

DEPARTMENT OF MEDICAL IMAGING



Medical Imaging – Clinical Support Services



Gillian Nasato
Executive Director
Clinical Support Services

The Department of Medical Imaging (DMI) provides a full range of diagnostic and interventional imaging services. DMI actively undertakes clinical research in departmental, interdepartmental and multi-site collaborative research projects. Under the directorship of Professor Alan Coulthard, the DMI Research Office supports many departmental research projects and clinical trials while further supporting external, service-based research studies established by other RBWH departments or external research groups. Our consultants, registrars, nurses and radiographers provide expertise on imaging protocols, clinical diagnosis and interventional procedures to best support these projects. Partnerships with research institutions such as the Queensland Brain Institute, the Centre for Advanced Imaging, QIMR Berghofer, UQCCR and CSIRO have only strengthened over 2018.



Assoc. Prof. Karin Steinke
Acting Medical Director
Medical Imaging

Highlights of our research from 2018 include:

CONSULT Study – This year we completed the first stage in clinically validating tractography software to be used by radiologists and neurosurgeons for pre-surgical planning of patients about to receive brain surgery. This is a collaborative project between DMI, Dept. Neurosurgery and CSIRO.

EPPICS Study – This year we completed a three-year clinical trial designed to identify the optimal means of keeping patients anti-coagulated during intercranial aneurysm procedures.

PICC Study – This radiographer-driven study is designed to determine the optimal vein size-to-catheter ratio to reduce the occurrence of thromboembolic events in patients with PICC lines.

Interventional Oncology Unit – There has been a substantial increase in the demand for interventional radiologists to be involved in treating cancer patients. Data collected from this service will support many new research initiatives currently under development between these two departments.

Centre of Excellence for Interventional Neuroradiology – We are currently establishing a process for First in Human Clinical Trials for medical devices used in interventional neuroradiology procedures such as treating unruptured aneurysms and clot retrieval.

Our research provides valuable insights into the standards of practice within the department by exploring new diagnostic and interventional avenues. The diverse range of clinical trials currently being conducted within DMI will lead to changes of practice which will directly affect patient treatment and care across all imaging modalities.



Prof. Alan Coulthard
Director of Research
Medical Imaging

Supervised Post-Graduate Research Students

Name (RBWH staff in bold)	Current Studies (e.g. PhD, Masters etc.) University (duration)	Research Project Title	Supervisors (RBWH staff in bold)
Ms Rachael Anstey	MPhil, UQ	The Use of MRI and Ultrasound in Foetal Ventriculomegaly	Dr Gail Durbridge
Mr Muhammed Latif	MSc, Anglia Ruskin University, UK	Magnetic Resonance Imaging	Dr Catherine Westbrook
Ms Alice Graham	MPhil, QUT	Project title pending	Dr Karen Dobeli
Ms Kate Smith	MPhil, QUT	The Impact of Patient Arm Position for Multi-trauma Patients with Upper Extremity Injuries	Dr Karen Dobeli
Ms Jill Davies	Graduate Certificate, QUT	N/A	N/A

2018 Research Positions: Coordinators, Fellow, Adjunct and Honorary Positions

Name	Type of Fellowship	Research Program	University (years)
Dr Alan Coulthard	Professor	Director of Research	UQ School of Medicine
Dr Karin Steinke	Associate Professor	Chest and Breast Oncology	UQ School of Medicine
Dr Peter Scally	Associate Professor	Fluoroscopy, Tier A procedures	UQ School of Medicine
Dr Craig Hacking	Senior Lecturer	Trauma and Emergency Radiology	UQ School of Medicine
Dr Karen Dobeli	Honorary Associate	Senior lecture in the Masters in Medical Imaging CT programme	University of Sydney

2018 Current RBWH Research Group / Department Led Research Activity

RBWH Research Group/ Department Lead Researchers	Collaborative Researchers	Research Project Title
M Fielder, N Waters, J Hocking, M Prior, A Coulthard	Dept. Medical Imaging	Bright Spots Study – prospective study of clinically silent ischaemic events post elective endovascular treatment of intracranial aneurysms
M Fielder, J Hocking, M Prior A Coulthard	R Jeffree (Neurosurgery) T Robertson (Anatomical Pathology) D Reutens (Centre for Advanced Imaging)	High field magnetic resonance imaging of hippocampal sclerosis
J Hocking, M Fielder, M Prior, A Coulthard	Dept. Medical Imaging	Enoxaparin for postoperative prophylaxis in intracranial coiling and stents (EPPICS)
J Hocking, M Prior, A Coulthard	Dept. Medical Imaging	Silent intracranial lesions in endovascular treatments (SILEnT)
M Fielder, N Waters, M Prior, A Coulthard	Dept. Medical Imaging	Verify Now Study – effect of collection technique on platelet inhibition results
H Thalagala, M Fielder, M Prior, A Coulthard	Dept. Medical Imaging	The effect of Grey Blanket Protocol on clot retrieval times
R Gunasena, M Prior, K Steinke	Dept. Medical Imaging Emergency and Trauma Centre	CT imaging requests in the Emergency Department (Radiology) – are we Choosing Wisely?
A Bernard, M Fielder, R Bains	Dept. Medical Imaging	The role of interventional radiology in splenic trauma
N Mott	J Lee, D Ranganathan, (Renal Medicine)	RadCath Study – randomised controlled trial to determine the appropriate time to initiate peritoneal dialysis after radiological insertion of catheters to minimise complications
M Fielder, J Sommerville	R Sommerville (ENT), HIRF, Centre for Advanced Imaging (CAI)	Perineural Spread of Head and Neck Cancers
J Sommerville, M Fielder	R Sommerville (ENT)	Utility of Black Blood MRI Sequence in Evaluating Perineural Spread in Head and Neck Cancers
M Fielder, A Coulthard	N Surendran (Neurosurgery)	Common Vertebral Artery Variants and their Clinical Implications
M Prior, A Coulthard, T Rajah	R Jeffree (Neurosurgery), L Reid (CSIRO)	CONSULT – Predicting Surgery-induced Neurological Deficits using CONSULT
M Lu, P Jenvey, M Prior	J van de Pol, J Kinyanjui, L Daniele (Orthopaedics) HIRF	Prospective assessment of graft incorporation and ligamentisation after anterior cruciate ligament (ACL) reconstruction using two different hamstring tendon fixation techniques
T Mason, N Newman, M Prior	Dept. Medical Imaging	PICC Study – what is the optimal vein size-to-catheter ratio to reduce the occurrence of thromboembolic events in patients with PICC lines?
A Rao, S Gustafson, M Lu, F Sitheeque, M Prior	Dept. Medical Imaging	MR Enterography – impact on image quality using split dose Buscopan

2018 Collaborative Research Activity involving RBWH Research Group / Department

Collaborative Lead Researchers	RBWH Researchers	Research Project Title
Dr Simpson, Dr van der Mei, Dr Taylor (Menzies Institute for Medical Research, Tasmania), Prof Rose, Dr Fripp (CSIRO), Dr Lucas (ANU), and the Ausimmune AusLong Investigator Groups	C Odenthal (DMI), A Coulthard (DMI)	Midsagittal corpus callosum area and conversion to multiple sclerosis after clinically isolated syndrome: a multicentre Australian cohort study
Assoc. Prof. Yan (Royal Melbourne Hospital)	N Waters (DMI), A Coulthard (DMI)	Genetic Effects on Antiplatelet Response (GEAR)
Prof. Kwun Fong (TPCH)	K Steinke (DMI)	Low Dose Computed Tomography (LCDT) to diagnose lung cancer
Prof. Pender (Dept of Neurology, RBWH)	A Coulthard (DMI)	Adoptive immunotherapy for multiple sclerosis
Prof Colditz (UQCCR), Prof. Boyd (QLD Cerebral Palsy Rehabilitation and Research Centre, UQ)	A Coulthard (DMI)	Neurodevelopment of the preterm infant (PREterm Brain Outcomes – PREBO)
Sillagen – Global Trial	S Davis (DMI), N Mott (DMI), R Skoien (Dept of Gastroenterology and Hepatology)	A study comparing Pexa-Vec (Vaccinia GM-CSF/ Thymidine Kinase-deactivated virus) followed by Sorafenib versus just Sorafenib in patients with advanced hepatocellular carcinoma (HCC)
R Zivadinov, M Dwyer, Buffalo Neuroimaging Analysis Centre, University of Buffalo New York, USA	J Roberts (DMI), P McCoombe	NeuroSTREAM – creation of a multi-centre database to study real world brain and lesion volume changes in Multiple Sclerosis (MS)

2018 Research Awards and Achievements

Recipient	Award	Event
Rebekah Onsely	ASMIRT International Travel Scholarship	
DMI Clot Retrieval Team: Alan Coulthard, John Clouston, Ken Mitchell, Kate Mahady	RBWH Staff Excellence Award	

2018 Research Grants – Awarded

Investigators (RBWH staff in bold)	RBWH Research Groups/ Departments	Project Title	Granting Body	Amount in 2018	Total Amount (years)
Ryan Sommerville, Jennifer Sommerville, Matthew Fielder	Dept. of E.N.T. Dept. Medical Imaging	Perineural Spread of Head and Neck Cancers	RBWH Diamond Care	\$31,000	\$31,000 (1 year)
Lee Reid, Marita Prior, Rosalind Jeffree, Alan Coulthard, Thulasi Rajah	Dept. Neurosurgery, Dept. Medical Imaging, CSIRO	CONSULT – Predicting Surgery-induced Neurological Deficits using CONSULT	RBWH Diamond Care	\$15,000	\$15,000 (1 year)
Amanda Ullman, Patrick Harris, Andrew Bulmer, Rachael Walker, Naomi Runnegar, Tricia Kleidon, Paul Lee-Archer, Benjamin Pearch, Alan Coulthard (AI)	Griffith University, PAH, LCCH, Dept. Medical Imaging RBWH	PICNIC Trial	NHMRC	\$235,526	\$706,580 (3 years)
Joanne George, Alex Pagnozzi, Samudragupta Bora, Jane Bursle (AI)	University QLD, CSIRO, Dept. of Medical Imaging RBWH	Prebo-6 Trial – Prediction of Childhood Brain Outcomes in Infants born Preterm using Neonatal MRI and concurrent clinical biomarkers	NHMRC	\$277,333	\$832,000 (3 years)

2018 Research Publications

Journal Articles:

- Lawrence N, Kyle S.** Ventilation perfusion single photon emission computed tomography: referral practices and diagnosis of acute pulmonary embolism in the quaternary clinical setting. *JMIRO.* (2018) 62: 777-780
- Jeavons C, Hacking C,** Beenen L, Gunn M. A review of split-bolus single-pass CT in the assessment of trauma patients. *Emergency Radiology.* (2018) doi.org/10.1007/s10140-018-1591-1
- Blazak P, **Hacking C,** Presneill J, Reade M. Early repeat computed tomographic imaging in transferred trauma and neurosurgical patients: incidence, indications and impact. *JMIRO.* (2018) 62: 480-486
- Pierot L, **Coulthard A,** et.al. Standards of Practice in Acute Ischemic Stroke Intervention: International Recommendations. *J NeuroIntervent Surg.* (2018) doi:10.1136/neurintsurg-2018-014287
- Alruwaili A, Pannek K, **Coulthard A,** Henderson R, Kurniawan N, McCombe P. A combined tract-based spatial statistics and voxel-based morphometry study of the first MRI scan after diagnosis of amyotrophic lateral sclerosis with subgroup analysis. *J Neuroradiol.* (2018) 45(1):41-48
- Halder A, **Sommerville J,** Gandhi M. Primary Lymphoepithelial Carcinoma of the Parotid Gland, a Pictorial Review of a Rare Entity. *JMIRO.* (2018) 62:355-360.

Journal Articles: (cont):

7. Lee J, Mott N, Mahmood U, Clouston J, Ranganathan D. Radiological Tenckhoff catheter insertion for peritoneal dialysis: a cost-effective approach. *JMIRO*. (2018) 62:174-178
8. Campbell BCV, Coulthard A, Clouston J, Mitchell K, Mahady K, *et al*. Tenecteplase versus Alteplase before Thrombectomy for Ischemic Stroke. *The New England Journal of Medicine*. (2018). 378(17):1573-1582
9. Campbell BCV, Coulthard A, EXTEND-IA TNK investigators. Tenecteplase versus alteplase before endovascular thrombectomy (EXTEND-IA TNK): a multicentre, randomized, controlled study. *Int J Stroke*. (2018). 13(3):328-334
10. Campbell BCV, Coulthard A, *et al*. Effect of general anaesthesia on functional outcome in patients with anterior circulation ischaemic stroke having endovascular thrombectomy versus standard care: a meta-analysis of individual patient data. *Lancet Neurol*. (2018).17(1):47-53
11. Bolderston A, Watson J, Woznitza N, Westerink A, Di Prospero L, Currie G, Beardmore C, Hewis J. Twitter journal clubs and continuing professional development: an analysis of a MedRadJClub tweet chat. *Radiography (Lond)*. (2018). 24(1):3-8.

Book Chapters / Letters:

1. Yip T, Reid D. Scoliosis and Stitching Images Manual. (2018). Ed 1, 1-80.

2018 Conference Presentations – Invited Speaker, Oral and Poster

Invited Speakers:

1. Steinke K. 'Microwave ablation of lung; Principle and techniques'. Invited speaker BCIO Bangkok Conference in Interventional Oncology. 2017, Bangkok, Thailand
2. Steinke K. 'How to improve outcome of trans-thoracic needle biopsy'. Invited speaker BCIO Bangkok Conference in Interventional Oncology. 2017, Bangkok, Thailand
3. Steinke K. 'Combined SBRT and Microwave ablation for node-negative NSCLC'. Trial proposal at 2018 TROG ASM, 2018, Hobart, Australia
4. Steinke K. 'Interstitial Lung Disease'. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
5. Steinke K. 'Lung Cancer/TNM8 update'. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
6. Steinke K. 'Solitary Pulmonary Nodule'. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
7. Steinke K. 'Cystic Lung Disease'. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
8. Steinke K. 'RECIST Trial Reporting'. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
9. Steinke K. 'CT Lung Biopsy/MWA'. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
10. Steinke K. 'Dense Breasts. Invited speaker. RANZCR Tasmanian Branch Meeting, 2018, Hobart, Australia
11. Dobeli K. 'High heart rate is not necessarily a contraindication for prospective-triggered CT coronary angiography'. Australian Society of Medical Imaging and Radiation Therapy ASM. 2018. Canberra, Australia
12. Clouston J. 'Interventional Radiology and Control of ENT Bleeding'. Invited speaker. National ENT ASM. 2018. Cairns, Australia
13. Clouston J. 'Frontiers 2018'. National ENT ASM. 2018. Cairns, Australia
14. Sommerville J. 'Imaging the Post Treatment Neck'. ANZSNR ASM. 2018. Hobart, Australia.
15. Sommerville J. 'Imaging the Perineural Spread in Head and Neck Cancer'. Brisbane Cancer Conference. 2018. Brisbane, Australia
16. Sommerville J. 'Greater Occipital Nerve: radiological anatomy demonstrated by two cases of perineural tumour spread'. ASHNR. 2018. Georgia, U.S.A
17. Hacking C. 'Radiology Education FRANZCR Concurrent Session'. RANZCR ASM, 2018. Canberra, Australia.
18. Hacking C. 'Trauma in pregnancy'. RANZCR ASM, 2018. Canberra, Australia
19. Hacking C. 'Contrast injection techniques for trauma imaging'. American Society of Emergency Radiology conference, 2018. Washington, USA
20. Hacking C. 'High prevalence of inaccurate pelvic binder placement in major trauma'. American Society of Emergency Radiology conference, 2018. Washington, USA
21. Hacking C. 'A to Z of Acute Paediatric Radiology – Don't forget the Bubbles'. Acute Paediatric Conference, 2018. Melbourne, Australia
22. Hacking C. 'Trauma in Pregnancy radiology'. Australasian College of Emergency Medicine Autumn Symposium, 2018. Brisbane Australia
23. Hacking C. 'Brain haemorrhage radiology'. Australasian College of Emergency Medicine Autumn Symposium, 2018. Brisbane, Australia
24. Hacking C. 'Emergency Chest X-ray'. Australasian College of Emergency Medicine Autumn Symposium, 2018. Brisbane, Australia
25. Hacking C. 'What not to miss: AXR'. Keynote Speaker, Trauma and Acute Imaging Symposium, 2018. Gold Coast, Australia
26. Hacking C. 'Acute abdominal CT'. Keynote Speaker, Trauma and Acute Imaging Symposium, 2018. Gold Coast, Australia
27. Hacking C. 'What not to miss: Multitrauma CT'. Keynote Speaker, Trauma and Acute Imaging Symposium, 2018. Gold Coast, Australia
28. Hacking C. 'Vascular emergencies'. Keynote Speaker, Trauma and Acute Imaging Symposium, 2018. Gold Coast, Australia
29. Hacking C. 'Acute abdominal imaging'. Nurse Practitioner Symposium, RBWH, 2018. Brisbane, Australia
30. Coulthard A. 'Experience in using ATLAS Stents in Australia'. Society of NeuroInterventional Surgery, 2018, San Francisco, USA
31. Coulthard A. Invited panellist for workshop on ATLAS endovascular stents. Society of NeuroInterventional Surgery, 2018, San Francisco, USA.

Oral Presentations:

1. Koi V. 'The Vital Signs of Facial Bone and OPG.' Trauma and Acute Imaging Symposium, 2018. Gold Coast, Australia
2. Miller P. 'Ultrasound Versus CT for the Liver'. ASA, 2018
3. Karunasena S. 'Diagnostic Imaging for Suspected Pulmonary Embolism in Pregnancy – 12 Month Tertiary Centre Audit' RANZCR ASM, 2018. Canberra, Australia

Oral Presentations: (cont):

4. **Fielder M.** 'Catheter directed therapy for massive and submassive pulmonary embolism: a single centre Australian experience.' RANZCR ASM, 2018. Canberra, Australia
5. **Hocking J.** 'Therapeutic anticoagulation post elective intracranial aneurysm intervention in patients randomised to IV unfractionated heparin or subcutaneous enoxaparin.' RANZCR ASM, 2018. Canberra, Australia
6. **Hacking C.** 'Trauma in pregnancy.' RANZCR ASM, 2018. Canberra, Australia
7. **Robertson S.** 'Anti-platelet response and peri-procedural complications in elective endovascular treatment of intracranial aneurysms: comparison between clopidogrel and prasugrel.' RANZCR ASM, 2018. Canberra, Australia.

Poster Presentations:

1. **Fielder M, Coulthard A.** 'Changing from Clopidogrel to Prasugrel: The Effect on Thromboembolic Complications for Stent-Assisted Coilings of Unruptured Intracranial Aneurysms.' RANZCR ASM, 2018. Canberra, Australia
2. **Fielder M, Surendran N.** 'Common Vertebral Artery Variants and their Clinical Implications.' RANZCR ASM, 2018. Canberra, Australia
3. **Fielder M, Coulthard A.** 'Platelet Reaction Unit (PRU) Response in Patients Presenting for Elective Endovascular Treatment of Intracranial Aneurysms: Comparison between Clopidogrel and Prasugrel.' RANZCR ASM, 2018. Canberra, Australia
4. **Pearson T, Fielder M, Coulthard A.** 'Peri-Procedural and Late Complications of Flow Diverting Stents for Intracranial Aneurysms and the Impact of Platelet Reaction Unit (PRU) Status.' RANZCR ASM, 2018. Canberra, Australia
5. **Pearson T, Fielder M, Coulthard A.** 'Assessing Vasospasm Risk Post Subarachnoid Haemorrhage with the Modified Fisher Scale.' RANZCR ASM, 2018. Canberra, Australia
6. **Marsh P, Fielder M, Cleland P.** 'Important Radiological Findings in Submersion Injuries.' RANZCR ASM, 2018. Canberra, Australia
7. **Lovell S, Sommerville J, Gandhi M.** 'Pictorial Review of Cephaloceles in Adults'. RANZCR ASM, 2018. Canberra, Australia
8. **Sommerville J.** Greater Occipital Nerve: Radiological anatomy demonstrated by two cases of perineural tumour spread. ASHNR. 2018. Georgia, U.S.A.
9. **Sommerville J.** Imaging Anatomy of the Distal Branches of the Trigeminal Nerve, as Demonstrated by Perineural Tumour Spread. ASHNR. 2018. Georgia, U.S.A.
10. **Tromp D, Mann J, Hacking C.** Optimising computer tomography imaging in investigation of suspected renal calculi. RANZCR ASM, 2018. Canberra, Australia
11. **Hapugoda S, Do S, Hacking C.** The inaccuracy of pelvic binder placement in major trauma. Queensland Trauma Symposium, 2018, Brisbane, Queensland
12. **Williamson F, Martin-Dines P, Coulthard L, Hacking C, Zheng O, Wall D.** The inaccuracy of pelvic binder placement in major trauma. Queensland Trauma Symposium, 2018, Brisbane, Queensland.

