award
Julie Lee	Jeanette Thirlwell Anaesthesia and Intensive Care Best Paper Award
Julie Lee	Best paper award in The International Journal of Obstetric Anesthesia

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
Bowles J, Piper M, Spiller C, V. Eley	Department of Anaesthesia	Grant Program 1: Investigation of heritable impacts of germ cell exposure to general anaesthesia in experimental models or human cohorts.	Escher for Autism	\$32,000	2021
Wyssusek K, Woods C, Busuttin L, Eames G.	Department of Anaesthesia & Perioperative Medicine	Implementation of a scenario-based simulated program for Pyxis™ Anesthesia Stations within a hospital setting to improve acceptability, usability, and operational training requirements: A mixed-methods observational study.	Becton Dickson	\$123,000	2021 - 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
Roets, M.	Department Anaesthesia & Perioperative Medicine	GENetic profiling: Understanding the outcomes and mechanisms associated with reduced immune paralysis when Intraoperative Cell Salvage is used as an alternative to allogeneic (donated) blood transfusion (GEN-MICS).	ANZCA project Grant	\$66,500	2021-2023
Eley, V.	Department Anaesthesia & Perioperative Medicine	Clinical Research Fellowship	MetroNorth Hospital and Health Services	\$450,000	2021-2024
Eley VA, Navarro S, Martin E, Hartel G, Amoako A, Roberts J, Lipman J, Roberts, J, Tang M, Callaway L.	Department Anaesthesia & Perioperative Medicine	Do pre-delivery antibiotics affect the neonatal microbiome and immune system? Intravenous cefazolin v placebo before elective caesarean section: RCT Feasibility Study.	Children's Hospital Foundation Early Career Researcher Project Grant 2021	\$50,000	2021-2022
Hodge A, Roberts J, Tognolini A, Eley VA.	Department Anaesthesia & Perioperative Medicine	N22/003 Pharmacokinetic profile of sugammadex in the obstetric population	ANZCA Novice Investigator Grant	\$20,000	2021-2022
Wyssusek K, Gray P, Woods C, Pelecanos A, Lee J, Spanevello M.	Department Anaesthesia & Perioperative Medicine	Intravenous iron infusion therapy in chronic pain patients with iron deficiency: a randomised controlled trial	Pharmacosmos	\$79,860.24	2021-2022

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
Victoria Eley	Rebecca Christensen, Helen Barrett, Michael Stowasser, Matthew Smith, Andre van Zundert	A validation study of blood pressure readings from the Clearsite finger-cuff compared with invasive blood pressure readings in pregnant women undergoing elective Caesarean section, who have arms which don't suit regular arm cuffs.	3	18
Victoria Eley, Adrian Chin	Anita Pelecanos, George Hopkins, Moe Thuzar, Severine Navarro, Michael Stowasser	In patients presenting for bariatric surgery with a BMI >35 kg/m ² , what is the diagnostic accuracy of arm conicity in identifying >10mmHg error between invasive radial arterial blood pressure monitoring and automated non-invasive blood pressure monitoring?	32	58

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
Nathan Peters	Joel Thomas, Nicole Marsh, Christine Woods	Afterhours Difficult IntraVenous Access (DIVA) doctors - A feasibility study of virtual supervision for resident medical officers at the RBWH completing ultrasound guided peripheral intravenous cannulation (USGPiVC) competency.	102	102
Adrian Chin	Victoria Eley, David Belavy, Angela Tognolini, Anita Pelecanos, Christine Woods	A prospective, observational study of anaesthesia healthcare workers' interactions with COVID-19 positive patients and the occupational risk factors associated with contracting COVID-19.	16	25
Andrew Souness, Angela Tognolini, Dwane Jackson	David Taylor, Craig Harris, Rachel Esler, Nicholas Black, Kerstin Wyssusek	Near-infrared spectroscopy (NIRS) monitoring for early detection of lower limb ischaemia in pelvic exenteration surgery.	2	3
Christopher Futter, George Pang	Mark Trembath, Kerstin Wyssusek	Use of 3D printed models for training anaesthetists in magnetic ultrasound guided thoracic epidural catheter placement.	0	0
Angela Tognolini, Anthony Hodge, Victoria Eley	Elizabeth Martin, Christine Woods	Prospective observational study of the anaesthetic and perioperative management of patients with confirmed or suspected coronavirus disease 2019 (COVID-19).	0	0
Eley, V.A., Chin, A., Peters, N., Woods, C.	Claire Rickard, Anita Pelecanos, Teal Derboghossian, Tony Lightfoot, Murray Ogg	Incidence of radial arterial thrombus following arterial line catheterisation: an audit of clinical practice and the patient experience.	69	69
Eley, V.A.	Severine Navarro, Elizabeth Martin, Gunter Hartel, Akwasi Amaoko, Jeffrey Lipman, Jason Roberts, Leonie Callaway, Mimi Tang	Intravenous cefazolin vs placebo for pre-incision prophylaxis in very low-risk women undergoing elective caesarean section: RCT pilot feasibility study.	3	3
A/Prof Kersi Taraporewalla	Prof Andre van Zundert, Melanie Bakes	The efficiency and efficacy of a constraint-led approach to teaching anaesthesia procedural skills.	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
Dr Trisha Peel	Prof Peter Choong, Prof Allen Cheng, Prof David Paterson , A/Prof Kirsty Buising, A/Prof Michelle Dowsey, Prof Ross Crawford, Prof Richard de Steiger, Dr Tim Spelman, Prof Philip Clarke, Dr An Duy Tran, Prof Ben Howden, Dr Peter Rehfish, Dr Robert Molnar, Dr Victoria Eley Site PI for RBWH	Multicentre randomised double-blind placebo controlled trial of combination vancomycin and cefazolin surgical antibiotic prophylaxis.	69	69
Alvin Obed, Christopher Futter	Paul Schlosser, Penelope Sanderson, Christine Woods, Kerstin Wyssusek	The use of Head-Mounted Displays to detect patient deterioration in a simulated trauma setting.	0	0
Kerstin Wyssusek	Sandra Concha Blamey, Hannah Reynolds, Makarla Stead, Christine Woods, Carl Lisec, Susan Petrie, Alison Mudge, Sharon Neilson	Acute Surgery PEroperative Collaboration Team Quality Improvement Program: The ASPECT QI.	0	293
A/Prof Victoria Eley	A/Prof Severine Navarro Dr Elizabeth Martin Dr Gunter Hartel Dr Akwasi Amoako Professor Jeffrey Lipman Professor Jason Roberts Professor Leonie Callaway Professor Mimi Tang	Intravenous cefazolin v placebo for pre-incision prophylaxis in very low-risk women undergoing elective caesarean section: RCT Pilot Feasibility Study: the ASCENT Trial.	4	5
Professor Paul Myles	Wendy Brown Mark Shulman Trisha Peel Robert Medcalf Dominic Draxler Jessica Kasza A/Professor Julie Lee	Tranexamic acid to Reduce Infection after Gastrointestinal Surgery: the TRIGS Trial	35	35
Professor Bernhard Riedel	Professor David Story Professor Alexander Heriot A/Professor Gavin Wright Professor Daniel Sessler Professor Donal Buggy Dr Jonathan Hiller Dr Julia Dubowitz A/Professor Victoria Eley	Volatile Anaesthesia and Perioperative Outcomes Related to Cancer: The VAPOR-C Trial	1	1

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Bright MR, **Concha Blamey SI, Beckmann LA, Culwick MD**. Iatrogenic uvular injury related to airway instrumentation: A report of 13 cases from the webAIRS database and a review of uvular necrosis following inadvertent uvular injury. Anaesthesia and Intensive Care. 2021;49(2):133-139. doi:10.1177/0310057X20982623.

Journal Articles (RBWH staff in bold)

2. Diwan S, **Van Zundert A**, Nair A., Sancheti PK, Pradham C, Puram C. Impact and Outcomes of Regional Anaesthesia Techniques in Elderly Patients with Fracture of Proximal Femur – A Retrospective Study. *Cureus*. 2021. e 19392. DOI 10.7759.

3. Diwan S, Nair A, Sancheti P, & **van Zundert A**. Does subepineural injection damage the nerve integrity? A technical report from four amputated limbs. *The Korean Journal of Pain*. 2021;34(1):132.

4. **Eley V**, Khoo A, **Woods C**, & **van Zundert A**. Improving Accurate Blood Pressure Cuff Allocation in Patients with Obesity: A Quality Improvement Initiative. *Healthcare*. 2021;9(323):3-11. <https://doi.org/10.3390/healthcare9030323>.

5. **Eley, VA**, Christensen R, Guy L, Wyssusek K, Pelecanos A, Dodd B, Stowasser M, **van Zundert A**. ClearSight™ finger cuff versus invasive arterial pressure measurement in patients with body mass index above 45 kg/m². *BMC Anaesthesiology*. 2021;21:152 <https://doi.org/10.1186/s12871-021-01374-x>.

6. **Eley VA**, Thuzar M, Navarro S, Dodd BR, **van Zundert AA**. Obesity, metabolic syndrome, and inflammation: An update for anaesthetists caring for patients with obesity. *Anaesth Crit Care Pain Med*. 2021 Dec;40(6):100947. doi: 10.1016/j.accpm.2021.100947. Epub 2021 Sep 14. PMID: 34534700.

7. Gibbs NM, **Culwick MD**, Endlich Y, Merry AF. A cross-sectional overview of the second 4000 incidents reported to webAIRS, a de-identified web-based anaesthesia incident reporting system in Australia and New Zealand. *Anaesthesia and Intensive Care*. 2021;49(6):422-429. doi:10.1177/0310057X211060846.

8. Grace SG, Wiepking FSS, **van Zundert, AAJ**. (2021). Hot topics in anaesthesia: a bibliometric analysis of five high-impact journals from 2010-2019. *Scientometrics*. 2021;126(10):8749-8759. <https://doi.org/10.1007/s11192-021-04129-0>.

9. **Guy L**, Christensen R, Dodd B, Pelecanos A, Wyssusek K, **van Zundert A**, **Eley VA**. The effect of Transnasal Humidified rapid Insufflation Ventilator Exchange (THRIVE) versus nasal prongs on safe apnoea time in paralysed obese patients: A randomised controlled trial. *British Journal of Anaesthesia*; 2021 (In press, accepted 11/10/2021).

10. **Hade A**, Okano S, Pelecanos A, **Chin, A**. Factors associated with low levels of patient satisfaction following peripheral nerve block. *Anaesth Intensive Care*. 2021 Mar;49(2):125-132.

11. Higgs N, Lu P, Carr P, Wave R, **van Zundert A**. Techniques to select site of insertion for a peripheral IV catheter with vessel locating devices using light, sounds or tactile actions (or palpations). *J Clin Nurs* 2021;30:1091-1098. doi: 10.1111/jocn.15654.

12. Ioannides, Z.A., Csurhes, P.A., Douglas, N., Mackenroth, G., Swayne, A., Thompson, K.M., Hopkins, T.J., Green, K.A., Blum, S., Hooper, K.D., **Wyssusek, K.H.**, Coulthard, A., Pender, M.P. Sustained Clinical improvement in a subset of patients with progressive multiple sclerosis treated with Epstein-Barr virus-specific T cell therapy. *Front. Neurol.*, 2021;<https://doi.org/10.3389/fneur.2021.65281>.

13. Kim JY, Moore MR, **Culwick MD**, Hannam JA, Webster CS, Merry AF. Analysis of medication errors during anaesthesia in the first 4000 incidents reported to webAIRS. *Anaesthesia and Intensive Care*. December 2021. doi:10.1177/0310057X211027578.

14. **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 Dec;46(12):1085-1090. doi: 10.1136/rapm-2021-103014. Epub 2021 Oct 22. PMID: 34686581.

15. **Lee J**, **Reynolds, H**, **Zundert AV**. Intraoperative cuff pressure measurements of endotracheal tubes in the operating theatre: A prospective audit. *Bali J Anaesthesiology* 2021;5:174-7.

16. Munday J, Higgins N, Jones L, Vagenas D, **van Zundert A**, Keogh S. Zero-heat-flux and oesophageal temperature monitoring in orthopedic surgery: an observational study. *J Multidisciplinary Healthcare* 2021;14:1819-27.

17. **Peters N**, De Alwis S, Waters D, **Woods C**. A retrospective clinical audit investigating the prevalence of patients experiencing difficult peripheral intravenous cannulation afterhours in a tertiary referral hospital in Australia. *Vascular Access* 2021;7(1), 6-11.

18. Prineas S, **Culwick M**, Endlich YA. Proposed system for standardization of colour-coding stages of escalating criticality in clinical incidents, *Current Opinion in Anaesthesiology*. 2021; Dec 34(6):752-760. doi: 10.1097/ACO.0000000000001071.

19. **Roets M**, Dean M, Sturgess D. Transfusion Implications in a COVID-19 era. *Australasian Anaesthesia* 2021, 146-47. 2021.

Journal Articles (RBWH staff in bold)

20. Sin JCK, Tabah A, Campher M, Laupland K, **Eley VA**. The Effect of Dexmedetomidine on Post-Anaesthesia Care Unit Discharge and Recovery: A Systematic Review and Meta-Analysis. *Anaesthesia and Analgesia* (In Press) Accepted 6/11/2021.
21. Strange Khursandi D, **Eley V**. 'Quit while you are ahead - and smell the roses!' A survey of retired Fellows of the Australian and New Zealand College of Anaesthetists. *Anaesth Intensive Care*. 2021 Sep;49(5):379-388. doi: 10.1177/0310057X211005783. Epub 2021 Aug 8. PMID: 34365806.
22. **Town CJ**, Strand H, **Johnson J**, **Brown J**, **Pelecanos A**, **Van Zundert A**. Ultrasound-Guided Fascia Iliaca Plane Block for the Treatment of Donor Site Pain in the Burn-Injured Patient: A Randomized Control Trial. *J Burn Care Res*. 2021 Sep 30;42(5):981-985. doi: 10.1093/jbcr/irab021. PMID: 33517454.
23. Vivian VH, Pardon TL, Vivian S, **Van Zundert A**. Characteristics of a New Device for Intubation Through a Laryngeal Mask Airway Over a Flexible Endoscope. *Med Devices (Auckl)*. 2021 Jul 6;14:217-223. doi: 10.2147/MDER.S310415. PMID: 34267558; PMCID: PMC8275173.
24. Vivian VH, Pardon T, **van Zundert AA**. Modified Retrograde Nasal Intubation: A New Airway Technique and Devices. *Anaesthesia Progress* 2021;68(2) 107-113.
25. **Van Zundert AAJ**, Gatt SP, van Zundert TCRV, Kumar CM, Pandit JJ. Features of new vision-incorporated third-generation video laryngeal mask airways. *J Clin Mon Comp* 2021. <https://doi.org/10.1007/s10877-021-00780-3>.
26. **Van Zundert A**. Difficult subarachnoid anaesthesia: Prediction and Performance. *Int J Reg Anaesth* 2021;2(2):92-99. DOI: 10.13107/ijra.2021.v02i02.033.
27. **Van Zundert A**. (2021). The green footprint of anaesthesia. *Anaesthesia and critical care and pain medicine* 2021;40(4):100872. <https://doi.org/10.1016/j.accpm.2021.100872>.
28. **Van Zundert AA**, Endlich Y, **Beckmann LA**, Bradley WP, Chapman GA, Heard AM et al (2021). Australian and New Zealand Airway Management Special Interest Group. 2021 Update on airway management from the Anaesthesia Continuing Education Airway Management Special Interest Group. *Anaesth Intensive Care* 2021;Jun 22:310057X20984784. doi: 10.1177/0310057X20984784. Epub ahead of print. PMID: 34154374.
29. **Van Zundert A**, Wiepking F, **Roets M**, Van Zundert T, Gatt S. Blood transfusion and venous cannulation; medical publication and innovation across 350 years of history: A narrative review. 2021;5(4):223-9.
30. **Van Zundert A**, **Nethathe G**. Commentary: Li, Y., Ciampa, E. J., Zucco, L., Levy, N., Colella, M., Golen, T et al. Adaptation of an obstetric anaesthesia service for the severe acute respiratory syndrome coronavirus-2 pandemic: description of checklists, workflows, and development tools. *Anaesthesia and analgesia in Obstet Anesth Digest* 2021;41(3):122-123.
31. Wiepking, FSS., **van Zundert, AAJ**. The Lure of the Luer Connector Non-Luer Connectors in Regional Anaesthesia. *Acta Anaesthesiol Scand* 2021; May 8 65:1147-1153. doi: 10.1111/aas.13840.
32. Wiepking F, **Van Zundert A**, Martin JP, Cazalaà JB, Buttner R. The all-glass Luer syringe: Historical facts around concepts, introduction and patents. *Anaesth Crit Care Pain Med* 2021;40(100921):1-7.
33. **Wyssusek K**, Lee J, **Hames K**, Koehler-Vargas N, Hall K, **Steyn M**, **van Zundert A**. Departmental preparedness for pandemic readiness in anaesthesia: A practical departmental readiness checklist. *Bali Journal of Anaesthesiology* 2021;5(3):149-157. doi: 10.4103/bjoa.bjoa_14_21.
34. **Wyssusek K**, **Taylor K**, **Concha-Blamey S**. Focused educational intervention improves intern knowledge of perioperative patient blood management principles. *BMJ Open Quality* 2021;10(4):e001390. doi: 10.1136/bmjocq-2021-001390.

Book Chapters (RBWH staff in bold)

1. **Roets M**, Sturgess JD, Dean MM. Transfusion implications in a COVID-19 era. In: *Australasian Anaesthesia*. Melbourne (AU): Australian and New Zealand College of Anaesthetists; 2021.
2. **Van Zundert A**. Revolutionary Healthcare Information Technology. In: Paul P. Chaiken (ed.). *Navigating the Code. Transforming the Patient-Physician Journey*. Chapter 12. Poplar Tree Media; 2021. ISBN: 1736702122, 9781736702123.

Book Chapters (RBWH staff in bold)

3. **Van Zundert A**, Kumar C, Jankovic D. Regional Anaesthesia in Ophthalmology. In: Regional Nerve Blocks in Anaesthesia and Pain Therapy, 81–98. Cham: Springer International Publishing, 2015. http://dx.doi.org/10.1007/978-3-319-05131-4_6.
4. Barach P, **Van Zundert A**. How to become a successful researcher? In: WHO guidance on research methods for health emergency and disaster risk management. Geneva: World Health Organization; 2021. <https://apps.who.int/iris/handle/10665/345591> Licence: CC BY-NC-SA 3.0 https://extranet.who.int/kobe_centre/en/project-details/GUIDANCE_ResearchMethods_HealthEDRM.

Keynote or Plenary Lectures given in 2021

Date	Title
07/2021	Beckman, L. Facilitator. CICO Workshop & Case Conference: Airway: It's not your airway, it's mine! Conjoint Australian Society of Anaesthetists National Scientific Congress and Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021); Brisbane, Australia.
07/2021	Black M , Kothari A, Chawla G, Pelecanos A, McDermott L , O'Connor H , Kalma B, Eley VA . SOMANZ/ADIPS National Conference (Virtual). Attitudes toward antibiotic use in pregnancy and after birth – a survey of Australian women. Presented by M. Black.
07/2021	Chin, A. Facilitator. Conjoint Australian Society of Anaesthetists National Scientific Congress and Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021); Brisbane, Australia.
06/2021	Eley V , Obstetric Anaesthetists Association Annual Scientific Meeting (Virtual). Best Practice: Post-dural puncture headache. Expert panel member.
04/2021	Eley, V , ASA/ACE Combined Annual Scientific Meeting (Virtual) July 2021. Chair of the Obstetric Special Interest Group Session.
04/2021	Eley, V , Australian Society of Anaesthetists/ACE Combined Annual Scientific Meeting (Virtual) July 2021. Facilitator of multidisciplinary panel: "Does she have capacity".
04/2021	Eley VA , Christensen R , Guy L , Wyssusek K , Pelecanos A, Dodd B, Stowasser M, van Zundert A . Australian and New Zealand College of Anaesthetists Annual Scientific Meeting Melbourne/. ClearSight™ finger cuff versus invasive arterial measurements in patients with BMI >45 kg.m ⁻² . Open Poster Prize Session - Winner.
06/2021	Eley V , Obstetric Anaesthetists Association Annual Scientific Meeting June 13, 2021 (Virtual). Best Practice: Post-dural puncture headache. Expert panel member.
07/2021	Eley V , Advances in the Management of Obstetric Haemorrhage. Singapore Anaesthesia Refresher Course (Virtual). Invited speaker.
07/2021	Eley V , Perimortem Caesarean Section. Singapore Anaesthesia Refresher Course (Virtual). Invited speaker, plenary.
09/2021	Van Zundert A , European Society of Regional Anaesthesia Virtual Conference. Opioid Crisis: What Physicians and Chronic Pain Therapy Providers Need to Know - The Australian Perspective.
11/2021	Eley V , National Patient Safety in Anaesthesia Conference, Dublin, Ireland (Virtual). Maternal and Child Safety, perspectives from Australia. Invited speaker.
11/2021	Eley V , College of Anaesthesiologists and Intensivists of Sri Lanka, (Virtual). Resuscitation Webinar: Maternal Resuscitation. Invited speaker
04/2021	Gurunathan U, Hines J, Hay K, McKenzie S, Pearse B, Nandurkar H, Eley V . Australian and New Zealand College of Anaesthetists Annual Scientific Meeting Melbourne/Virtual 2021. Open Poster Prize Session. Influence of metabolic syndrome and hypercoagulability on postoperative troponin levels in obese patients undergoing major orthopaedic surgery.
04/2021	Guy L , Christensen R , Dodd B, Pelecanos A, Wyssusek K , van Zundert A , Eley VA . Australian and New Zealand College of Anaesthetists Annual Scientific Meeting, Melbourne/Virtual 2021. The effect of THRIVE versus nasal prongs on safe apnoea time in paralysed obese patients: A randomised controlled trial. Presented in the Gilbert Brown Prize Session. Presented by L. Guy.

10/2021	Eley V , Australian and New Zealand College of Anaesthetists Joint Airway/Obstetrics/ Perioperative Medicine Special Interest Group Virtual Meeting . Metabolic syndrome, obesity and anaesthesia.
10/2021	Eley VA, Christensen R, Guy L, Wyssusek K, Pelecanos A, Dodd B, Stowasser M, van Zundert A . Open Poster Prize Session - Winner. Australian and New Zealand College of Anaesthetists Annual Scientific Meeting Melbourne/Virtual. ClearSight™ finger cuff versus invasive arterial measurements in patients with BMI >45 kg.m ⁻² .
09/2021	Futter C . Presenter. Improving Clinical Education through 3D manufacturing. 2021 Herston Healthcare Symposium. Royal Brisbane and Women's Hospital.
07/2021	Lawrence S . Multidisciplinary panel: Does she have capacity? A case-based study. Conjoint Australian Society of Anaesthetists National Scientific Congress and Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021); Brisbane, Australia.
07/2021	Lawrence S . Epidurals in Obese Patients. Obstetrics SIG. Conjoint Australian Society of Anaesthetists National Scientific Congress and Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021); Brisbane. Australia.
02/2021	Lee J . Co-facilitator: Australian Society of Anaesthetists 4D Directors of Departments Development Day – Learn and lead topics: Managing and leading team effectiveness and negotiation skills in difficult conversations.
04/2021	Lee J . EMERGE #3 ROTEM® in Obstetrics (Education Meetings for Expanding ROTEM®-guided Excellence)
04/2021	Lee J . Co-facilitator: EMERGE ROTEM® virtual workshop – case interpretations.
05/2021	Lee J . ANZCA Annual Scientific Meeting. What's new in fibrinogen replacement therapy?
04/2021	Lee J, Eley V, Wyssusek K, Way M, Cohen J, van Zundert A . 21 st Annual NATA Symposium 04/2021, Virtual Meeting: The influence of gestational diabetes mellitus on coagulation in healthy term pregnancy as assessed by rotational thromboelastometry (ROTEM®).
09/2021	Obed A . Critical event detection in Anaesthesia- design and evaluation of a head-mounted display application. 2021 Herston Healthcare Symposium. Royal Brisbane and Women's Hospital.
07/2021	Roets M , Intraoperative cell salvage for obstetric surgery. Conjoint Australian Society of Anaesthetists National Scientific Congress and Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021), Brisbane Australia. Roets M, et. al. Intraoperative cell salvage as an alternative to allogeneic (donated) blood transfusion: An evaluation of the immune response profile.
04/2021	Roets M , et. al. Intraoperative cell salvage as an alternative to allogeneic (donated) blood transfusion: An evaluation of the immune response profile. <ul style="list-style-type: none">• Selected by the reviewers as one of the 8 best abstracts submitted this year.• Invited to a 5-minute presentation, followed by a 3-minute discussion, during the session BEST POSTERS – PRESENTATIONS AND AWARDS, 21st Annual NATA (virtual) Symposium, Athens Greece.
06 - 07/2021	Roets M. , Building Bridges and Breaking Boundaries, Panel discussion. AAHMS Queensland Clinical Sciences Symposium for the Australian Academy of Health and Medical Sciences (AAHMS) at the Translational Research Institute, Brisbane. 20 March 2021.
05/2021	Storey A . High flow O2 Hood for COVID-19, from Thought Bubble to Capability. SPUMS Annual Scientific Meeting 2021.
07/2021	Wyssusek K . Committee member. Conjoint ASA NSC & QLD ACE Meeting. Wyssusek K . Presenter. Sustainability in Anaesthesia. Conjoint Australian Society of Anaesthetists National Scientific Congress and Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021); Brisbane, Australia. Wyssusek K . Presenter. Hot Topic Update: Perioperative Patient Blood Management- How prepared is your patient for surgery? Conjoint Australian Society of Anaesthetists National Scientific Congress and

	Queensland Anaesthesia Continuing Education Meeting (Conjoint ASA NSC QLD ACE 2021); Brisbane, Australia.
09/2021	Wyssusek K. Back to the future - Emerging Technologies in Anaesthesia and Intensive Care. 2021 Herston Healthcare Symposium. Royal Brisbane and Women's Hospital.
08/2021	Wyssusek K. Panel member: ASM Junior Doctor Conference, Sustainability in Healthcare; Gold Coast.
11/2021	Wyssusek K. Recycling of PET in the hospital - online seminar and workshop. Australian Packaging Covenant (APCO).

Professor Stuart Pegg Burns Centre

The Professor Stuart Pegg Burns Centre provides all adult burn care for the state of Queensland, presenting an excellent opportunity for innovative translational research. Co-located with the Queensland Skin Culture Centre and the Herston Biofabrication Institute and in strong partnership with The Jamieson Trauma Institute, STARS, QUT and Fiona Wood Burns Research Centre places the Burns unit in a unique position for world-class research.

The Burns research programmes leads innovative research into improving patient outcomes for patients following burns, with research projects ranging from *in vitro* explorative studies to novel approaches to patient management and therapy.

The RBWH Foundation Burns Research Grant scheme has funded three research projects to be commenced in 2022. One project entitled "A pilot study assessing the feasibility of NexoBrid versus the current standard of care of isolated upper limb burns: A solution to the perfect crime. This will involve recruitment of ten patients to receive topical enzymatic debridement for deep burns on the upper limbs (less than 10% total body surface area) with the aim of demonstrating feasibility of its use as well as the expected reduction in length of stay compared to the current standard of care.

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
Jason Brown, David Clark, Andrew Stevenson, Benjamin Dodd, David Cavallucci, Ben Green, Owen Ung, Michael Handy	General Surgery, Burns and Trauma	Research Coordinator Grant for General Surgery, Burns and Trauma	Metro North HHS	\$314,438	2020-2021
Jason Brown, Elizabeth Vujcich, Andrea McKittrick	Burns Unit/ OT Dept.	Investigating the feasibility, acceptability and safety of advanced early burn scar interventions on burn scar outcomes (ELEVATE/ELATE)	JTI	\$236,188	2020-2021
Dr Jason Brown , Prof Kiarash Khosrotehrani (UQ), Prof Alan Rowan (UQ)	Queensland Skin Culture Centre and Herston Biofabrication Institute	Clinical Sub-Program: Skin and Wounds	Metro North HHS	\$1,000,000	2021-2025
Dr Jason Brown , Prof Kiarash Khosrotehrani (UQ), Prof Alan Rowan (UQ)	Queensland Skin Culture Centre and Herston Biofabrication Institute	Clinical Sub-Program: Skin and Wounds	Metro North HHS	\$1,000,000	2021-2025

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
Jason Brown	Michelle Donovan, Noah Betar, Steven McPhail (QUT), Zephania Tyack (QUT)	Feasibility, acceptability, cost and sustainability of ablative fractional CO2 laser for the treatment of scars in adolescents and adults post-burn: a longitudinal cohort study (retrospective)	N/A	N/A
Jason Brown	Peter Gillies, Andrew Dally	Collection of skin tissue from burn wounds in adults. The Queensland Skin Culture Centre (QSCC) Biobank	3	3
Peter Gillies	Ranjeny Thomas (UQ), Andrew Dalley, Danielle Herbert	Manipulating the immune response to epithelial cells	N/A	N/A
Jason Brown	Lucas Wheatly, Noah Betar, Peter Maitz (Syd)	A prospective, non-controlled evaluation of the synthetic NovoSorb™. Biodegradable Temporising Matrix (BTM) for dermal repair after deep burn injury	0	40
Liz Vujcich	Jason Brown, Michelle Donovan, Noah Betar	ELATE - Early versus late ablative CO2 fractional laser treatment evaluation	8	11
Andrea McKittrick	Michelle Donovan, Amber Jones, Jason Brown, Liz Vujcich, Sue Laracy, Jennifer Strong	ELEVATE - Feasibility, Acceptability and Safety of Vacuum Therapy on Burn Scar outcomes	11	14
Jason Brown	Andrea Mc Kittrick, Mathilde Desselle, David Forrestal, Roozbeh Fakhr, Danielle Herbert, Aleksandra Edmundson	A pilot study to implement technology (3D Scanning and Printing) to improve long term burn facial scarring outcomes across the spectrum of care	1	1
Carl Lisec	Jason Brown, Amelia Perri, Allison Hill, Anber Jones, Anita Plaza, Kate McCrossin, Andrea McKittrick,	A pilot study assessing the feasibility of NexoBrid versus the current standard of care of isolated upper limb burns: A solution to "the perfect crime"?	0	0
Noah Betar	Jason Brown, Peter Maitz (Syd), Danielle Herbert	Intravenous iron therapy to treat anaemia in patients with big burns at the RBWH (retrospective). Herston Biofabrication Institute (HBI) Burns Statewide Service program.	N/A	N/A

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 Gillies	Andrew Dalley, Jason Brown, Danielle Herbert	Pilot study to recapitulate the proliferative epithelial niche in acellular de-epidermised dermis. Herston Biofabrication Institute (HBI) Burns Statewide Service program.	N/A	N/A
Peter Gillies	Amanda Kijas (UQ), Andrew Dalley , Alan Rowan (UQ), Jason Brown, Danielle Herbert	Functionalised hydrogel and/or fibrin for keratinocyte culture. Herston Biofabrication Institute (HBI) Burns Statewide Service program.	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
Nichole Foster	Dale Edgar, Fiona Wood, Mark Fear, Nathan Pavlos, Edward Raby, Elizabeth Capell, Frank Li, Jason Brown , Aaron Tay, Leila Cuttle	Traumatic Heterotopic Ossification: Exploring Prevalence, Risk Factors, Prevention and Treatment	1	1
Kiarash Khosrotehrani (UQ)	Alan Rowan (UQ), Abbas Shafiee, Jason Brown	Effective solutions for full restoration of skin barrier and function. HBI Skin & Wounds sub-program.	N/A	N/A
Alan Rowan (UQ)	Amanda Kijas (UQ), Jason Brown, Peter Gillies, Andrew Dalley , Michaela George (UQ)	Guiding immune regulation using smart biomaterials to promote scarless wound healing. HBI Skin & Wounds sub-program.	QSCC Biobank	N/A
Andrea Mc Kittrick	Amber Jones, Jason Brown	A retrospective review of the management and functional outcomes of patients who developed heterotopic ossification in upper limbs post burn injury between 2017 and 2020	0	17
Mathilde Desselle	Jason Brown , Lucy Holland (QUT), Paul Gray, Andrea McKittrick	PARM-VR. Co-design of an Innovative Virtual Reality (VR) Environment as a Pain and Anxiety Augmented Relief Method in Burns Survivors	1	1

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. C Town, H Strand, J Johnson, **J Brown**, A Pelecanos, A Van Zundart. Ultrasound-guided Fascia Iliaca Plane Block for the treatment of donor site pain in the burn injured patient: a randomized control trial. J Burn Care & Research. 2021. 42 (5), 981.<https://doi.org/10.1093/jbcr/irab021>
2. CH Lo, **JN Brown**, EJG Dantzer, PKM Maitz, JG Vandervord, Wound healing and dermal regeneration in severe burn patients treated with NovoSorb® Biodegradable Temporising Matrix: A prospective clinical study. Burns 2021. Jul 31 S0305-4179(21)00199-6. doi: 10.1016/j.burns.2021.07.014
3. **A Miller, E Vujcich, J Brown**. Effect of Central Line Duration and Other Risk Factors on Central Line-Associated Bloodstream Infection in Severe Adult Burns Patients at a Large Tertiary Referral Burns Centre. 2021. European Burn Journal 3 (1), 18-26
4. **S O'Reilly, E Crofton, J Brown, J Strong**, J Ziviani. Use of tape for the management of hypertrophic scar development: A comprehensive review. 2021. Scars, Burns & Healing. Jul 12; 7; doi: 10.1177/20595131211029206
5. **A Shafiee**, L Moradi, M Lim, **J Brown** Coronavirus disease 2019: A tissue engineering and regenerative medicine perspective Stem Cells Translational Medicine 2020. 10 (1), 27-38

Keynote or Plenary Lectures given in 2021

Date	Title
04/2021	Topical Steroids in Burns Patients: a review of the literature and a descriptive analysis of topical Kenacomb use at a major tertiary burn centre. Verbal Presentation, 44th Annual JAB Maui Burn and Wound Symposium, Duff, M and Lisec, C.

Department of Otolaryngology, Head & Neck (Ear, Nose & Throat)

The ENT Department continues to expand the scope of its academic research.

Grant funding for additional research support staff will allow a number of studies to be submitted for publication in the next few months.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Zhen Yu Liu	2021 RBWH and RBWH Foundation Post Graduate Scholarship	2021 RBWH and RBWH Foundation Grant Awards Ceremony

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
Ryan Sommerville	ENT - Skull-Base	Multimodal assessment of perineural spread in Head & Neck Cancer and development of a Head & Neck Research Unit	Garnett Passe and Rodney Williams Foundation		2019 - 2021
Sarju Vasani	ENT – Head and Neck	A “needleless” approach to predict individuals at risk of developing oral cancer	RBWH Foundation Grant	\$50,000	2021-2022

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
Anders Cervin	Zhen Liu, Kathryn Girling, Naboth Matinhira , Diane Maresco-Pennisi (UQCCR)	Intranasal Probiotic Rinse for Purulent Chronic Rhinosinusitis	14	14
Anders Cervin	Abigail Walker, Kathryn Girling	A Phase II, Open-label, Two-part, Randomised, Parallel-group Trial to Evaluate the Safety, Tolerability and Pharmacokinetics of LYR-220 in Chronic Rhinosinusitis (CRS) patients who have had a prior Ethmoidectomy	2	2
Anders Cervin	Abigail Walker, Kathryn Girling	A Multicentre, Randomised, Double-Blind, Parallel-Group Placebo-Controlled Phase III efficacy and safety study of Benralizumab in Patients with Eosinophilic Chronic Rhinosinusitis with Nasal Polyps (ORCHID)	5	5
James Earnshaw	Anders Cervin, Cameron Grigg, Zhen Yu Liu	A double blinded trial to assess and validate pilot results of oral propranolol in preventing epistaxis in patients with Hereditary Haemorrhagic Telangiectasia	14	14
Jennifer Chen	Sarju Vasani, CK Lee (QUT)	Artificial intelligence to detect laryngeal cancer		

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
Jennifer Chen	Sarju Vasani , David Fielding, Eva Malacova	Second primary malignancy surveillance in head and neck cancer	15	30
Jennifer Chen, Ryan Sommerville		A comparison of surgical outcomes in the management of parotid pleomorphic adenoma – a 10-year retrospective cohort study		338
Nathan Quigly, Sarju Vasani	Eva Malacova, Anders Cervin	Systematic Evaluation of Laryngeal and Pharyngeal Investigations for LPR		
Ryan Sommerville	Craig Winter , Jennifer Gillespie, Woo Sun, Zhen YuLiu	Utility of High-Resolution MRI for Perineural Spread in Head and Neck Cancers		
Ryan Sommerville	Dr Charles Lin	Perineural Outcome Study		
Ryan Sommerville	Ash Abeysekera	Histology vs high-resolution MRI margins	1	13
Zhen Yu Liu	Sarju Vasani , Chamindie Punyadeera (QUT), Lizbeth Kenny , Rahul Ladwa (PAH)	Human Papillomavirus associated oropharyngeal cancer: a novel salivary modality for monitoring disease response and surveillance		
Zhen Yu Liu	Sarju Vasani	PET in HPV-OPC		302

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Analysis of human leukocyte antigen associations in human papillomavirus-positive and -negative head and neck cancer: Comparison with cervical cancer. Cancer 2022. Chameera Ekanayake Weeramange,, Danhua Shu, Kai Dun Tang, Jyotsna Batra, Rahul Ladwa, Lizbeth Kenny, **Sarju Vasani**, Ian H Frazer, Riccardo Dolcetti, Jonathan J Ellis, Richard A Sturm, Paul Leo, Chamindie Punyadeera
2. Determining the utility of a screening program to reduce the incidence of HPV driven oropharyngeal cancer Oncoscience 2021. **Sarju Vasani**, Ian Frazer, Chamindie Punyadeera.
3. Salivary High-Risk Human Papillomavirus (HPV) DNA as a Biomarker for HPV-Driven Head and Neck Cancers. Chameera Ekanayake Weeramange, **Zhen Liu**, Gunter Hartel, Yinan Li, **Sarju Vasani**, Julian Langton-Lockton, Lizbeth Kenny, Luc Morris, Ian Frazer, Kai D Tang, Chamindie Punyadeera.
4. Proteomic Alterations in Salivary Exosomes Derived from Human Papillomavirus-Driven Oropharyngeal Cancer. Kai D Tang, Yunxia Wan, Xi Zhang, Natalie Bozyk, **Sarju Vasani**, Lizbeth Kenny, Chamindie Punyadeera.

Department of General Surgery (Selected highlights from within the Department)

Unit 1: Breast and Endocrine

2021 was an exciting year for Unit 1 (Breast and Endocrine) with the establishment of a novel and improved procedure known as ROLLIS for pre-surgical localisation of breast lesions, and the implantation of intra-operative radiotherapy (IORT) which would offers multiple advantages over current radiotherapy. The unit is conducting two Phase 1 clinical trials; a multi-centre trial investigating the diagnostic, staging and theranostic potential of a nanoparticle targeting tumour specific markers in early breast cancer. In addition, RBWH is the lead site to conduct a clinical trial in 2022 assessing the outcomes and tolerability of 3-D bio-printed scaffold implants for breast reconstruction.

Unit 2: Hepatobiliary/Pancreatic

HPB is involved with ongoing contribution to the international literature to progress the understanding of the technical and safety aspects of complex HPB surgery.

Ongoing inclusion of junior and senior trainees to begin and advance the research component of their surgical careers.

Success in obtaining funding to support ground-breaking research into early diagnosis, staging and treatment of pancreatic cancer using novel PET tracers.

Unit 3: Colorectal Unit

The highlights of the 2021 year have seen great work across the PhD projects of Nick Lyons and Andrew Zammit. A number of poster presentations have been accepted for the Tripartite colorectal meeting in 2022 and manuscripts summarising the data chapters have been submitted for peer review. Dr Cuda is nearing the completion of her thesis and is soon to defend it.

New prospective studies have commenced, including the anastomotic checklist and drain fluid studies have completed recruitment. Plans are underway for a new randomised study of anastomotic configuration in Crohn's disease. A/Professor Clark has had his PhD accepted through the University of Sydney and shown that it is possible to embed clinical research and a higher degree into everyday practice.

Unit 4: Upper Gastrointestinal

The Upper Gastro-intestinal Surgery Department primary goal of 2021 was to establish a database which will provide capability to produce future research. We were able to attain a research grant to purchase equipment which will help all avenues of research for the Upper Gastro-intestinal Surgery unit, as well as provide a clinical need for service provision.

The research publication output has been low volume in 2021, but highlighted by our revisional bariatric single loop anastomosis paper published in Surgery and Obesity Related Diseases. We are a key site involved in an international multi-centre trial SPACE-FLOT. Many projects have been commenced which will hopefully translate to more prolific publication and presentations in 2022.

Our unit is involved in organising and presenting at the upcoming RACS ASC event.

Unit 5: Acute Surgical Unit

In 2021 Acute Surgical Unit has explored the safety, feasibility and cost saving of Same Day Discharge following uncomplicated appendectomy, this study has led to specifying the selection criteria for Same Day Discharge from ASU at RBWH for a prospective study. A prospective, multi-site study assessing Same Day Discharge following uncomplicated appendectomy is due to launch during 2022.

Unit 1: Breast and Endocrine

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
Kowsalya Murugappan	Ashkun Naderian	Magnetic Resonance Imaging (MRI) in the evaluation of lobular carcinoma	N/A	N/A
Kowsalya Murugappan	Eugenia Ip	Use of one-step nucleic acid amplification (OSNA) in the management of the axilla in breast cancer	N/A	N/A
Kowsi Murugappan	Paul Thomas; Owen Ung; Sunil Lakhani; Ben Green; Clement Wong; Liz Kenny; Karin Steinke; Louise Campbell; Natalie Bradford; Colleen Niland	Evaluating the accuracy of 18F-FDG PET-MRI scan in detecting regional lymph node disease in high-risk Breast cancer patients: PETAL Study	5	10
Diana Tam	Kristen Elstner, Robyn Cheuk, Owen Ung, Clement Wong, Liz Kenny, Michelle Grogan, Charles Lin, Sunil Lakhani	Intraoperative radiotherapy (IORT) for early breast cancer- a pilot evaluation of implementation, feasibility, safety and financial analysis	0	0
Andrew Nathanson	Pongkwan Pratishtananda	Thyroidectomy at RBWH: reviewing the activity of General Surgery and ENT departments	N/A	N/A
Kowsi Murugappan	Therese McCurry	Measuring the outcomes of patients receiving neoadjuvant chemotherapy	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
Jane Fox	Kowsi Murugappan , Natalie Yang, Shanta Velaiutham,	A Phase I Study Investigating the Safety and Efficacy of the MagSense™ Human Epidermal Growth Factor Receptor 2 (HER2) Test Reagent Using Magnetic Resonance Imaging and the MagSense™ Instrument in Subjects with HER2-positive Breast Cancer to Test for Ipsilateral Lymph Node Involvement	0	0
Owen Ung	Michael Wagels	Clinical trial evaluating medical-grade polycaprolactone-PCL breast scaffold implantation with autologous fat grafting for breast implant revision and congenital defect correction surgery	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
Sunil Lakhani	Kowski Murugappan, Owen Ung, Ben Green, Po-Ling Inglis, Pete Simpson Amy McCart Reed	Q-IMPROVE: genome sequencing of NAC patients to develop precision treatment plan	7	7
Sunil Lakhani	Kowski Murugappan Paul Thomas; Owen Ung; Sunil Lakhani; Ben Green; Clement Wong , Peter Simpson; Kaltin Ferguson, Colleen Niland	Breast Cancer Tissue Bank	198	
Sunil Lakhani	Owen Ung, Scott Campbell, Tom Robertson, Lindy Jeffree	Molecular Pathology and Genetic Sub-Classification of Precancerous and Cancerous Breast Lesions (Sub study of Breast Cancer Tissue Bank)	72	

Unit 2: Hepatobiliary/Pancreatic

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
Nicholas O'Rourke, David Cavallucci, David Wong	HPB Unit	Exploring the role of PSMA PET scans in diagnosis of HCC	Wesley Medical Research Cancer Grant 2020	\$48,000	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
William McGahan	Paul Thomas, Stephen Rose, David Cavallucci, Euan Walpole, Kellee Slater, Thomas O'Rourke, Nicholas O'Rourke, Nicholas Butler, Richard Bryant	Applicability of Positron Emission Tomography using Gallium-68 labelled Fibroblast Activating Protein Inhibitor for the diagnosis, staging and treatment of pancreatic cancer	10	10
David Brough	David Cavallucci, Nick O'Rourke	Looking At symptoms and outcomes for Patients with functional gastrointestinal disorders undergoing laparoscopic CHOLEcystectomy (LAP-CHOLE): a two centre, single-blinded, observational study	N/A	N/A
William McGahan	Nick O'Rourke, David Cavallucci	A retrospective review of the patterns of care in patients with pancreatic cancer in the Metro North Health District	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
William McGahan	David Cavallucci, Tom O'Rourke, Nick Butler, Mark Smithers, Euan Walpole, David Brough	Standardised data recording for patients with pancreatic cancer in the Metro North and Metro South Health Districts of Queensland	N/A	N/A
John Hooper	William McGahan, Thomas Kryza, Madeleine Gough	Expression of novel PET targets in precursors of pancreatic cancer: implications for early diagnosis	N/A	N/A

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Xiaoying Wang, Catherine S C Teh, Takeaki Ishizawa, Takeshi Aoki, **David Cavallucci**, Ser-Yee Lee, Katherine M Panganiban, Marcos V Perini, Sudeep R Shah, Hongguang Wang, Yinzhe Xu, Kyung-Suk Suh, Norihiro Kokudo; Consensus Guidelines for the Use of Fluorescence Imaging in Hepatobiliary 2021. *Surgery. Ann Surg.* Jul 1;274(1):97-106.
2. **Bianca Kwan, Peadar S Waters, Cian Keogh, David J Cavallucci, Nicholas O'Rourke, Richard D Bryant.** Body mass index and surgical outcomes in laparoscopic liver resections: a systematic review. 2021. *ANZ J Surg* Nov;91(11):2296-2307.
3. **Bianca Kwan, Peadar S Waters, Emily Olive, Andrew Nathanson, Roger Bain, Richard D Bryant, Nick O'Rourke, David J Cavallucci.** Haemobilia due to a ruptured right hepatic pseudoaneurysm secondary to Mirizzi syndrome with simultaneous cholecystoduodenal fistula. 2021. *ANZ J Surg.* Jan;91(1-2): E56-E58
4. **Samuel L Smith, Peadar S Waters, Wasif Mirza, Cian Keogh, Jeffrey Lipman, David J Cavallucci, Nicholas O'Rourke, Richard D Bryant.** Re-expansion pulmonary oedema with Takotsubo cardiomyopathy: a rare complication of giant hepatic cyst drainage. 2021. *ANZ J Surg.* 2021 Nov;91(11):2524-252
5. **Krishna Pattabathula, Peadar S Waters, Jason Hwang, Mark Bettington, Mahendra Singh, Richard D Bryant, David J Cavallucci, Nicholas O'Rourke.** Diagnostic and therapeutic considerations in biopsy-proven type 2 autoimmune pancreatitis: comparative analysis with biopsy-proven type 1 autoimmune pancreatitis. 2021, *ANZ Journal of Surgery* 91 (5): 907-914
6. Nis-Julius Sontag, Andrew PW Banks, Lesa L Aylward, **Nicholas A O'Rourke, David J Cavallucci,** Jochen F Mueller, Daniel S Drage. Comparison of lipid-normalised concentrations of persistent organic pollutants (POPs) between serum and adipose tissue. 2021, *International Journal of Hygiene and Environmental Health*, 236:113801
7. **Benjamin Swinson, Peadar S. Waters, Laurence Webber,** Les Nathanson, **David J. Cavallucci, Nicholas O'Rourke & Richard D. Bryant.** Portal vein thrombosis following elective laparoscopic splenectomy: incidence and analysis of risk factors, 2021, *Surgical Endoscopy* 1-8.
8. **Samuel L Smith, Peadar S Waters, Wasif Mirza, Cian Keogh, Jeffrey Lipman, David J Cavallucci, Nicholas O'Rourke, Richard D Bryant.** Re-expansion pulmonary oedema with Takotsubo cardiomyopathy: a rare complication of giant hepatic cyst drainage. 2021, *ANZ J Surgery*, 91 (11): 2524-2527
9. **C Keogh, W Mirza, R Bryant, D Cavallucci, P Waters, N O'Rourke.** Dorsal Approach in Laparoscopic Major Liver Resection: Patient and Operative Outcomes Compared To Traditional Laparoscopic Approach, 2021. *Irish J Med Sci.* 190 (S6):S242 -S242
10. **William McGahan, Venkata Chikatamarla, Paul Thomas, David Cavallucci, Nicholas O'Rourke, Matthew Burge.** High SUVmax on routine pre-operative FDG-PET predicts early recurrence in pancreatic and peri-ampullary cancer, 2021, *HPB* <https://doi.org/10.1016/j.hpb.2022.01.005>
11. Mairim Russo Serafini, Flavia Medeiros Savi, Jiongyu Ren, Onur Bas, **Nicholas O'Rourke, Christopher Maher,** Dietmar W Hutmacher. The Patenting and Technological Trends in Hernia Mesh Implants 2021. *Tissue Eng Part B Rev* Feb;27(1):48-73. doi: 10.1089/ten.TEB.2019.0245.
12. Arimasa Miyama, Zenichi Morise, Luca Aldrighetti, Giulio Belli, ... **Nicholas O'Rourke, Joel Lewin,** et al. Multicenter Propensity Score-Based Study of Laparoscopic Repeat Liver Resection for Hepatocellular Carcinoma: A Subgroup Analysis of Cases with Tumors Far from Major Vessels, 2021. *Cancers (Basel).* 2021 Jul; 13(13): 3187

Unit 3: Colorectal Unit

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
Andrea Warwick	Andrew Riddell, Makrina Totsika, Nick Rukin, Edward Ren, Mia Woodruff	Biofabricated biological meshes for pelvic surgery	MNHHS Collaborative Research Grant	\$50,000	3 years 2019-2021
David Clark	Damien Petersen , John Lumley, Tim Slack, Andrew Riddell, Craig Hacking , Jacobus Ungerer	Phase II study of efficacy: A validation of Gastrografin measurement in postsurgical samples following low anterior resection where the rectal tube is flushed with Gastrografin	Wesley Medical Research	\$28,280	2020-2021
David Clark	Graham Radford-Smith , Lisa Simms, Martha Zakrzewski (IBD/ Gut Health Lab QIMRB)	Ileal Pouch Microbiome: Defining a pre-operative microbiological signature that predisposes to anastomotic leak	RBWH Foundation	\$36,300	2020-2021
Jason Brown, David Clark, Andrew Stevenson, Benjamin Dodd, David Cavallucci, Ben Green, Owen Ung, Michael Handy	General Surgery, Burns and Trauma	Research Coordinator Grant for General Surgery, Burns and Trauma	Metro North HHS	\$314,438	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
David Clark	John Panizza , Sherri Swee (UQ),	Hospital readmission for dehydration following creation of a diverting loop ileostomy after colorectal surgery	NA	NA
David Clark	Andrew Zammit, Andrew Riddell, Julie Moore (QCCAT), Danica Cossio (QCCAT)	Management of polyps in Queensland	NA	NA
David Clark	Graham Radford-Smith , Anton Lord (QIMR), Lisa Simms (QIMR)	Precision medicine for colorectal cancer: defining a pre diagnostic signature	NA	NA
David Clark,	Andrew Stevenson, Damien Petersen Andrea Warwick (Redcliffe), John Lumley (Wesley)	Total colectomy for constipation	2	5
David Clark	Tahleesa Cuda, Declan Maher	Length of bowel resection in surgical management of Crohn's disease	NA	NA

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 Clark	Craig Harris, Damien Petersen, Carina Chow, Tony McGiffin, John Lumley (Wesley)	Long term functional consequences of anastomotic leak after laparoscopic restorative surgery with low pelvic anastomosis	0	99
David Clark	James Nicholson (UK), Ian Mackay	Exploring the relationship between risk taking propensity and surgeon and patient preferences for temporary covering ileostomy	0	119
David Clark	Graham Radford-Smith, Lisa Simms (QIMRB), Martha Zakrzewski (QIMRB)	Ileal pouch microbiome: defining a pre-operative microbiological signature that predisposes to anastomotic leak	3	7
Jennifer Liang	Glen Kennedy; Yaying Xu (Caboolture), Julie Moore (QCCAT); Danica Cossio (QCCAT); David Thiele (QCCAT)	Management and outcomes of gastrointestinal lymphomas in Queensland	NA	NA
David Clark	Damien Petersen, John Lumley, Tim Slack, Andrew Riddell, Craig Hacking, Jacobus Ungerer	Phase 2 study of efficacy: The validation of Gastrografin measurement in post surgical samples following low anterior resection where the rectal tube is flushed with Gastrografin	10	11
David Clark	Nicholas Smith, Ruben Rajan	Triple assessment of the anastomosis (objective anastomotic checklist): Covering the surgeon or the anastomosis?	7	7
David Clark	Cian Keogh, Nicholas Smith	Colonic Stenting for obstructive colorectal cancer in QLD	NA	NA

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
David Clark	Cherry Koh, Michael Solomon (RPA) , Craig Harris, David Taylor, David Clark	Localised recurrent rectal cancer QoL study (Phase-III)	0	0
Nicholas Lyon	John Hooper, Andrew Riddell, Simon Puttick, David Clark	The search for new theranostic targets for colorectal cancer	NA	NA
Andrew Maurice	Jason Brown, Mark Smithers, David Clark, Donald Cameron	Multi-centre study: Laparoscopic appendectomy versus antibiotics for radiologically confirmed acute uncomplicated appendicitis	3	10
David Clark	Frank Frizelle (NZ), Andrew McCombie (NZ), Craig Harris, David Taylor, David Clark	10-Ten Study: Quality of life after surgery for recurrent rectal cancer	0	0
Alexander Heriot	David Clark, Chris Gillespie, Mikhail Mikhail, Raphael Vergese, Mark Doudle	Bi-National Colorectal Cancer Audit (BCCA)	N/A	N/A

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. Lim MH, Lord AR, Simms LA, **Hanigan K**, **Edmundson A**, Rickard MJFX, Stitz R, **Clark DA**, **Radford-Smith GL**. Ileal Pouch-Anal Anastomosis for Ulcerative Colitis: An Australian Institution's Experience. *Ann Coloproctol*. 2021 Oct;37(5):318-325. doi: 10.3393/ac.2020.08.26
2. REACCT Collaborative, Zaborowski AM, ..., **Clark D** et al. Characteristics of Early-Onset vs Late-Onset Colorectal Cancer: A Review. *JAMA Surg*. 2021 Sep 1;156(9):865-874. doi: 10.1001/jamasurg.2021.2380
3. **Clark DA**, Steffens D, Solomon M. An umbrella systematic review of drain fluid analysis in colorectal surgery for the detection of anastomotic leak: Not yet ready to translate research studies into clinical practice. *Colorectal Dis*. 2021 Nov;23(11):2795-2805. doi: 10.1111/codi.15844
4. **Clark DA**, **Yeoh E**, **Edmundson A**, **Harris C**, **Stevenson A**, Steffens D, Solomon M.
A Development study of Drain Fluid Gastrografin as a Biomarker of Anastomotic Leak.
Ann Coloproctol. 2021 Jan 11. doi: 10.3393/ac.2020.12.24.
5. **Clark DA**, **Stephensen B**, **Edmundson A**, Steffens D, Solomon M. Geographical Variation in the Use of Diverting Loop Ileostomy in Australia and New Zealand Colorectal Surgeons.
Ann Coloproctol. 2021 Oct;37(5):337-345. doi: 10.3393/ac.2020.09.14.1
6. 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 CDCP1 in Colorectal Cancer. *Contrast Media Mol Imaging*. 2021 Sep 13;2021:3153278. doi: 10.1155/2021/3153278
7. **Clark DA**, **Edmundson A**, Steffens D, **Harris C**, **Stevenson A**, Solomon M. Drain fluid amylase as a biomarker for the detection of anastomotic leakage after rectal resection without a diverting ileostomy. *ANZ J Surg*. 2021 Jan 6. doi: 10.1111/ans.17461.
8. Bloomfield I, Dobson B, Von Papen M, **Clark D**. Incisional hernia following ileostomy closure: who's at risk? The Gold Coast experience. *ANZ J Surg*. 2021 Nov 18. doi: 10.1111/ans.17359.
9. Larach JT, Flynn J, Kong J, Waters PS, McCormick JJ, Murphy D, **Stevenson A**, Warriar SK, Heriot AG.
Robotic colorectal surgery in Australia: evolution over a decade.
ANZ J Surg. 2021 Nov;91(11):2330-2336. doi: 10.1111/ans.16554.
10. Law CK, **Stevenson ARL**, Solomon M, Hague W, Wilson K, Simes JR, Morton RL; Australasian Gastro-Intestinal Trials Group (AGITG) ALaCaRT Investigators. Healthcare Costs of Laparoscopic versus Open Surgery for Rectal Cancer Patients in the First 12 Months: A Secondary Endpoint Analysis of the Australasian Laparoscopic Cancer of the Rectum Trial (ALaCaRT). *Ann Surg Oncol*. 2021 Oct 28. doi: 10.1245/s10434-021-10902-5.
11. Keane CR, O'Grady G, Bissett IP, Hayes J, Hulme-Moir M, Eglinton TW, Solomon MJ, Lumley JW, Simes J, **Stevenson ARL**. Functional Outcome of Laparoscopic Assisted Resection vs Open Resection of Rectal Cancer: A secondary analysis of the Australasian Laparoscopic Cancer of the Rectum Trial.
Dis Colon Rectum. 2021 Nov 11. doi: 10.1097
12. Hompes R; TaTME Guidance Group representing the ESCP (European Society of Coloproctology), in collaboration with ASCRS (American Society of Colon, Rectum Surgeons), ACPGBI (Association of Coloproctology of Great Britain and Ireland), ECCO (European Crohn's, Colitis Organisation), EAES (European Association of Endoscopic Surgeons), ESSO (European Society of Surgical Oncology), CSCRS (Canadian Society of Colorectal Surgery), CNSCRS (Chinese Society of Colorectal Surgery), CSLES (Chinese Society of Laparo-Endoscopic Surgery), CSSANZ (Colorectal Surgical Society of Australia, New Zealand), JSES (Japanese Society of Endoscopic Surgery), SACP (Argentinian Society of Coloproctology), SAGES (Society of American Gastrointestinal, Endoscopic Surgeons), SBCEP (Brazilian Society of Coloproctology), the Swiss-MIS (Swiss Association for Minimally Invasive Surgery). Reply to Gachabayov et al. 'Consensus statement on TaTME: other thoughts'.
Colorectal Dis. 2021 Feb;23(2):553-555. doi: 10.1111/codi.15434.
13. **Mizumoto R**, **Moloney J**, **Clark D** Palpable head on digital rectal examination: a rare case of uterine incarceration causing obstruction and perforation of an ileal pouch in mid-term pregnancy. 2021. *ANZ J Surg*. Sep : 91 (9) E629-E630. doi: 10.1111

Journal Articles (RBWH staff in bold)

14. Cavallaro, Paul MD; Fearnhead, Nicola DM; Bissett, Ian MD; Brar, Mantaj MD; Cataldo, Thomas MD; Clarke, Rasheed; Denoya, Paula MD; Elder, Amber Lorraine; Gecse, Krisztina MD; Hendren, Samantha MD, MPH; Holubar, Stefan MD; Jeganathan, Nimalan MD; Myrelid, Pär MD; Norton, Beth-Anne NP; Wexner, Steven MD; Wilson, Lauren M; Zaghiyan, Karen MD; Bordeianou, Liliana MD, ... **Clark, David** *et al.* On behalf of the PROPS Delphi Study Expert Panels Patients Undergoing Ileoanal Pouch Surgery Experience a Constellation of Symptoms and Consequences Representing a Unique Syndrome, *Annals of Surgery*: April 30, 2021 - Volume Publish Ahead of Print - Issue - doi: 10.1097/SLA.0000000000004829

15. Caycedo-Marulanda A, Nadeau K, Verschoor CP, Sands D, Spinelli A, Ashamalla S, Patel SV, Di Candido F, Mujukian A, Zaghiyan K, Stevenson G, Wolthuis A, **Clark DA**, D'Hoore A, **Stevenson A**, Wexner SD. 2021, Exploring the perioperative outcomes of a sample of successful adopters of transanal total mesorectal excision (taTME) during the learning phase Surgery. 2021 Apr;169(4):774-781. doi: 10.1016/j.surg.2020.10.018

16. Colbran R, Gillespie C, Ayvaz F, **Warwick A**. A comparison of faecal incontinence scorings systems. *Colorectal Disease* 2021 Jul;23(7):1860-1865

17. Kristensen H, Thyø A, Emmertsen K, Smart N, Pinkney T, **Warwick A**, Pang D, Furnée E, Verkuijl S, Rama N, Solis Peña, Espin E, Sjövall A, Christensen P Translation and International Validation of the Colostomy Impact Score. *Colorectal Disease* Jul;23(7):1866-1877

18. Maeda Y, Espin E, Gorissen K, Lehur PA, Lundby L, Kim M, Negoï I, Norcic G, O'Connell R, Rautio T, van Geluwe B, van Ramshorst G, **Warwick A**, Vaizey C. ESCP Guidance on use of mesh in pelvis in colorectal surgery. *Colorectal Disease* 2021;23(9):2228-2285

Unit 4: Upper Gastrointestinal

Research Grants

Investigator Names (RBWH staff in bold)	RBWH Departments / Research Groups	Research Project Title	Granting Body
David Mitchell/ Mark Appleyard	Upper GI/ Gastroenterology	Ph/Manometry Service	PPTF Capital Funding Grant

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
Duc Quang Nguyen	Benjamin Dodd	Can administration of olive oil reduce chylothorax after oesophagectomy?		
Andrew Maurice	Jason Brown , Mark Smithers, Donald Cameron, Clark	Multi-Centre Study: Laparoscopic Appendicectomy versus Antibiotics for Imaging Confirmed Acute Uncomplicated Appendicitis		
Pat Walsh	George Hopkins, Dr David Mitchell	Endoscopic RAP procedure for reflux post gastric sleeve	NA	NA
David Mitchell	Dr George Hopkins, Dr Robert Finch	Outcomes in RYGB with varying limb lengths	NA	NA
Dr Kirryn Williams	Dr David Mitchell; Dr George Hopkins; Dr Dinithi Samarasingha; Dr Geoffrey Fanning	Peri-operative Screening and Assessment of Sleep-Disordered Breathing in patients undergoing bariatric surgery: a single center experience and recommendation to improve resource allocation and outcomes	NA	NA
Ben Dodd	Marilla Dickfos, Dr Jennifer Gillespie	CT prediction of linitus plastic gastric cancer RO resection status	NA	NA
Ben Dodd	Kevin Lah	Laparoscopic management of oesophageal perforations	N/A	N/A
Ben Dodd	Andrew Maurice, Dr J Punnesseril, S King	Bariatric telehealth patient and clinician satisfaction		
Ben Dodd	Duc Nguyen, Robert Finch, Dr Barry O'Loughlin	Incidence, risk factors and management of chyle leak after Oesophagectomy	NA	NA
Ben Dodd	Robert Finch, David Mitchell	Oesophagectomy and double tract reconstruction for OGJ adenocarcinoma	NA	NA
Ben Dodd	George Hopkins	Reflux after revisional single anastomosis gastric bypass		
George Hopkins	Georgia Taylor, Leila Sheikh	Weight outcomes in primary bariatric patients complicated by severe intra-abdominal sepsis	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
Dr Patrick Walsh	Abdulnasser Lafta, Mehul Lamba, Dr George Hopkins	Assessing the efficacy of a novel endoscopic resection and plication (RAP) technique in managing gastroesophageal disease in post laparoscopic sleeve gastrectomy patients with severe reflux	NA	NA
Phillip Townsend (GCUH); Karl Bagraith (GCUH);	CovidSurg Collaborative Group (International); Matthew Roberts (Martin Batstone Surgery); David Mitchell; Kevin Lah Guy Sheahan William McGahan Ben Swinson	Outcomes of elective cancer during the COVID-19 pandemic crisis: an international, multicentre observational cohort study (CovidSurg-Cancer)	N/A	N/A
David Liu (International Collaborative)	Kevin Chan	Survival and Patterns of Care in the Era of FLOT-based Chemotherapy for Gastric and Gastroesophageal Adenocarcinoma (SPACE-FLOT): An international multicentre cohort study	N/A	N/A

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. **Andrew Maurice, Scott Miron, Lachlan Yaksich , George Hopkins, Benjamin Dodd.** Revisional bariatric surgery to single-anastomosis gastric bypass: a large multi-institutional series. 2021. Surg Obes Relat Dis Jun;17(6):1080-1087. doi: 10.1016
2. **Patrick R Walsh, Mehul Lamba,** Petros Benias, Abdulnasser Lafta, **George Hopkins.** Feasibility of resection and plication "RAP" technique for management of medically refractory GERD in patients with altered gastric anatomyEndosc Int Open. 2021 Sep 16;9(10): E1549-E1555. doi: 10.1055/a-1535-1279
3. **Victoria A Eley,** Moe Thuzar, Séverine Navarro, **Benjamin R Dodd,** André A van Zundert. Obesity, metabolic syndrome, and inflammation: An update for anaesthetists caring for patients with obesity. 2021
4. **De la Cruz Garcia, I. and Chan, K.** Gastric outlet obstruction secondary to omental fat in a parahiatal hernia resulting in a gastric volvulus. 2021 ANZ Journal of Surgery <https://doi.org/10.1111/ans.17428>

Unit 5: Acute Surgical Unit

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
Elizabeth Vujcich	James Baumann	Retrospective analysis of management of Pseudo Obstruction at RBWH	N/A	N/A
Carl Lisec	Meryem Al-Abid, Matthew Bassa, Daniel Kilburn	Same Day Discharge Post Laparoscopic Appendicectomy in an Acute Surgical Unit	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
Kerstin Wyssusek	Sandra Concha Blamey, Hannah Reynolds, Makarla Stead, Christine Woods, Carl Lisec, Susan Petrie, Alison Mudge, Sharon Neilson	Acute Surgery Perioperative Collaboration Team Quality Improvement Program. The ASPECT QI.	NA	NA

Keynote or Plenary Lectures given in 2021

Date	Title
10/2021	Transient Enteroenteric intussusception in adults and the role of computed tomography. Oral Presentation, RANZCR ASM, 2021 Nguyen, D., Lai, N., Perri, A., Lisec C., Watsney, T.

Department of Oral and Maxillofacial Surgery

The RBWH OMFS unit had a very active research year. We participated in the global Covid Surgery studies to help guide care during the pandemic and increased our research activity with the Herston Biofabrication Institute.

We were fortunate to graduate research degree students and saw the enrolment of multiple new students.

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
Omar Breik, Martin Batstone, Danilo Carluccio	HBI, Oral and Maxillofacial Surgery	3D-printed patient matched scaffolds for mandibular bone regeneration after resective surgery	Metro North	\$50,000	2021

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
Martin Batstone	Brett Hughes, QIMR	Immune Biomarker Evaluation in Oral Mucosal Squamous Cell Carcinoma	~15	85

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Global wealth disparities drive adherence to COVID-safe pathways in head and neck cancer surgery. COVIDSurg Collaborative. BJS Open. 2021 Nov 9;5(6):zrab112. doi: 10.1093/bjsopen/zrab112.PMID: 34958353
- Global wealth disparities drive adherence to COVID-safe pathways in head and neck cancer surgery. STARSurg Collaborative and COVIDSurg Collaborative.Br J Surg. 2021 Dec 1;108(12):1448-1464. doi: 10.1093/bjs/znab336.PMID: 34871379
- Effect of COVID-19 pandemic lockdowns on planned cancer surgery for 15 tumour types in 61 countries: an international, prospective, cohort study. COVIDSurg Collaborative. Lancet Oncol. 2021 Nov;22(11):1507-1517. doi: 10.1016/S1470-2045(21)00493-9. Epub 2021 Oct 5.PMID: 34624250 article. Clinical Trial.
- SARS-CoV-2 infection and venous thromboembolism after surgery: an international prospective cohort study. COVIDSurg Collaborative; GlobalSurg Collaborative. Anaesthesia. 2022 Jan;77(1):28-39. doi: 10.1111/anae.15563. Epub 2021 Aug 24.PMID: 34428858
- Ali T, Keenan J, Mason J, Hsieh JT, Batstone M.** Prospective study examining the use of thrombin-gelatin matrix (FloSeal) to prevent post dental extraction haemorrhage in patients with inherited bleeding disorders. Int J Oral Maxillofac Surg. 2021 Aug 13:S0901-5027(21)00271-X. doi: 10.1016/j.ijom.2021.07.018. Online ahead of print.PMID: 34400026
- Effects of pre-operative isolation on postoperative pulmonary complications after elective surgery: an international prospective cohort study. COVIDSurg Collaborative; GlobalSurg Collaborative.Anaesthesia. 2021 Nov;76(11):1454-1464. doi: 10.1111/anae.15560. Epub 2021 Aug 9.PMID: 34371522 Clinical Trial.
- Khadembaschi D, Russell P, **Beech N, Batstone MD.** Osseointegrated implant survival, success and prosthodontic outcomes in composite free flaps: A 10-year retrospective cohort study. Clin Oral Implants Res. 2021 Oct;32(10):1251-1261. doi: 10.1111/clr.13822. Epub 2021 Aug 11.PMID: 34352129

Journal Articles (RBWH staff in bold)

8. SARS-CoV-2 vaccination modelling for safe surgery to save lives: data from an international prospective cohort study. COVIDSurg Collaborative, GlobalSurg Collaborative. Br J Surg. 2021 Sep 27;108(9):1056-1063. doi: 10.1093/bjs/znab101.PMID: 33761533

9. Timing of surgery following SARS-CoV-2 infection: an international prospective cohort study. COVIDSurg Collaborative; GlobalSurg Collaborative. Anaesthesia. 2021 Jun;76(6):748-758. doi: 10.1111/anae.15458. Epub 2021 Mar 9.PMID: 33690889

10. UK Head and neck cancer surgical capacity during the second wave of the COVID-19 pandemic: Have we learned the lessons? COVIDSurg collaborative. Shaw R; COVIDSurg Collaborative. Clin Otolaryngol. 2021 Jul;46(4):729-735. doi: 10.1111/coa.13749. Epub 2021 Mar 29.PMID: 33660920

11. Khadembaschi D, **Borgna SC, Beech N, Batstone MD**. Outcomes of osseointegrated implants in patients with benign and malignant pathologies of the head and neck: a 10-year single-centre study. Int J Oral Maxillofac Surg. 2021 Oct;50(10):1375-1382. doi: 10.1016/j.ijom.2021.02.019. Epub 2021 Feb 26.PMID: 33642153

12. Preoperative nasopharyngeal swab testing and postoperative pulmonary complications in patients undergoing elective surgery during the SARS-CoV-2 pandemic. COVIDSurg Collaborative.Br J Surg. 2021 Jan 27;108(1):88-96. doi: 10.1093/bjs/znab051.PMID: 33640908

13. Russell J, Pateman K, **Batstone M**. Donor site morbidity of composite free flaps in head and neck surgery: a systematic review of the prospective literature. Int J Oral Maxillofac Surg. 2021 Sep;50(9):1147-1155. doi: 10.1016/j.ijom.2020.12.009. Epub 2021 Jan 30.PMID: 33531270 Review.

14. *Fisher BM*, Tang KD, Warkiani ME, Punyadeera C, **Batstone MD**. A pilot study for presence of circulating tumour cells in adenoid cystic carcinoma. Int J Oral Maxillofac Surg. 2021 Aug;50(8):994-998. doi: 10.1016/j.ijom.2020.11.012. Epub 2020 Dec 24.PMID: 33358588

15. Subramaniam N, Clark JR, Goldstein D, de Almeida J, Abdalaty AHA, Balasubramanian D, Thankappan K, Iyer S, **Batstone M**, Iyer NG, Smee RI, Chandrasekhar NH, Pillai V, Shetty V, Rangappa V, Veness M, Low TH. Geographical heterogeneity in the American Joint committee on Cancer oral cancer staging and prognostic implications. Oral Oncol. 2021 Feb;113:105122. doi: 10.1016/j.oraloncology.2020.105122. Epub 2020 Dec 21.PMID: 33352532

16. Head and neck cancer surgery during the COVID-19 pandemic: An international, multicenter, observational cohort study. COVIDSurg CollaborativeCancer. 2021 Jul 15;127(14):2476-2488. doi: 10.1002/cncr.33320. Epub 2020 Dec 21.PMID: 33345297

17. **Liu TPJ, Fisher BM**, Chua B, Clark JR, Low TH, **Batstone MD**. Survival outcomes following modern multidisciplinary management of oral squamous cell carcinoma in Australia. Oral Surg Oral Med Oral Pathol Oral Radiol. 2021 Jan;131(1):92-98. doi: 10.1016/j.oooo.2020.09.012. Epub 2020 Oct 5.PMID: 33187950

18. Vasiliadou I*, **Breik O***, Baker H*, Leslie I, Sim VR, Hegarty G, Michaelidou A, Nathan K, Hartley A, Good J, Sanghera P, Fong C, Urbano TG, Lei M, Petkar I, Ferreira MR, Nutting C, Wong KH, Newbold K, Harrington K, Bhide S, Kong A. Safety and treatment outcomes of nivolumab for the treatment of recurrent or metastatic head and neck squamous cell carcinoma: retrospective multicenter cohort study. Cancers 2021; 13(6): 1413. DOI: 10.3390/cancers13061413 *co-first authors

19. **Breik O**, Higginson J, Al-Ajmi A, Mohamed A, Martin T, Amel-Kashipaz R. Clear Cell Odontogenic Carcinoma: first report of novel EWSR1-CREM fusion gene in case of long-term misdiagnosis. Head and Neck pathology 15(9). DOI: [10.1007/s12105-021-01302-y](https://doi.org/10.1007/s12105-021-01302-y)

20. Briggs K, Bell C, **Breik O**. What should every dental health professional know about electronic cigarettes? Aust Dent J 2021. 66(3) DOI: [10.1111/adj.12818](https://doi.org/10.1111/adj.12818)

21. Goodrum H, **Breik O**, Korja H, Idle M, Praveen P, Martin T, Parmar S. Novel 'in-house' design for fibula cutting guide with detachable connecting arm for head and neck reconstruction. J Oral Maxillofac Surg March 2021 79(8). DOI: [10.1016/j.joms.2021.02.035](https://doi.org/10.1016/j.joms.2021.02.035)

22. Archer N, Zebic L, Turton N, Higginson J, Idle M, Praveen P, Martin T, Parmar S, **Breik O**. An evaluation of the clinical utility of C-reactive protein and antibiotic use in patients undergoing major head and neck reconstructive surgery with outcome assessment. Oral and Maxillofacial Surgery. October 2021 DOI: [10.1007/s10006-021-01001-6](https://doi.org/10.1007/s10006-021-01001-6)

23. Higginson J, **Breik O**, Goodrum, H, Warfield A, Bates T, Rhodes B, Martin T. Tumefactive fibroinflammatory lesion of the maxilla: Successful resection and microvascular reconstruction after failed medical therapy. Oral Maxillofac Surg 2021. 24(3). DOI: [10.1007/s10006-020-00914-y](https://doi.org/10.1007/s10006-020-00914-y)

Keynote or Plenary Lectures given in 2021

Date	Title
04/2021	Global IA00 oral oncology Webinar. Session Chair

Department of Neurosurgery

2021 has been a successful and productive year for research in the Department of Neurosurgery. Over the past 12 months, our clinicians and researchers have been instrumental in securing over \$6,000,000 in competitive research funding, including three Medical Research Future Fund projects aimed at improving traumatic brain injury management and prognostication. We currently have 12 Neurosurgery-led research projects underway that employ a range of designs (systematic reviews to prospective data collections) across a broad spectrum of areas including traumatic brain injury, spine surgery, rapid prototyping, subdural haematoma and ventriculostomy. We also continue to support 15 collaborative projects with partners from other RBWH departments, the Queensland Institute of Medical Research, The University of Queensland, Cancer Care, CSIRO, Speech Pathology Queensland, The Queensland Brain Institute, the Jamieson Trauma Institute and the Herston Biofabrication Institute.

To our list of valued collaborations, we added the Cerebrovascular Engineering Research Group (CERG), which consolidates research collaborations between the RBWH departments of Neurosurgery and Interventional Neuro Radiology, Queensland University of Technology's School of Mechanical, Medical and Process Engineering and the University of Queensland's School of Chemical Engineering. With 27 publications (Neurosurgical staff first author and senior author in 7 and 6 respectively) we have endeavoured to increase our scientific output and our department's contribution to medical evidence.

Our CranioFacial program, housed within the Herston Biofabrication Institute, has continued to gain momentum. Within the program, we have appointed a senior research fellow, a biomedical modeler and enrolled 3 PhD students who will work towards our goal of revolutionising neurosurgical training through the development of high fidelity, realistic 3D printed surgical simulation models.

Our success over the past year can be attributed to hard work from our staff and the privilege of collaborating with clinicians, academics, and experts across a variety of fields and institutions. In summarising our year in research, we would like to express our deep gratitude to all our collaborators, the organisations that support what we do and, importantly, our patients. Thank you.

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
Michael Redmond, Martin Batstone, Hamish Alexander, Saso Ivanovski (UQ), Robert Campbell (QCH), Yun Phua (QCH)	Neurosurgery	Herston Biofabrication Institute (HBI) Clinical Program: CranioFacial	Metro North HHS	\$2,000,000	2021-26
Liam Coulthard	Neurosurgery	Investigating the role of complement and peripheral leukocytes in aneurysmal subarachnoid haemorrhage	RBWH Foundation Project Grant	\$45,740	2020-21
Charles Yates, Liam Coulthard	Neurosurgery	Investigating the profile of complement activation in relation to vasospasm, delayed cerebral ischaemia and aneurysmal subarachnoid haemorrhage outcomes	RBWH Foundation Postgraduate Scholarship	\$46,973	2020-23
Benjamin Chua, Rosalind Jeffree, Chamindie Punyadeera, Bryan Day, Paul Leo, Juliana Muller Bark, Gunter Hartel	Radiation Oncology; Neurosurgery	The use of non-invasive biomarkers in glioblastoma	RBWH Foundation Project Grant	\$50,000	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
Barbara Rolfe, Trent Woodruff, Rosalind Jeffree , Stefan Sonderegger, Richard Clark	Neurosurgery	Complement C5aR1: A novel therapeutic target for brain cancer	Mark Hughes Foundation	\$191,377	2021-22
Roberta Mazzeri, Riccardo Dolcetti, Jodi Saunus , Paul Leo, Sunil Lakhani , Ranjeny Thomas, Mark Pinkham, Sarah Olson, Rosalind Jeffree , Katharine Cuff, Natasha Woodward, Po Inglis , Ian Bennett, Lyne Moore, Vicki Shepherd	Pathology; Neurosurgery	New immunotherapeutic options for triple-negative and brain metastatic breast cancer: next-generation cancer vaccines exploiting alternative classes of tumour antigens	National Breast Cancer foundation	\$1,000,000	2020-23
Craig Winter , Mark Allenby, John Clouston , Zhiyong Li, Marita Prior , Emilie Sauret, Maria Woodruff, David Forrestal, Trent Brooks-Richard, Liam Maclachlan	Neurosurgery; Medical imaging	Investigation into the correlation between intra-aneurysmal computational fluid dynamics and thin-walled regions (TWR's) in brain aneurysms.	RBWH Foundation Project Grant	\$50,000	2021-2022
Fatima Nasrallah, David Reutens , Shekhar Chandra, James Walsham, Trevor Russell, Sandeep Bhuta, Jason Ross, Craig Winter , Siva Senthuran, Judith Bellapart	Medical imaging; Neurosurgery; Intensive care	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	2020-2024
Andrew Udy, David Cooper, Rosalind Jeffree , Rinaldo Bellomo, Alistair Nichol, Terence O'Brien, Judith Bellapart , David Menon, Robert McNamara, Melinda Fitzgerald	Monash University, University of New South Wales, RBWH Neurosurgery, Royal Melbourne Hospital, Neurology, University of Cambridge, University of Western Australia, Curtin University	PRECISION-TBI – Promoting evidence-based, data driven care for critically ill moderate-to-severe TBI patients	Medical Research Future Fund	\$499, 000	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
Melinda Fitzgerald (PI), Gary Mitchell , Michael Reade , Rosalind Jeffree , and 47 others	Curtin University, RBWH Emergency , RBWH Intensive Care , RBWH Neurosurgery , and 17 others	An informatics approach to predict outcomes and monitor intervention efficacy following moderate to severe traumatic brain injury	Medical Research Future Fund	\$500,000	2021-2023

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
Craig Winter	Nicholas Green	Herston Biofabrication Institute: 3D-printed moulds for orbital implants	0	0
Craig Winter	Nicholas Green	Herston Biofabrication Institute: 3-D printed head models for surgical planning	0	0
Craig Winter	Mark Allenby, John Clouston , Zhiyong Li, Marita Prior, Emilie Sauret, Maria Woodruff, David Forrestal, Trent Brooks-Richard, Liam Maclachlan	3D Biofabrication of Intracranial Aneurysms to aid endovascular and surgical treatment strategies and improve patient outcome	0	63
Thorbjorn Loch-Wilkinson	Liam Maclachlan , Vignesh Raman	A Systematic Review of Predictive Variables for Surgical Outcomes of Surgical Resection of Benign Peripheral Nerve Tumours	NA	NA
Michael Colditz	Charles Yates , Andrew Whittaker, Lindy Jeffree , Robert Campbell, Liam Maclachlan , David Forrestal , Changkui Fu, Hui Peng, Norman Ma	Hydrophilic polymers – clearing the way to longer lasting ventriculoperitoneal shunts.	0	0
Patrick Pearce	Liam Maclachlan , Akila Wijesekera , James Novak, Thorbjorn Loch-Wilkinson , Craig Winter , Michael Redmond	Properties and characteristics of 3-dimensional printed spine models used in simulation of surgical procedures: a mixed methods review with meta-analysis	N/A	N/A
Patrick Donnelly	Eduardo Apellinez, Liam Maclachlan , Stacey Llewellyn, Fatima Nasrallah, Craig Winter	A systematic review of susceptibility-weighted magnetic resonance imaging as a prognostic factor in adults with traumatic brain injury	N/A	N/A
Rui Soares	Liam Maclachlan , Anita Pelacanos, Lok Heng Lee , Rebekah Gracias , Roozbeh Fakhr, Jeffrey Lipman , Lindy Jeffree	A Systematic Review of Risk Factors for Ventriculostomy Related Infections	N/A	N/A
Patrick Pearce	Liam Maclachlan , Thorbjorn Loch-Wilkinson	Outcomes of bacterial spinal infections treated with S53P4 Bioactive Glass – A single centre retrospective cohort study	19	19

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
Craig Winter	Liam Maclachlan, EeShern Liang, Michael Colditz, Joseph Yoon	Utilising open source software to plan burr-hole and craniotomy drainage of chronic subdural haematoma in neurosurgery	0	0
Michael Redmond	Charles Yates, Liam Maclachlan	Establishment and maintenance of a cohort database of Royal Brisbane and Women's hospital patients attending the department of neurosurgery	0	0
Joseph Yoon	Liam Maclachlan, Michael Redmond	Comparison and accuracy of ventriculostomy points	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
Stephen Williams	Lisa Gillinder, Helen Gooch, Rosalind Jeffree, Jason Papacostas	Fundamental computations in the Human Brain	10	13
Benjamin Chua	Rosalind Jeffree , Chamindie Punyadeera, Zarnie Lwin , Juliana Müller Bark, Yunxia Wan, Arutha Kulasinghe, Xi Zhang, Kai Tang, Bryan Day (QIMR)	The use of non-invasive biomarkers in glioblastoma: a pilot study	7	27
Brian Day	Rosalind Jeffree, Zarnie Lwin, Po Inglis, Benjamin Chua , Catherine Bettington Hamish Alexander	Novel therapies in brain cancer: Glioma Tumour bank	33	381
Sunil Lakhani	Own Ung , Scott Campbell, Tom Robertson, Rosalind Jeffree ,	Molecular Pathology and Genetic Sub-Classification of Precancerous and Cancerous Breast Lesions	11	190
Sunil Lakhani	Stephen Rose, Jodi Saunus, Rosalind Jeffree Andrew Scott, Paul Thomas, Lizbeth Kenny ,	Observational PET/MR imaging study of breast cancer brain metastases to quantify relationships between blood perfusion dynamics and uptake of Pertuzumab	0	4
Lee Reid	Stephen Rose, Alan Coulthard, Rosalind Jeffree, Hamish Alexander, Marita Prior , Jurgen Fripp	Post-surgical diffusion MRI in epilepsy patients for CONSULT	1	12
Alan Coulthard	Rosalind Jeffree, David Reutens, Thomas Robertson	High-field MRI hippocampal sclerosis	1	11
Kevin Chu	Judith Bellapart, Craig Winter, Rosalind Jeffree	Timing of lumbar puncture for the detection of xanthochromia in suspected subarachnoid haemorrhage	0	24
Po-Ling Inglis	Zarnie Lwin , Bryan Day, Rosalind Jeffree, Hui Gan	KB 004: A phase I safety and bioimaging trial of KB004 in patients with glioblastoma	0	2

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
Zarnie Lwin	Po-Ling Inglis, Rosalind Jeffree, Benjamin Chua, Craig Gedye	MAGMA: The Multi-Arm Glioblastoma Australasia Trial	9	11
Zarnie Lwin	Po Inglis, Rosalind Jeffree	Ex-Tem: Phase III Trial of Extended Temozolomide in Newly Diagnosed Glioblastoma	2	5
Zarnie Lwin	Po Inglis, Rosalind Jeffree	LUMOS: Low & Intermediate Grade Glioma Umbrella Study of Molecular Guided Therapies – Pilot Study.	0	2
Fatima Nasrallah	Craig Winter, Stephen Rose, Allan Coulthard , Geoff Osborne, Paul Nichols, Patrick Donnelly, Javier Urriola, Liam Maclachlan , Eduardo Apellaniz, Dana Bradford, Paul Thomas, Katie McMahon, Cliff Pollard, Gary Mitchell , Guido Gonzalez, Ricardo Wenger, Kate Mahady ,	A Magnetic Resonance Imaging approach to investigate blood brain barrier dysfunction in brain injury and subarachnoid haemorrhage patients as a predictor of patient outcome	7	37
James Novak	Liam Maclachlan , Mathilde Desselle, Natalie Haskell, Kaecee Fitzgerald, Michael Redmond	Student experience of biomedical design with the hospital context	N/A	N/A
Timothy Kleinig and 6 others	Hamish Alexander and 26 others	Ultra-Early, minimally invasive intracerebral haemorrhage evacuation versus standard treatment (EVACUATE)	0	0

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Byth L, Lust K, **Jeffree R**, Paine M, Voldanova L, Craven AM. Management of idiopathic intracranial hypertension in pregnancy. *Obstet Med*. 2021, June, 9. Epub. DOI:10.1177/1753495X211021333
- Müller Bark J, Kulasinghe A, Hartel G, Leo P, Warkiani ME, **Jeffree RL**, Chua B, Day BW, Punyadeera C. Isolation of circulating tumour cells in patients with glioblastoma using spiral microfluidic technology – a pilot study. *Front Oncol*. Epub. 2021, June, 3. DOI: 10.3389/fonc.2021.681130
- Kahrom A, Grimley R, **Jeffree RL**. A case of delayed cyst formation post brain AVM stereotactic radiosurgery for arteriovenous malformation: Case report. *J Clin Neurosci*. 2021 May;87:17-19. DOI: 10.1016/j.jocn.2021.01.051.
- Colditz MJ**, Lee SF, Eastgate M, Elder S, Brandis P, Anderson D, Withers T, **Jeffree RL**, Pinkham MB, Olson S. Surgical series of metastatic cerebral melanoma: Clinical association of resection, BRAF-mutation status, and survival. *Interdiscip Neurosurg*. 2021;24. DOI: 10.1016/j.inat.2020.101075
- Matsuyama M, Sachchithananthan M, Leonard R, Besser M, Nowak AK, Truran D, Vajdic CM, Zalcberg JR, Gan HK, Gedye G, Varikatt W, Koh ES, Kichenadasse G, Sim HW, Gottardo NG, Spyridopoulos D, **Jeffree RL**. What matters for people with brain cancer? Selecting clinical quality indicators for an Australian Brain Cancer Registry. *Neurooncol Pract*. Epub. 2021, August, 31. DOI: 10.1093/nop/npab055
- 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 May;60(5):655-664. DOI: 10.1007/s40262-020-00979-8
- Jeffree RL**, Stoodley MA. Management of Chiari in pregnancy. *J Clin Neurosci*. 2021 Jan;83:153-154. DOI: 10.1016/j.jocn.2020.10.025

Journal Articles (RBWH staff in bold)

8. Brennan FH, **Coulthard LG**, Alawieh AM, Reiner O, Pekna M. Complement in the Development and Regeneration of the Nervous System. *Front Immunol.* 2021;12:1626. DOI: 10.3389/fimmu.2021.694810

9. Mantha S, **Coulthard LG**, Campbell. CSF-space volumetric change following posterior fossa decompression in padiatric Chiari type-I malformation: a correlation with outcome. *Childs Nerv Syst.* 2021;37(12):3861-3869. DOI: 10.1007/s00381-021-05307-4

10. **Coulthard LG**, Vonhoff CR, Badran AM, Robertson TE, Wood MJ. Growth of Intramedullary Spinal Cord Dermoid Cyst from a Congenital Thoracic Dermal Sinus Tract after Negative Screening Ultrasound Imaging. *Pediatr Neurosurg.* 2021;56(1):79-84. DOI: 10.1159/000512580

11. **Stephens S**, Kuchel A, Cheuk R, **Alexander H**, Robertson T, Rajah T, Tran Q, **Inglis PL**. Management trends and outcomes of pineal germinoma in a multi-institutional Australian cohort. *J Clin Neurosci.* 2021 Aug;90:1-7. DOI: 10.1016/j.jocn.2021.05.006

12. Mazzoni D, Xiao Y, **Loch-Wilkinson T**, **Stephens S**. Calcium pyrophosphate deposition disease of the spine mimicking septic arthritis. *Intern Med J.* 2021 Aug;51(8):1357-1358. doi: 10.1111/imj.15452

13. **Yoon J**, O'Bryan CM, **Maclachlan L**, **Redmond M**. Intracranial infected collections and epidemiology in the top end, Northern Territory, Australia. A 10-year case series. *ANZ J Surg.* 2021 Dec;91(12):2793-2799. DOI: 10.1111/ans.17202.

14. **Maclachlan LR**, **Alexander H**, Forrestal D, Novak JI, **Redmond M**. Properties and Characteristics of Three-Dimensional Printed Head Models Used in Simulation of Neurosurgical Procedures: A Scoping Review. *World Neurosurg.* 2021 Dec;156:133-146.e6. DOI: 10.1016/j.wneu.2021.09.079

15. Reid LB, Martínez-Heras E, Manjón JV, **Jeffree RL**, **Alexander H**, Trinder J, Solana E, Llufríu S, Rose S, Prior M, Frupp J. Fully automated delineation of the optic radiation for surgical planning using clinically feasible sequences. *Hum Brain Mapp.* 2021 Dec 15;42(18):5911-5926. DOI: 10.1002/hbm.25658

16. Ryder S, **Robusto J**, Robertson T, **Alexander H**, Duncan EL. Unilateral hydrocephalus from a gangliocytoma-somatotrophinoma: first reported case. *Endocrinol Diabetes Metab Case Rep.* 2021 Jul 1;2021:21-0037. DOI: 10.1530/EDM-21-0037

17. Canseco JA, Schroeder GD, Patel PD et al.....**Alexander H**. Regional and experiential differences in surgeon preference for the treatment of cervical facet injuries: a case study survey with the AO Spine Cervical Classification Validation Group. *Eur Spine J.* 2021; 30:517–523. DOI: 10.1007/s00586-020-06535-z

18. Schroeder GD, Canseco JA, Patel PD et al....**Alexander H**. Establishing the Injury Severity of Subaxial Cervical Spine Trauma: Validating the Hierarchical Nature of the AO Spine Subaxial Cervical Spine Injury Classification System. *Spine.* 2021, May, 15;46(10):649-657. DOI: 10.1097/BRS.0000000000003873.

19. **Winter C**, Bjorkman T, Miller S, et al. Acute Mountain Sickness Following Incremental Trekking to High Altitude: Correlation With Plasma Vascular Endothelial Growth Factor Levels and the Possible Effects of Dexamethasone and Acclimatization Following Re-exposure. *Front Physiol.* 2021;12:746044. DOI: 10.3389/fphys.2021.746044

20. Allenby MC, **Liang ES**, Harvey J, Woodruff MA, Prior M, **Winter CD**, Alonso-Caneiro D. Detection of clustered anomalies in single-voxel morphometry as a rapid automated method for identifying intracranial aneurysms. *Comput Med Imaging Graph.* 2021 Apr;89:101888. DOI: 10.1016/j.compmedimag.2021.101888

21. Nichols P, Urriola J, Miller S, Bjorkman T, Mahady K, Vegh V, Nasrallah F, **Winter C**. Blood-brain barrier dysfunction significantly correlates with serum matrix metalloproteinase-7 (MMP-7) following traumatic brain injury. *Neuroimage Clin.* 2021;31:102741. DOI: doi.org/10.1016/j.nicl.2021.102741

22. **Liang ES**, **Mahady K**, **Coulthard A**, **Winter C**. Treatment of a middle cerebral artery aneurysm in the setting of Loeys-Dietz syndrome: Case report and review of literature. *Radiol Case Rep.* 2020 Oct 30;16(1):48-50. DOI: 10.1016/j.radcr.2020

23. Truong Q, Ryder SJ, Gillespie J, **Papacostas J**, McLeod DSA. Clival prolactinoma masquerading as a chordoma: a case report. *Radiol Case Rep.* 2021 Apr 1;16(6):1320-1324. DOI: 10.1016/j.radcr.2021.02.07

24. Mulcahy T, **Ma N**, Mitchell K. Endovascular treatment of trigeminal neuralgia with cranial autonomic symptoms due to a right-sided petrous ridge dAVF. *Br J Neurosurg.* 2021 Jan 20:1-7. DOI: 10.1080/02688697.2021.1874295

25. **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 Dec 13:8850666211056568. DOI: 10.1177/08850666211056568.

Journal Articles (RBWH staff in bold)

26. **Liang ES**, Efendy M, **Winter C**, **Coulthard A**. Intracranial perianeurysmal cysts: case series and review of the literature. J Neurointerv Surg. 2021, August, 11:017807. DOI: 10.1136/neurintsurg-2021-017807
27. **Redmond MJ**, Potter TA, Bradley JP. Pilot-administered anaesthesia and the Royal Flying Doctor Service of Australia: An interview with Captain Keith Galloway. Anaesth Intensive Care. 2021 Sep;49(1_suppl):25-28. doi: 10.1177/0310057X211015690

Keynote or Plenary Lectures given in 2021

Date	Title
07/2021	Rosalind Jeffree: Advances in Neurotrauma management. Australasian Trauma Society conference, Brisbane
05/2021	Michael Redmond: Kenneth Jamieson Lecture. Metro North, Royal Brisbane and Women's Hospital

Department of Ophthalmology

2021 was a difficult year across the healthcare sector, which included the cancellation of our annual ophthalmology congress. Our ocular plastics team continued their innovative work, particularly in Thyroid Disease (in both adults and children) and ocular oncology. In a challenging year, we also commenced a significant amount of research that I'm excited to see come to fruition in 2022 and beyond. Great work and congratulations to the Ophthalmology Team.

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
Thomas Moloney		Retrospective Review of Retinal Detachments repaired with 360 Laser	
Thomas Moloney		Retrospective Review of Retinal Detachments repaired with Retinectomy	
Thomas Moloney		Retrospective Review of Retinal Artery Occlusion Patients treated with Hyperbaric Oxygen Therapy	
Thomas Moloney		Case Report into a rare case of Cellulomonas Endophthalmitis	
Thomas Moloney		Retrospective Review of patients with sudden visual loss after removal of silicone oil	
Thomas Moloney		Retrospective Review of efficacy and safety of Ozurdex at RBWH	
Thomas Moloney		Retrospective Review of causes and outcomes of patients requiring sutured IOL	

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. **Van Rooij N**, Newman AR, Vyas V, **Sullivan TJ**. Rare case of epithelial-myoepithelial carcinoma arising ex pleomorphic adenoma of the lacrimal gland: Case report and review of the literature. *Orbit* 2021 DOI: 10.1080/01676830.2021.1949726
2. Patukale A, **Sullivan TJ** Alphonso N et al. Subperiosteal orbital haematoma from SVC occlusion during cardiac surgery: To see or not to see? *World J Ped Congenital Heart Surgery* Oct 12, 2021
<https://doi-org.ezproxy.library.uq.edu.au/10.1177/21501351211044130>
3. Hoang T, Lee GA, **Sullivan TJ**. An eyebrow lump: malignant spindle-cell melanoma *Med J Australia* 2021 214 P 306 Mar 16. doi: 10.5694/mja2.50989
4. Patheja RS. Serous macular detachments associated with topical travoprost. *BMJ Case Reports CP* 2022;**15**:e246712

Keynote or Plenary Lectures given in 2021

Date	Title
01/2021	Sullivan TJ Complications of Orbital Decompression Surgery: How to manage them. Presented as an invited paper as part of the APSOPRS-APITEDS Joint Virtual Conference
05/2021	Sullivan TJ Paediatric Thyroid Eye Disease. Presented as an invited paper at the International Thyroid Associated Orbitopathy Forum from Shanghai 9th Peoples Hospital with 10,000+ delegates online
07/2021	Sullivan TJ Periocular Ocular Trauma. Presented as the Richard Fan Keynote Lectureship in Ophthalmology and Visual Sciences at the SNEC 30th Anniversary Symposium

08/2021	Sullivan TJ Orbital Vascular Anomalies. Presented as art of the Virtual International Oculoplastics Course, University of Buenos Aires
09/2021	Sullivan TJ Thyroid Associated Orbitopathy: What I am doing differently in 2021. Presented as an invited paper in the combined APAO / APSOPRS Symposium
10/2021	Sullivan TJ Orbital Tumours” Presented as an invited lectura for the Sight For All Education System to Mongolia, Myanmar, Vietnam, Lao, Cambodia and Papua New Guinea
10/2021	Sullivan TJ. The Alexis Retractor for Lateral Orbital Decompression. Presented as part of the ITEDS AAO symposium “Surgical and non-surgical interventions in Thyroid Eye Disease, A Video based Symposium AAO Virtual Annual Meeting
10/2021	Sullivan TJ. Complications of Orbital Decompression. Presented as part of the ITEDS AAO symposium “Surgical and non-surgical interventions in Thyroid Eye Disease, A Video based Symposium AAO Virtual Annual Meeting
10/2021	Sullivan TJ Paediatric Thyroid Eye Disease. Presented as an invited paper in the APSOPRS/ITEDS “East meets West” symposium on Thyroid Eye Disease,
10/2021	Sullivan TJ, Manta A, Wilson-Pogmore A. Ocular Adnexal T Cell Lymphoma. Presented as Grand Rounds UCSF, San Francisco California

Department of Orthopaedic Surgery

The Royal Brisbane and Women's Hospital continues to be widely recognised as the pre-eminent institution in Queensland for education and research related to Orthopaedic Surgery, with a particular focus on trauma, the reconstruction of bone defects, and implant-related infections. The Department has close affiliations with the Jamieson Trauma Institute (JTI), the Herston Imaging Research Facility (HIRF), and the Herston Biofabrication Institute (HBI), further enhancing our capacity to conduct clinically meaningful research of the highest calibre. The creation and implementation of a dedicated Multi-disciplinary Device Related Infection Team (mDRIFT) has formalised our response to one of the most difficult yet common orthopaedic conditions, deep infection associated with implants. As has been true of the entirety of the past decade, this activity is reflected once again in the impressive breadth and depth of the academic productivity of the Department, resulting in a total of 27 papers that were collectively produced over the past year.

Among many highlights for 2021, the most significant was that the SIN Trial, led by Dr Chris Conyard, was finally completed with a full 12-months follow-up. This is an important randomised controlled trial (RCT) comparing clinical outcomes after either infra- or supra-patellar nailing of tibial shaft fractures. This represents the first in a series of RCTs that have been initiated, as we deliver on a promise of providing the best possible evidence-based health care. Dr Gerrit van de Pol and Dr William O'Callaghan have since initiated additional RCTs that have already begun to recruit patients with similar goals.

The other main highlight is that the Orthopaedic Trauma Association (North America) awarded an \$80K USD grant to support our studies to definitively investigate the molecular biology of induced membranes when used to reconstruct segmental bone loss following the Masquelet technique. This will allow us to study a very large series of cases using the most sophisticated techniques to evaluate the genetic expression (upregulation and downregulation) of important growth factors associated with these induced membranes, comparing specimens from different bones (femur and tibia) and at different time points in the clinical course. Further studies will use histology and immunohistochemistry to confirm the proteins coded by these genes are in fact produced and are locally influencing the growth and regeneration of bone within the confines of the membranes.

Dr Andrew Foster, together with and under the direction of Professor Michael Schuetz and A/Professor Kevin Tetsworth, published a series of papers in 2021 focussed on the difficult problem of orthopaedic implant-related infection, another area of particular interest to our department. Dr Zhenya Welyczko and Dr Nicholas Jorgensen also share this passion, and have already laid a very solid foundation for a series of important studies investigating a number of areas of interest regarding open long bone fractures, including: (a) the severity of bone loss associated; (b) the types of soft tissue coverage employed; (c) the methods used for skeletal reconstruction and bone regeneration; and (d) the incidence of subsequent infection, as influenced by the timing of coverage and other considerations.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Andrew Foster	Bill Crawford Basic Science Resident Research Award	QLD Australian Orthopaedic Association Annual Scientific Meeting, May 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
Kevin Tetsworth , Vaida Glatt, Anna Woloszyk (University of Texas, San Antonio)	Orthopaedic Surgery	Biological activity of human induced membranes in bone defects: Correlation of an in vitro analysis with clinical outcomes, comparing femoral and tibial locations	Orthopaedic Trauma Association (North America)	\$80,000 (United States dollars)	2 yrs, 2021-2022

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
William O'Callaghan, Paul Chapman, Kevin Tetsworth, Gerrit van de Pol, Grant Menegon (Cairns), Steve Nicol (Townsville)	Orthopaedic Surgery (RBWH, Cairns, Townsville)	TAAFS: Topical antibiotics in ankle fracture surgery (pilot)	Queensland Orthopaedic Research Foundation	\$5,998	4 yrs, 2021-2024
Ash Wadhawan, Schmutz B (QUT), Bourgeat P, Fripp J (CSIRO), Tetsworth K, Schuetz MA	Orthopaedic Surgery	Development of an Artificial Intelligence screening system to identify patients requiring a CT scan following distal radius fractures	Royal Research Foundation Grant	\$40,000	3 yrs, 2021-2023

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
Trevor Gervais	Paul McEniery, Michael Schuetz, Katie McMahon (HIRF), Michael O'Sullivan (HIRF), Robert Henderson, Nyoman Kurniawan (UQ), Jin Jin (Siemens Healthcare), Esther Jacobson (JTI)	Use of advanced MRI to diagnose brachial plexus injuries and inform surgical intervention	5	5
Ash Wadhawan	Tetsworth K, Schmutz B (QUT), Bourgeat P, Fripp J (CSIRO), Schuetz MA	Development of an Artificial Intelligence screening system to identify patients requiring a CT scan following distal radius fractures	600	600
Chris Conyard	Gerrit van de Pol, Kevin Tetsworth, Luca Danielle	SIN Trial: Randomised controlled trial comparing clinical outcomes (including knee pain) in supra-patellar vs infra-patellar nailing of tibial shaft fractures	0	88
Kevin Tetsworth	Nicholas Jorgensen, Gerrit van de Pol, Zhenya Welyczko, Paul Chapman, Matthew Hope, Chris Jardim, Kanika Jain, Carly Fox, Fran Patterson, Molly Freyling, Ahmed Mahmoud	Management of open fractures, assessing: (a) the severity of bone loss; (b) types of soft tissue coverage employed; (c) methods used for skeletal reconstruction; and (d) incidence of infection	0	718
Gerrit van de Pol	Jon Kinyanjui Peter Jenvey, Macey Lu	SOLTAR: Short or long tunnel ACL reconstruction (randomised controlled trial, high resolution MRI assessment of incorporation of ACL grafts in bone tunnels in the femur and tibia)	53	53
Gerrit van de Pol	Jon Kinyanjui, James Brown	SOLTAR2: Short or long tunnel ACL reconstruction (randomised controlled trial, clinical outcomes comparing different surgical techniques)	53	53

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
Kevin Tetsworth	Gerrit van de Pol, Henry Burnand	Validation of a classification scheme for tibial plateau fracture malunions and nonunions	7	36
Kevin Tetsworth	Gerrit van de Pol, Thomas Crookes, Seung-Min Youn	Clinical outcomes following less invasive ORIF of displaced fractures of the scapula and glenoid neck	6	34
Nicholas Jorgensen	Zhenya Welyczko, Gerrit van de Pol, Kevin Tetsworth, Molly Freyling, Benjamin Davies	Formal validation of the bone defect classification scheme for open fractures	43	43
Gerrit van de Pol	Panagiotis Barlas (JTI), Michael Schuetz, Richard Hanly, Silvia Manzanero (JTI), Esther Jacobson (JTI), Michelle McGrath, Christopher Smith	SMART-Ankle: Streamlining Management and Rehabilitation with Technology for Ankle fractures (feasibility trial)	1	1
Kevin Tetsworth	Gerrit van de Pol, Ryan Beattie, Ibin Varughese (QUT), Vaida Glatt (University of Texas, San Antonio), Michael Schuetz	Clinical efficacy of the Masquelet induced membrane technique for the reconstruction of long bone defects	15	89
Kevin Tetsworth	Deniz Erbulut (HBI), Nicholas Green (HBI), Caroline Grant	"Bringing balance to the force" via structural optimization of fracture fixation: Optimised locking plate screw configurations for comminuted distal femur fractures with major bone loss, evaluated through finite element modelling	0	0
Kevin Tetsworth	Luke Visscher, Cathal McCarthy, Jordy White	Unicompartmental degenerative arthrosis of the knee associated with malunions correlates closely with lower limb coronal plane malalignment	27	27
Kevin Tetsworth	Mathew Davis, Owen O'Neill, Luca Danielle, Nicholas Green	Estimating bone defect size using the fluid volume technique (Archimedes' method)	6	6
Kevin Tetsworth	Nicholas Green (HBI), Greg Barlow, Miran Stubican, Frode Vindenes, Vaida Glatt (University of Texas, San Antonio)	Fractures and macroscopic acute osteochondral injuries of the talar dome associated with pilon fractures	0	104
Nicholas Green (HBI)	Deniz Erbulut (HBI), Kevin Tetsworth, Luke Kelly (UQ), Peter Pivonka (QUT), Donald Anderson (University of Iowa), Kevin Dibbern (University of Iowa), Todd McKinley (Indianapolis)	Biomechanical investigations of tibial pilon fractures and the impact on the talar dome	0	90
Deniz Erbulut (HBI), David Forrestal (HBI)	Kevin Tetsworth, Nicholas Green (HBI), Pascal Buenzli (QUT), Nicolas Soro (UQ), Yuheng Wang, Lut In Tam, Aravind Payyappatt, Jared Walker	Multi-faceted approach to modelling continuously curved lattices to enhance bone ingrowth (biomimetic designs using an alternative unit cell, the hexanoid)	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
William O'Callaghan (Cairns)	Paul Chapman, Kevin Tetsworth, Gerrit van de Pol, Grant Menegon (Cairns), Steve Nicol (Townsville)	TAAFS: Topical antibiotics in ankle fracture surgery	0	0
Vaida Glatt, PhD (University of Texas, San Antonio)	Kevin Tetsworth, Anna Woloszyk, PhD (University of Texas, San Antonio)	Biological activity of human induced membranes in bone defects: Correlation of an in vitro analysis with clinical outcomes, comparing femoral and tibial locations	15	89

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Randell M**, Glatt V, Stabler A, **Bussoletti T**, Hohmann E, **Tetsworth K**. Anterior Minimally Invasive Plate Osteosynthesis for Humeral Shaft Fractures Is Safer Than Open Reduction Internal Fixation: A Matched Case-Controlled Comparison. *Journal of Orthopaedic Trauma*. 2021 Aug 1; 35(8): 424-9.
- Hohmann E, Van Zyl R, Glatt V, **Tetsworth K**, Keough N. The anatomical relationship of the common peroneal nerve to the proximal fibula and its clinical significance when performing fibular-based posterolateral reconstructions. *Arch Orthop Trauma Surg*. 2021 Jan 3. doi: 10.1007/s00402-020-03708-9. Epub ahead of print. PMID: 33392754.
- Hoellwarth JS, Al-Jawazneh SS, **Tetsworth K**, Lu W, Roberts C, Al Muderis M. Amputation with osseointegration for patients with intractable complex regional pain syndrome: a report of 3 cases. *JBJS Case Connect*. 2021 Jan 14; 11(1): e20.00267. doi: 10.2106/JBJS.CC.20.00267. PMID: 33448707.
- Tetsworth KD, Burnand HG**, Hohmann E, Glatt V. Classification of Bone Defects: An Extension of the Orthopaedic Trauma Association Open Fracture Classification. *J Orthop Trauma*. 2021 Feb 1;35(2):71-76. doi: 10.1097/BOT.0000000000001896. PMID: 32639397.
- Hohmann E, **Tetsworth K**, Glatt V, Ngcelwane M, Keough N. The posterior horn of the medial and lateral meniscus both reduce the effective posterior tibial slope: a radiographic MRI study. *Surgical and Radiologic Anatomy*. 2021 Feb 9:1-8.
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Journal Articles (RBWH staff in bold)

12. Hohmann E, **Tetsworth K**, Glatt V, Ngcelwane M, Keough N. Medial and Lateral Posterior Tibial Slope Are Independent Risk Factors for Noncontact ACL Injury in Both Men and Women. *Orthopaedic Journal of Sports Medicine*. 2021 Aug 9;9(8): 23259671211015940.

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14. Hohmann E, Glatt V, **Tetsworth K**, Alentorn-Geli E, Bak K, Beitzel K, Bøe B, Calvo E, Di Giacomo G, Favard L, Franceschi F. Subacromial decompression in patients with shoulder impingement with an intact rotator cuff: An expert consensus statement using the modified Delphi Technique comparing North American to European shoulder surgeons. *Arthroscopy: The Journal of Arthroscopic & Related Surgery* 2021 Oct 14.

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16. **Visscher L**, **White J**, **Tetsworth K**, and McCarthy C. Malunion after trauma: knee arthritis correlates with malalignment. *Orthopaedic Proceedings* 2021.103-B (Supp 13): 63.

17. **Youn SM**, Lee HS, Rhee SM, Rhee YG. Medialized vs. lateralized humeral implant in reverse total shoulder arthroplasty: The comparison of outcomes in pseudoparalysis with massive rotator cuff tear. *Journal of Shoulder and Elbow Surgery*. 2021 Sep 17.

18. **Foster AL**, Moriarty TF, Zalavras C, Morgenstern M, Jaiprakash A, Crawford R, Burch MA, Boot W, **Tetsworth K**, Miclau T, Ochsner P, **Schuetz MA**, Richards RG, Metsemakers W-J. The influence of biomechanical stability on bone healing and fracture-related infection: the legacy of Stephan Perren. *Injury* 2021; ISSN 0020-1383, <https://doi.org/10.1016/j.injury.2020.06.044>.

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20. Boot W, Schmid T, D'Este M, Guillaume O, **Foster AL**, Decosterd L, Richards RG, Eglin D, Zeiter S, Moriarty T F. A hyaluronic acid hydrogel loaded with gentamicin and vancomycin successfully eradicates chronic methicillin-resistant staphylococcus aureus orthopedic infection in a sheep model. *Antimicrobial Agents and Chemotherapy* 2021. 65(4). doi:10.1128/AAC.01840-20.

21. **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. *Journal of Shoulder and Elbow Surgery* 2021 Jun 1;30(6):1410-22.

22. Epari DR, Gurung R, Hofmann-Fliri L, Schwyn R, **Schuetz M**, Windolf M. Biphasic plating improves the mechanical performance of locked plating for distal femur fractures. *Journal of Biomechanics* 2021 Jan 22; 115: 110192.

23. Sarai H, Schmutz B, **Schuetz M**. Potential pitfalls of lateral radiographic assessment of the nail position in the distal femur. *Archives of Orthopaedic and Trauma Surgery* 2021 Mar 11:1-8.

24. Buschbaum J, Freitag L, Slongo TF, Zeiter S, **Schuetz M**, Windolf M. Growth modulation of angular deformities with a novel constant force implant concept - preclinical results. *Journal of Children's Orthopaedics* 2021 Apr; 15(2): 137-48.

25. Sarai H, Schmutz B, **Schuetz M**. Effects of ethnicity on proximal femoral intramedullary nail protrusion — a 3D computer graphical analysis. *Archives of Orthopaedic and Trauma Surgery* 2021 May; 141(5): 845-53.

26. Henkel J, Savi FM, Berner A, Fountain S, Saifzadeh S, Steck R, Epari DR, Woodruff MA, Knackstedt M, **Schuetz MA**, Hutmacher DW. Scaffold-guided bone regeneration in large volume tibial segmental defects. *Bone* 2021 Dec 1; 153:116163.

27. Vuong KA, Manzanero S, Ungerer JP, Mitchell G, McWhinney B, Vallmuur K, Warren J, McCreanor V, Howell T, **Pollard C**, **Schuetz M**. Prevalence of Alcohol Consumption in Emergency department presentations (PACE) in Queensland, Australia, using alcohol biomarkers ethanol and phosphatidylethanol: an observational study protocol. *BMJ Open*. 2021 Nov 1; 11(11): e047887.

Trauma Service

The highlight of the RBWH Trauma Service in 2021 has clearly been the implementation of the Trauma bedcard/unit (Surg6), which led to a successful research grant (MN Collaborative Research grant scheme) examining the pre- and post-implementation changes on clinical, operational and health economical outcomes. This grant and various other projects are based on strong collaboration with our research partners from Jamieson Trauma Institute, QUT (Centre of Healthcare Transformation, School of Information Systems and School of Creative Practice), AusHSI (Australian Centre for Health Service Innovation), UQ (Trauma Science Group, Australian Institute of Bioengineering and Nanotechnology AIBN and Translational Research Institute TRI) and other QH research groups, such as Gold Coast Health and Statewide Trauma Clinical Network – Research group.

Our clinical research focus has been on projects of chest wall injuries including pain management and surgical stabilisation of rib fractures, splenic injuries (both in collaboration with GCUH Trauma Service / Interventional Radiology), traumatic cardiac arrest and management of Tourniquet for major extremity injuries.

In September 2021, we got awarded as, the first outside USA, Chest Wall Injury Society (CWIS) Collaborative Centre, and participate in the first multicentre trial on 'Incidence of surgical rib fixation at International CWIS Collaborative Centres and a guide for expected number of cases'.

In late 2021, JTI and the RBWH Trauma Service launched an international trauma research partnership with Durban (Inkosi Albert Luthuli Central Hospital), South Africa, comparing trauma systems and trauma care.

We are excited and looking forward to 2022 to expand our trauma research program with particular focus on clinical resuscitation management and trauma system analysis in order to advance our practises and implement our findings, ultimately to improve our trauma patient outcomes.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Trauma Service	Excellence in Leadership and Performance – Multimodal Rib Fracture Management Service	QuARRIES Awards November 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
Frances Williamson , Victoria McCreanor, Zephane Tyack, Jacelle Warren, Michael Handy , Martin Wullschlegler	Trauma Service, Jamieson Trauma Institute, QUT	Clinical, operational and health cost outcomes pre- and post-implementation of trauma service in major trauma centre	MN Collaborative Research Grants	\$49,913	1 year

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
Frances Williamson	Martin Wullschlegler Catherine Lawton	Outcomes in Traumatic Cardiac Arrest (TCA) Patients that Underwent Advanced Life Support	N/A	N/A

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
Natasha Abeysekera	Elizabeth Vujcich, Linzy Keegan, David Sidhom, Craig Hacking, Martin Wullschleger	Thromboembolic Events in patients presenting with trauma: a retrospective review of cases at a tertiary trauma centre	N/A	N/A
Martin Wullschleger	Emma McCabe, Michael Muller, Kimberley Barker, Jeffrey Lau, Jodie Ross	Does Surgical Stabilization of multiple displaced rib fractures and flail chest improve clinical outcomes for patients? A level I trauma centre cohort matched study.	N/A	N/A
Frances Williamson	Helena Franco	Exploring the value of clavicle fixation in trauma patients with associated chest wall injuries	N/A	N/A
Natasha Abeysekera	Elizabeth Vujcich , Roger Bain, Daniel Kilburn, Martin Wullschleger, David Cavallucci	Hepatic Embolisation: A retrospective review of cases at a single tertiary trauma facility	N/A	N/A
Frances Williamson	Natalie Souyave	ICC complication audit- data collection	N/A	N/A
Frances Williamson	Martin Wullschleger , Hussein Nouredine El Moussa	Tourniquet use for trauma – a review	N/A	N/A
Michael Rudd	Barry O’Loughlin	Does time delay to definitive fracture stabilization and or soft tissue coverage affect outcomes in tibial and or fibular fractures?	N/A	N/A
Michael Rudd	Barry O’Loughlin	Does time delay to surgery affect outcomes in Acute Unstable Spinal Fractures?	N/A	N/A
Michael Rudd	Barry O’Loughlin	Does time delay to surgery affect outcomes in femoral fractures?	N/A	N/A
Michael Rudd	Barry O’Loughlin	Does time delay to surgery affect outcomes in Acetabular and Pelvic Ring Fractures	N/A	N/A
Michael Rudd	Barry O’Loughlin	Does waiting longer than the recommended emergency surgery triage categorization time affect outcomes in acute and emergency surgical Patients?	N/A	N/A
Michael Rudd	Barry O’Loughlin	Does time delay to surgery affect outcomes in Blunt Hollow Visceral Injuries?	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
Evert Eriksson (Chest Wall Injury Society International Collaborative)	Martin Wullschleger , Bhavik Patel	The incidence of Stabilization of Rib Fractures (SSRF) at Centers Recognized for Excellence in the Management of Chest Wall Injury	N/A	N/A
Robert Andrews	Kirsten Vallmuur, Emma Bosley, Martin Wullschleger , Stephen Rashford, Arthur ter Hofstede, Michael Schuetz	MAIC / QAS / RSQ – Road Trauma: Modelling the Patient Journey from pre-hospital triage to outcome using process mining	N/A	N/A
Robert Andrews	Moe Wynn, Arthur ter Hofstede, Kirsten Vallmuur, Emma Bosley, Adam Rolley, Martin Wullschleger , Clinton Gibbs	Process Analysis of Trauma Activation in Queensland Hospitals	N/A	N/A

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Williamson F**, Warren J, and Cameron C. Rib fractures in blunt chest trauma: factors that influence daily patient controlled opiate use during acute care. Injury. Published online: 3rd September 2021.
- Pettit AR, Batoon L, Millard SM, **Raggatt LJ**, Sandrock C, Pickering E, Williams K, Sun LWH, Wu AC, Irvine KM, Pivonka P, Glatt V, **Wullschleger ME**, Hume D: Treatment with a long-acting chimeric CSF-1 molecule enhances fracture healing of healthy and osteoporotic bones, Biomaterials, 2021.
- Campbell D, Wake E, Grieve J, Rashid M, **Wullschleger ME**, Patel B: Experience with clinical pathway for management of high grade blunt splenic injuries: a prospective study in adults at two tertiary trauma centers, Int Surg J, 8(8):2374-2381, 2021.
- Williamson F**, Dehn A, Doig S, and Collins S. Vascular Injury is an infrequent finding following non-fatal strangulation in two Australian Trauma Centres. Emergency Medicine Australasia. Published online: 9th September 2021.
- Cooper E, Wake E, Cho C, **Wullschleger ME**, Patel B: Outcomes of rib fractures in the geriatric population: a 5-year retrospective, single institution, Australian study, ANZ J Surg, 2021.
- Williamson F**, **Grant K**, Warren J, **Handy M**. Trauma Tertiary Survey: Trauma service medical officers and trauma nurses detect similar rates of missed injuries. Journal of Trauma Nursing 2021; 28: 166-172.
- Cameron CM, Eley R, Judge C, **O'Neill R**, **Handy M**. Did attending P.A.R.T.Y. change youth perceptions? Results from 148 Queensland schools participating in the Prevent Alcohol and Risk-Related Trauma in Youth, 2016-2019
- Brun M, Brun S, Pearson D, **Wullschleger ME**: The way to a man's heart is through his stomach: a case of myocardial infarction mimic and pseudo-tamponade in a polytrauma patient, Scand J Trauma Resus Emerg Med, 2021.
- Frances Williamson**, **Kerena Grant**, Jacelle Warren, **Michael Handy**. Trauma Tertiary Survey: Trauma Service Medical Officers and Trauma Nurses Detect Similar Rates of Missed Injuries, Journal of Trauma Nursing | JTN in Vol. 28, No. 3, May/June 2021.
- Campbell D, Arnold N, Wake E, Grieve J, Provenzano S, **Wullschleger ME**, Patel B: 3D volume rendered Computed Tomography application for follow up fracture healing and volume measurements pre and post SRF, J Trauma Acute Care Surg, 2021.

Keynote or Plenary Lectures given in 2021

Date	Title
04/2021	Regional Trauma Systems: Do they really work? Singapore Trauma & Acute Care Conference (International keynote speaker: Martin Wullschleger)
09/2021	Session Chair, Australasian Trauma Society Conference, Brisbane: Sarah Pearce
09/2021	Session Chair, Australasian Trauma Society Conference, Brisbane: Michael Handy
09/2021	Session Chair, Australasian Trauma Society Conference, Brisbane: Frances Williamson
09/2021	Session Chair, Australasian Trauma Society Conference, Brisbane: Martin Wullschleger

Department of Urology

The Urology Department continued to build research capacity and productivity in 2021. We welcomed the appointment of Dr Natasha Roberts, our Prostate Cancer Specialist Nurse, to a part-time research fellowship to explore unmet needs in prostate cancer care. Our part-time PHO structure was successful for our research-focused PHOs, who published 5 manuscripts (more in preparation) and numerous presentations and local and international conferences. The Urology Research Nurse commenced toward the end of 2021 to expand our capacity for clinical trials and establishment of the Urology Clinical Research Unit (URO-CRU). Our collaboration with the Herston Biofabrication Institute has grown, with commencement of a PhD student and expansion of urological fabrication projects expect to progress to clinical studies in 2022.

Internal RBWH, national and international research collaborations established in 2020 produced high impact publications, including two manuscripts in European Urology (Impact factor 20.1) and others in high-ranking Urology and Imaging journals. Of particular note was the growing collaboration between Urology, Nuclear Medicine and Cancer Care services, which resulted in 6 publications and numerous conference presentations, as well as commencement of multiple prospective clinical trials incorporating the Herston Imaging and Research Facility (HIRF) in 2021.

Grant funding continued to supplement RBWH Urology research, including the Viertel Clinical Investigator Award to Matthew Roberts to support multi-disciplinary trials. RBWH Urology staff members were invited speakers at international and national conferences, showcasing the clinical and research expertise present in the unit. A/Prof Yaxley (Journal of Pathology) and Dr M Roberts (BJU International) continue their Editorial Board Membership and active peer reviewer activities, with Dr M Roberts recognised as a BJU "Top Reviewer" for 2021.

Research Awards and Achievements

Recipient (RBWH staff in bold)	Award	Event
Arsalan Tariq	Best Abstract Selection (ESUI 21)	9th Annual meeting of EAU section of Urological Imaging
Arsalan Tariq	Outstanding Abstract (SIU 2021)	41st Congress of the Société Internationale d'Urologie

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
Patrick Harris, David Paterson, Scott Beatson, Matthew Roberts, Brian Forde, Bianca Graves	Infectious Diseases, Urology, HeIDI	A precision-medicine approach to recurrent E. coli urinary tract infections	Australian Infectious Disease Research Centre (AID)	\$50,000	2021
Dr Matthew Roberts	Urology	Prospective surgeon-led trials in Prostate Cancer for personalised management and healthcare sustainability	Viertel Foundation (Sylvia and Charles Viertel)	\$90,000	2022-2023

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
Dr Matthew Roberts	A/Prof John Yaxley, Dr Natasha Roberts, A/Prof David Pattison, A/Prof Paul Thomas, Anita Pelecanos	Staging of aggressive prostate cancer 'invisible' to PSMA-PET: The FDG-PET for INvisible Disease (FIND) Trial	5	8

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
Dr Matthew Roberts	A/Prof John Yaxley, Dr Rachel Effeneay, Natasha Roberts , Prof Louise Emmett (UNSW, Co-PI), DIPPER steering committee	De-Intensification of Post ProstatEctomy Radiotherapy (DIPPER) incorporating clinical and imaging-based risk stratification		
A/Prof John Yaxley	Prof Frank Gardiner , Dr Kevin Koo (UQ/Xing), Prof Matt Trau (UQ/Xing), Dr Jeffrey Goh , A/Prof Paul Mainwaring (Xing), Prof H Samaratunga (UQ), MF Lavin (UQ), Dr Matthew Roberts	Detection of Clinically Significant Prostate Cancer: a paradigm shift		
Prof Frank Gardiner	Dr Matthew Roberts, A/Prof John Yaxley , A/Prof Kristen Radford (MMRI), A/Prof Michelle Hill (QIMR), Dr Kevin Koo (UQ/Xing), A/Prof Paul Mainwaring (Xing), Prof Matt Trau (UQ/Xing), Dr Jeffrey Goh	ImmunoPro Project: Developing an effective therapeutic vaccine for all prostate cancer patients		
A/Prof John Yaxley	Dr Matthew Roberts , A/Prof Haitham Tuffaha	Assessing Transition to Local Anaesthetic Sampling (ATLAS) for prostate biopsy using the PrecisionPoint Transperineal Access System device		
Dr Matthew Roberts	A/Prof John Yaxley, Prof Frank Gardiner, Dr Geoff Coughlin, Dr Rachel Esler, Dr Nigel Dungleison, A/Prof Paul Thomas, A/Prof David Pattison, Dr Timothy Wastney , Dr Peter Donato, Dr Andrew Morton, Dr Arsalan Tariq	A retrospective analysis of multiparametric MRI for the detection of prostate cancer		
Dr Matthew Roberts	Dr Geoff Coughlin, A/Prof John Yaxley, Dr Andrew Morton, Dr Amila Siriwardana	Prostate specific membrane Antigen (PSMA) TaRgeted Imaging to guide Optimal Treatment (PATRIOT)		
Dr Matthew Roberts	A/Prof John Yaxley , Andrew Jiang, A/Prof Paul Thomas, A/Prof David Pattison	PSMA and FDG PET/CT for prostate cancer		
Dr Matthew Roberts	Dr Arsalan Tariq, Dr Adam Pearce , Dr Handoo Rhee (PAH), A/Prof Paul Thomas, A/Prof Dr Samuel Kyle , Dr Chun Gan	RE-CAP: REnal CANcer characterised by PSMA-PET		
Dr Matthew Roberts	Dr Arsalan Tariq, A/Prof John Yaxley , Dr Amy McCart Reed (UQCCR), A/Prof Ian Vela (PAH)	Urothelial carcinoma and prostate specific membrane antigen (PSMA): cellular, imaging and prognostic implications		
Dr Arsalan Tariq	Dr Matthew Roberts, Dr Adam Stewart	Comprehensive analysis of periurethral abscess		
Dr Matthew Roberts	Dr Nishal Patel , Dr Georges Mehawed, Dr Nigel Dungleison , A/Prof Vincent Tse (USyd)	Urosymphyseal fistula: aetiology, clinical features and management		
Dr Matthew Roberts	Dr Stephen McGeorge , A/Prof Craig Hacking, Dr Megan Purvey	Current Use of Imaging Modalities in Emergency Department Assessment of Renal Colic		

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
Dr Matthew Roberts	Dr Sumudu Britton, Prof David Paterson, Dr Patrick Harris, Dr Bianca Graves, Dr Johanna Mayer-Coverdale	A multidisciplinary approach to complex urinary tract infections		

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 Paul Hodges (UQ)	Ryan Stafford, Natasha Roberts	Efficacy of a personalised pelvic floor muscle training programme on urinary incontinence after radical prostatectomy (MaTchUP)	16	16
Prof Penelope Schofield (Swinburne Uni)	John Yaxley, Matthew Roberts, Frank Gardiner	Navigate: Randomised Controlled Trial of an online treatment decision aid for men with localised prostate cancer and their partners	6	12
Prof Louise Emmett (UNSW)	Matthew Roberts, John Yaxley, Paul Thomas, David Pattison	PRIMARY Trial: Additive diagnostic value of PSMA to mpMRI in the diagnostic setting: Ability to reduce unnecessary prostate biopsies in men being investigated for prostate cancer	0	21
A/Prof David Pook (Monash & ANZUP Trials Group Pty Ltd)	Matthew Roberts, Nishal Patel, Anna Kuchel	RetroPSMA: A retrospective study to identify clinical predictors of early metastatic disease using PSMA PET imaging	1	1

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

1. **Arnfield EG, Thomas PA, Roberts MJ**, Pelecanos 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. Eur J Nucl Med Mol Imaging 2021; 48(13):4495-4507
2. **Chikatamarla VA**, Okano S, **Jenvey P, Ansaldo A, Roberts MJ, Ramsay SC, Thomas PA, Pattison DA**. Risk of metastatic disease using [18F]PSMA-1007 PET/CT for primary prostate cancer staging. EJNMMI Res. 2021; 11(1):128
3. COVIDSurg Collaborative (**Roberts M, Pearce A**). Elective Cancer Surgery in COVID-19-Free Surgical Pathways During the SARS-CoV-2 Pandemic: An International, Multicenter, Comparative Cohort Study. J Clin Oncol. 2021; 39(1):66-78
4. COVIDSurg Collaborative (**Roberts M, Pearce A**). Timing of surgery following SARS-CoV-2 infection: an international prospective cohort study. Anaesthesia. 2021; 76 (6), 748-758
5. COVIDSurg Collaborative (**Roberts M, Pearce A**). Preoperative nasopharyngeal swab testing and postoperative pulmonary complications in patients undergoing elective surgery during the SARS-CoV-2 pandemic. Br J Surg. 2021; 108 (1) 88-96
6. COVIDSurg Collaborative (**Roberts M, Pearce A**). Machine learning risk prediction of mortality for patients undergoing surgery with perioperative SARS-CoV-2: the COVIDSurg mortality score. Br J Surg. 2021; 108(11): 1274-1292

Journal Articles (RBWH staff in bold)

7. COVIDSurg Collaborative (**Roberts M**). Early outcomes and complications following cardiac surgery in patients testing positive for coronavirus disease 2019: An international cohort study. *J Thorac Cardiovasc Surg*. 2021; 162(2):e355-e372

8. COVIDSurg Collaborative (**Roberts M, Pearce A**). Effect of COVID-19 pandemic lockdowns on planned cancer surgery for 15 tumour types in 61 countries: an international, prospective, cohort study. *Lancet Oncol*. 2021; 22(11):1507-1517

9. COVIDSurg Collaborative (**Roberts M, Pearce A**). SARS-CoV-2 infection and venous thromboembolism after surgery: an international prospective cohort study. *Anaesthesia*. 2022; 77 (1), 28-39 (published 24 Aug 2021)

10. COVIDSurg Collaborative (**Roberts M, Pearce A**). SARS-CoV-2 vaccination modelling for safe surgery to save lives: data from an international prospective cohort study. *Br J Surg*. 2021; 108(9):1056-1063

11. COVIDSurg Collaborative (**Roberts M, Pearce A**). Effects of pre-operative isolation on postoperative pulmonary complications after elective surgery: an international prospective cohort study. *Anaesthesia*. 2021; 76(11):1454-1464

12. COVIDSurg Collaborative (**Roberts M, Pearce A**). Death following pulmonary complications of surgery before and during the SARS-CoV-2 pandemic. *Br J Surg*. 2021; 108(12):1448-1464

13. Delahunt B, Eble JN, Samaratunga H, Thunders M, **Yaxley JW**, Egevad L. Staging of renal cell carcinoma: current progress and potential advances. *Pathology*. 2021; 53(1):120-128.

14. Delahunt B, Egevad L, Samaratunga H, Srigley JR, Cheng L, Clouston D, et al. **Yaxley JW**. Intraductal carcinoma of the prostate is not a diagnostic entity. *Histopathology*. 2021; 78(2):342-344.

15. Emmett L, Buteau J, Papa N, Moon D, Thompson J, **Roberts MJ**, Rasiah K, **Pattison D, Yaxley J, Thomas P**, et al. The additive diagnostic value of Prostate specific membrane antigen PET-CT to multiparametric MRI in the diagnosis of prostate cancer (PRIMARY): A prospective multi-centre study. *Eur Urol*. 2021; 80(6):682-689

16. Jay APM, Aldiwani M, O'Callaghan ME, **Pearce AK**, Huddart RA, Mayer E, et al. Features and Management of Late Relapse of Nonseminomatous Germ Cell Tumour. *Eur Urol Open Sci*. 2021;29:82-88.

17. Kachanov M, Leyh-Bannurah S, **Roberts MJ**, Sauer M, Beyersdorff D, Boiko S, et al. Optimizing Combined Magnetic Resonance Imaging-Targeted and Systematic Biopsy Strategies: Sparing the Multiparametric Magnetic Resonance Imaging-Negative Transitional Zone in Presence of Exclusively Peripheral Multiparametric Magnetic Resonance Imaging-Suspect Lesions. *J Urol* 2021; 207(2):333-340

18. **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. *Adv Urol*. 2021:1544208

19. **McGeorge S**, Phillips R, Rukin N, **Reynolds J, Roberts MJ**. Solitary castrate-resistant prostate cancer metastasis to adrenal gland with concordant intense avidity on PSMA and FDG PET. *Urol Case Rep* 2021; 38:101696

20. Meijer D, van Leeuwen PJ, **Roberts MJ, Siriwardana AR**, Morton A, **Yaxley JW**, et al. External Validation and Addition of PSMA-PET to the Most Frequently Used Nomograms for the Prediction of Pelvic Lymph-node Metastases: an International Multicenter Study. *Eur Urol*. 2021; 80(2): p. 234-242

21. **Pattison DA, Debowski M, Gulhane B, Arnfield EG**, Pelecanos AM, **Garcia PL, Latter MJ, Lin CY, Roberts MJ, Ramsay SC, 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. *Eur J Nucl Med Mol Imaging* 2022; 49(2):763-776 (published 12 Aug 2021)

22. **Pearce AK**, Manson-Bahr D, Reid A, Huddart R, Mayer E, Nicol DL. Outcomes of Postchemotherapy Retroperitoneal Lymph Node Dissection from a High-volume UK Centre Compared with a National Data Set. *Eur Urol Open Sci*. 2021;33:83-88.

23. Raveenthiran S, Yaxley WJ, Franklin A, Coughlin G, **Roberts MJ**, Gianduzzo T, et al, **Esler R, Yaxley JW**. Findings in 1123 Men with Pre-operative 68Ga-PSMA PET/CT and mpMRI Compared to Totally Embedded Radical Prostatectomy Histopathology. Implications for the Diagnosis and Management of Prostate Cancer. *J Urol* 2022; 207(3):573-580 (published 25 Oct 2021)

24. **Roberts MJ**, Emmett L. Editorial Comment. *J Urol*. 2022; 207(2):348-349 (published 9 Nov 2021)

Journal Articles (RBWH staff in bold)

25. **Roberts MJ**, Macdonald A, Ranasinghe S, Bennett H, Teloken PE, **Harris P**, **Paterson D**, Coughlin G, **Dunglison N**, **Esler R**, **Gardiner RA**, Elliott T, Gordon L, **Yaxley J**. Transrectal versus transperineal prostate biopsy under intravenous anaesthesia: A clinical, microbiological and cost analysis of 2,048 cases over 11 years at a tertiary institution. *Prostate Cancer Prostatic Dis.* 2021; 24(1): 169-176
26. **Roberts MJ**, Morton A, Donato P, **Kyle S**, **Pattison D**, **Thomas P**, Coughlin G, **Esler R**, **Dunglison 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. *Eur J Nucl Med Mol Imaging* 2021;48(2):477-82
27. Schofield P, Gough K, Hyatt A, White A, Frydenberg M, Chambers S, Gordon LG, **Gardiner R**, et al. Navigate: a study protocol for a randomised controlled trial of an online treatment decision aid for men with low-risk prostate cancer and their partners. *Trials.* 2021 Jan 11;22(1):49.
28. Sharma P, Ajjikuttira AA, Rhee H, Ashrafi D, **Roberts M**, Chung E. Localised mass forming amyloidosis of the lower genitourinary tract mimics urothelial carcinoma: Two cases of mistaken identity. *J Urol Surg* 2021; 8(2):142-144
29. **Tariq A**, Kwok M, **Pearce A**, Rhee H, **Kyle S**, Marsh P, Raveenthiran S, Wong D, McBean R, **Westera J**, **Dunglison N**, **Esler R**, **Navaratnam A**, **Yaxley J**, **Thomas P**, **Pattison D**, **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; S1078-1439(21)00502-0
30. **Tariq A**, McCart Reed A, Morton A, Porten S, Vela I, Williams ED, **Yaxley JW**, Black PC, **Roberts MJ**. Urothelial carcinoma and prostate specific membrane antigen (PSMA): cellular, imaging and prognostic implications. *Eur Urol Focus* 2021: S2405-4569(21)00196-6
31. **Tariq A**, **Westera J**, **Navaratnam A**, **Dunglison N**, **Esler R**, **Roberts MJ**. Extra-peritoneal oligometastatic renal cell carcinoma (RCC): Atypical pattern of metastasis and novel localisation techniques. *ANZ J Surg.* (in press; published 1 Nov 2021)
32. **Williams M**, **Perera M**, **Nouhaud FX**, **Coughlin G**. Robotic pelvic exenteration and extended pelvic resections for locally advanced or synchronous rectal and urological malignancy. *Investig Clin Urol.* 2021 Jan;62(1):111-120.
33. **Yaxley JW**, Coughlin G, Patel V. Level 1 Evidence of Better Early Urinary Continence at 3 Months Following Robot-assisted Laparoscopic Radical Prostatectomy Compared with Laparoscopic Radical Prostatectomy. Results of the LAP-01 Randomised Controlled Trial. *Eur Urol.* 2021; 79(6):760-761.
34. **Yaxley JW**. Letter to the Editor BJUI in response to Montorsi et al.: Histological comparison between predictive value of preoperative 3-T multiparametric MRI and 68 Ga-PSMA PET/CT scan for pathological outcomes at radical prostatectomy and pelvic lymph node dissection for prostate cancer. *BJU Int.* 2021; 127(6):747.
35. Yaxley WJ, McBean R, Wong D, Grimes D, Vasey P, Frydenberg M, **Yaxley JW**. Should Lutetium-prostate specific membrane antigen radioligand therapy for metastatic prostate cancer be used earlier in men with lymph node only metastatic prostate cancer? *Investig Clin Urol.* 2021; 62(6):650-657.
36. Yaxley WJ, Nouhaud F, Raveenthiran S, Franklin A, Donato P, Coughlin G, Kua B, Gianduzzo T, Wong D, Parkinson R, Brown N, Samarasinghe H, Delahunt B, Egevad L, **Roberts M**, **Yaxley JW**. Histological findings of totally embedded robot assisted laparoscopic radical prostatectomy (RALP) specimens in 1,197 men with a negative (low risk) preoperative multiparametric magnetic resonance imaging (mpMRI) prostate lobe and clinical implications. *Prostate Cancer Prostatic Dis.* 2021; 24(2): p. 398-405

Keynote or Plenary Lectures given in 2021

Date	Title
03/2021	Yaxley J . British Journal of Urology International Webinar. LAPRO: Surgeon heterogeneity significantly affects functional and oncological outcomes after radical prostatectomy in the Swedish LAPRO trial – discussion points
05/2021	Yaxley J . “The role of ultrasound in the contemporary diagnosis of prostate cancer in 2021” Australian Sonographers Association Annual Scientific Meeting 2021, Brisbane
05/2021	Yaxley J . “The role of PSMA PET/CT in primary staging of prostate cancer” Royal Australian college of Surgeons Annual Scientific Meeting ASC 2021, Melbourne

10/2021	Roberts NA. "Remote monitoring of symptoms from both disease and treatment in men with advanced prostate cancer – a single arm clinical trial" Symposium presentation, 28th International Society for Quality of Life Congress
11/2021	Roberts MJ. "USANZ Lecture: Best Treatment Sequence for mCRPC in the Era of Checkpoint and PARP Inhibitors" 30th Malaysian Urological Conference 2021 (International presentation)
12/2021	Yaxley J. "The role of a PLND in contemporary urology in the era of PSMA PET scanning" Asia Pacific Prostate Cancer Conference 2021, Melbourne

Vascular Outpatients

In 2021 the vascular outpatient's research department has continued its strong research collaboration with Professor Jonathon Golledge of the Queensland Research Centre for Peripheral Vascular Disease (QRCVPD) at James Cook University. This collaboration has seen the commencement of a new clinical trial seeking to evaluate if taking Metformin XR can slow the growth of Abdominal Aortic Aneurysms (AAAs) and reduce the risk of AAA rupture and need for repair. The Metformin for Treating Peripheral Artery Disease trial, another research trial conducted by the QRCVPD and vascular outpatient's department, continued to recruit participants in 2021. The QRCVPD and RBWH were awarded funding from the Heart Foundation to conduct a clinical trial investigating a multi-disciplinary medical management program on cardiovascular risk factors in people with peripheral artery disease. Study recruitment for this trial will commence in 2022. Dr Jonathon Golledge and Dr Jason Jenkins have authored in excess of 10 research publications together in high quality journals stemming from the results of clinical trials conducted in previous years and from other research activity.

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 Jason Jenkins, Dr Danella Favot, Dr Murray Ogg, Dr Nigel Pinto, Professor Jonathon Golledge	Vascular Outpatients	The Metformin Aneurysm Trial (MAT)	NHMRC	\$4,998,679.50	5 yrs, 2020-2024
Dr Jason Jenkins, Dr Danella Favot, Dr Murray Ogg, Dr Nigel Pinto, Professor Jonathon Golledge	Vascular Outpatients	Metformin For Treating Peripheral Artery Disease-Related Walking Impairment (MERIT)	SERTA Grant – Townsville University Hospital	\$50,000	3 yrs, 2021-2024
Dr Murray Ogg, Professor Jonathon Golledge	Vascular Outpatients	The Holistic Peripheral Artery Disease Management Trial (OPTIMAL)	Heart Foundation Strategic Funding	\$1,000,000	3 yrs, 2021-2024
Dr Jason Jenkins, Dr Danella Favot, Dr Nicola Burton, Dr Jessica Suna, Roslyn Clapperton and Dr Sophie Rowbotham, Professor Jonathon Golledge	Vascular Outpatients	Brief Behavioural Counselling Intervention for Peripheral Artery Disease (BIP)	NHMRC Project Grant administered by James Cook University	\$131,257.26	5 yrs, 2014-2019 Trial still ongoing in 2021
Dr Krishna Pattabathula, Dr Jason Jenkins, Dr Murry Ogg, Dr Samatha Peden	Vascular Outpatients	Blood Pressure Control for Endoleak (BOLD)	RBWH Foundation Project Grant	\$50,000	Not commenced

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
Dr Krishna Pattabathula	Dr Jason Jenkins Dr Murry Ogg Dr Samantha Peden	Blood Pressure Control for Endoleak (BOLD)	Not yet recruiting	
Dr Murray Ogg , Professor Jonathon Golledge	Dr Jason Jenkins, Dr Danella Favot and Dr Nigel Pinto	The Metformin Aneurysm Trial (MAT)	26	26
Dr Jason Jenkins Professor Jonathon Golledge	Dr Murray Ogg, Dr Danella Favot and Dr Nigel Pinto	Metformin For Treating Peripheral Artery Disease-Related Walking Impairment (MERIT)	44	72
Dr Murray Ogg Professor Jonathon Golledge		The Holistic Peripheral Artery Disease Management Trial (OPTIMAL)	Not yet recruiting	Not yet recruiting
Dr Jason Jenkins , Dr Jonathon Golledge	Dr Danella Favot, Dr Nicola Burton, Dr Jessica Suna, Rosyln Clapperton and Dr Sophie Rowbotham	Brief Behavioural Counselling Intervention for Peripheral Artery Disease (BIP)	0 recruited; 6 participants completed study	103

Research Publications

Publications in 2021

Journal Articles (RBWH staff in bold)

- Golledge J, Velu R, Quigley F, **Jenkins J**, Singh TP. Cohort study examining the prevalence and relationship with outcome of standard modifiable risk factors in patients with peripheral artery occlusive and aneurysmal disease. European Journal of Vascular and Endovascular Surgery. 2021 Dec 13.
- Golledge J, Velu R, Quigley F, **Jenkins J**, Singh TP. Editor's Choice—Cohort Study Examining the Association Between Abdominal Aortic Size and Major Adverse Cardiovascular Events in Patients with Aortic and Peripheral Occlusive and Aneurysmal Disease. European Journal of Vascular and Endovascular Surgery. 2021 Dec 1;62(6):960-8.
- Nastasi DR, Norman R, Moxon JV, Quigley F, Velu R, **Jenkins J**, Golledge J. The Potential Benefits and Costs of an Intensified Approach to Low Density Lipoprotein Cholesterol Lowering in People with Abdominal Aortic Aneurysm. European Journal of Vascular and Endovascular Surgery. 2021 Oct 1;62(4):643-50.
- Thanigaimani S, Phie J, Quigley F, Bourke M, Bourke B, **Jenkins J**, Golledge J. Association of Diagnosis of Depression and Small Abdominal Aortic Aneurysm Growth. Annals of Vascular Surgery. 2021 Sep 17.
- Golledge J, Velu R, Quigley F, **Jenkins J**, Singh TP. Cohort Study Examining the Association of Immunosuppressant Drug Prescription With Major Adverse Cardiovascular and Limb Events in Patients With Peripheral Artery Disease. Annals of Vascular Surgery. 2021 Sep 16.
- Thanigaimani S, Phie J, Quigley F, Bourke M, Bourke B, **Jenkins J**, Golledge J. Association of Diagnosis of Depression and Small Abdominal Aortic Aneurysm Growth. Annals of Vascular Surgery. 2021 Sep 17.

Journal Articles (RBWH staff in bold)

7. Golledge J, Drovandi A, Rowbotham S, Velu R, Quigley F, **Jenkins J**. Control of modifiable risk factors and major adverse cardiovascular events in people with peripheral artery disease and diabetes. *World Journal of Diabetes*. 2021 Jun 15;12(6):883.

8. Singh TP, Moxon JV, Iyer V, Gasser TC, **Jenkins J**, Golledge J. Comparison of peak wall stress and peak wall rupture index in ruptured and asymptomatic intact abdominal aortic aneurysms. *British Journal of Surgery*. 2021 Jun;108(6):652-8.

9. Golledge J, Yip L, Fernando ME, Pinchbeck J, Rowbotham S, **Jenkins J**, Leicht A. Relationship between requirement to stop during a six-minute walk test and health-related quality of life, physical activity and physical performance amongst people with intermittent claudication. *Annals of Vascular Surgery*. 2021 Apr 24.

10. Nastasi DR, Moxon JV, Norman R, Trollope AF, Rowbotham S, Quigley F, **Jenkins J**, Golledge J. The cost-effectiveness of intensive low-density lipoprotein cholesterol lowering in people with peripheral artery disease. *Journal of Vascular Surgery*. 2021 Apr 1;73(4):1396-403.

11. Pattabathula K, **Peden S, Jenkins J, Pinto N**. Concurrent chronic contained rupture of abdominal aortic and popliteal artery aneurysms: a case report and review of the literature. *ANZ Journal of Surgery*. 2020 Nov 13.

12. Weekes A, Bartnikowski N, **Pinto N, Jenkins J**, Meinert C, Klein TJ. Biofabrication of small diameter tissue-engineered vascular grafts. *Acta biomaterialia*. 2021 Nov 13.

13. Tesar J, **Moult V, Quinn S**. Non-atherosclerotic cause of claudication: cystic adventitial disease of the popliteal artery. *ANZ Journal of Surgery*. 2021 May 10.

14. Golledge J, Pinchbeck J, Tomee SM, Rowbotham SE, Singh TP, Moxon JV, **Jenkins JS**, Lindeman JH, Dalman RL, McDonnell L, Fitridge R. Efficacy of telmisartan to slow growth of small abdominal aortic aneurysms: a randomized clinical trial. *JAMA cardiology*. 2020 Dec 1;5(12):1374-81.

15. Golledge J, Moxon JV, Rowbotham S, Pinchbeck J, Quigley F, **Jenkins J**. High ankle brachial index predicts high risk of cardiovascular events amongst people with peripheral artery disease. *Plos one*. 2020 Nov 12;15(11):e0242228.

16. **Flynn D, Tesar J, Peden S, Quinn S, Kruger A, Jenkins J**. Venous cystic adventitial disease: to cure or manage? A case series *BMJ Case Reports CP* 2022;15:e247813.

17. **Flynn D**, Ogi A, Subedi S, Langton J, Choong K, O'Donnell J. Mycotic aortic aneurysm formation following intravesical BCG treatment for transitional cell carcinoma of the bladder *BMJ Case Reports CP* 2021;14:e246389.