

2017

RBWH

RESEARCH REPORT

MEDICAL IMAGING
SERVICES

RBWH

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150
years

1867-2017



Queensland
Government

MEDICAL IMAGING SERVICES



NOELLE CRIDLAND
Executive Director
Medical Imaging Services

Medical Imaging is multi-faceted incorporating highly specialised work forces: radiology, radiography and nursing.

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 approximately 20 departmental research projects and 70 service-based research studies for which the department provides imaging services and radiological expertise to projects and clinical trials established by other RBWH departments or external research groups. Partnerships with research institutions such as the Queensland Brain Institute, the Centre for Advanced Imaging, QIMR Berghofer, UQCCR and CSIRO have only strengthened over 2017.

The work flow within Medical Imaging is multi-faceted incorporating highly specialised work forces: radiology, radiography and nursing. The role of the Research Office has extended to support, not only consultants, but residents, radiology registrars, radiographers and nursing staff to achieve their research goals. 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.

Highlights of our research from 2017 include:

Mechanical thrombectomy timing project (stroke audit). Medical Imaging and the Department of Emergency Medicine recently assessed its workflow for identifying stroke patients who were eligible for a clot retrieval procedure. An immediate consequence of this assessment was the development and implementation of the 'Grey Blanket' protocol. The effectiveness of this protocol and its outcomes is the focal point of one of the larger studies to be continued on into 2018.

Medical Imaging and the Medical Oncology Department identified a need to develop the Interventional Oncology Unit. Recently, 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 a number of new research initiatives currently under development between these two departments.

Medical Imaging has adopted the hospital-wide approach of Choosing Wisely. A number of consultants and registrars have been instrumental in developing projects to assess the effectiveness of various protocols that relate to CT imaging of head traumas, C-spines and pulmonary angiograms. This is a collaborative endeavour with staff from the Department of Emergency Medicine.

DMI has successfully obtained a number of research grants during 2017 to support its research interests. We have increased our research productivity by increasing the scope of research support to include radiographers, nurses and radiology registrars alike. We see the quality of our research and the increase in productivity to continue to improve in future years.

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)
Mr Patrick Eastgate	PhD, QUT (2015 - 2018)	Patterns in current imaging practice in an emergency department.	Dr Steven McPhail
Dr Nicole Waters	MPhil, UQ (2015 - 2018)	Silent Strokes Study: Prospective study of clinically silent ischaemic events post-elective endovascular treatment of intracranial aneurysms.	Prof. Alan Coulthard
Dr Cara Odenthal	MPhil, UQ (2013 - 2017)	Can serial MRI after first demyelinating event detect early reduction in brain volume in patients who progress to clinically definite MS compared to those who do not? The application of linear and two-dimensional measures of cerebral atrophy in an Australian cohort of individuals presenting with clinically isolated syndrome.	Prof. Alan Coulthard
Ms Katherine Smith	MPhil, QUT (2017 – 2018)	Research project in development	Dr Karen Dobeli

2017 RESEARCH POSITIONS: COORDINATORS, FELLOW, ADJUNCT AND HONORARY POSITIONS

NAME	TYPE OF FELLOWSHIP	RESEARCH PROJECT	UNIVERSITY (YEARS)
Prof 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	Research Fellow	Senior lecture in the Masters in Medical Imaging CT programme	University of Sydney
Ms Clare Berry	Research Associate	Investigating sexual dimorphism in volumetric mapping of the basal nuclei.	QUT

2017 CURRENT RBWH RESEARCH GROUP / DEPARTMENT LED RESEARCH ACTIVITY

RBWH RESEARCH GROUP / DEPARTMENT LEAD RESEARCHERS	COLLABORATIVE RESEARCHERS	RESEARCH PROJECT TITLE
Dr Cara Odenthal Dr Justin Oughton Prof Coulthard	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.	Midsagittal corpus callosum area and conversion to multiple sclerosis after clinically isolated syndrome: A multicentre Australian cohort study.
Dr Waters Dr Hocking Dr Prior Prof. Coulthard	DMI - departmental project	Bright Spots Study – Prospective study of clinically silent ischaemic events post elective endovascular treatment of intracranial aneurysms.
Dr Hocking Dr Prior Prof. Coulthard	Dr Jeffrey (Neurosurgery) Dr Robertson (Anatomical Pathology) Prof Reutens (Centre for Advanced Imaging)	High field magnetic resonance imaging of hippocampal sclerosis
Dr Hocking Dr Jenvey Dr Prior Prof. Coulthard	DMI - departmental project	Enoxaparin for postoperative prophylaxis in intracranial coiling and stents (EPPICS).
Dr Hocking Dr Prior Prof. Coulthard	DMI - departmental project	Silent intracranial lesions in endovascular treatments (SILEnT).
Dr Waters Prof. Coulthard	DMI - departmental project	Verify Now Study – Effect of collection technique on platelet inhibition results.
Dr Jenvey Dr Prior Prof. Coulthard	DMI - departmental project	The effect of Grey Blanket Protocol on clot retrieval times.
Dr Gunasena Dr Prior Assoc. Prof Steinke	DMI - departmental project	CT imaging requests in the Emergency Department (Radiology) – Are we Choosing Wisely?
Dr Jenvey Dr Bains	DMI - departmental project	The role of interventional radiology in splenic trauma.
Dr Nigel Mott	Dr Dwarakanathan 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.

2017 COLLABORATIVE RESEARCH ACTIVITY INVOLVING RBWH RESEARCH GROUP / DEPARTMENT

COLLABORATIVE LEAD RESEARCHERS	RBWH RESEARCHERS	RESEARCH PROJECT TITLE
Prof Rose Dr Reid (Australian e-Health Research Centre, CSIRO)	Prof Coulthard (DMI) Dr Prior (DMI)	CONSULT: A connectivity-based surgical planning tool, incorporating advanced functional neuroimaging.

COLLABORATIVE LEAD RESEARCHERS	RBWH RESEARCHERS	RESEARCH PROJECT TITLE
Assoc. Prof. Yan (Royal Melbourne Hospital)	Dr Nicole Waters (DMI) Prof. Alan Coulthard (DMI)	Genetic Effects on Antiplatelet Response (GEAR)
Prof. Kwun Fong (TPCH)	Assoc. Prof. Karin Steinke (DMI)	Low Dose Computed Tomography (LCDT) to diagnose lung cancer.
Prof. Pender (Dept of Neurology, RBWH)	Prof. Alan Coulthard (DMI)	Adoptive immunotherapy for multiple sclerosis.
Prof Colditz (UQCCR), Prof. Boyd (QLD Cerebral Palsy Rehabilitation and Research Centre, UQ)	Prof. Alan Coulthard (DMI)	Neurodevelopment of the preterm infant (PREterm Brain Outcomes – PREBO)
Sillagen – Global Trial	Dr Richard Skoien (Dept of Gastroenterology and Hepatology), Dr Sam Davis (DMI) , Dr Nigel Mott (DMI)	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)
Dr Jerry Van De Pol, Dr John Kinyanjui. (Dept. of Orthopaedics, RBWH)	Dr Peter Jenvey (DMI) Dr Macy Lu (DMI)	Graft incorporation and ligament healing after ACL reconstruction using two different hamstring tendon fixation techniques.
Dr John Woodford Dr James McCarthy (Dept. of Infectious Disease, RBWH)	Dr Peter Jenvey (DMI) Dr Jennie Roberts (DMI)	Advanced medical imaging in subpatent malaria: can it help us understand where the parasites go and organ-specific host responses?

2017 RESEARCH AWARDS AND ACHIEVEMENTS

RECIPIENT	AWARD	EVENT
Dr Dean McCoombe	Uhr Clarke Bursary	RANZCR Awards 2017

2017 RESEARCH AWARDS

INVESTIGATORS (RBWH STAFF IN BOLD)	RBWH RESEARCH GROUPS / DEPARTMENTS	PROJECT TITLE	GRANTING BODY	AMOUNT IN 2017	TOTAL AMOUNT (YEARS)
Prof Coulthard Dr Prior Prof Rose Dr Reid	Department of Medical Imaging, Australian e-Health Research Centre, CSIRO	Post-surgical Diffusion MRI in Epilepsy Patients for CONSULT.	RANZCR	\$5,037.50	\$5,037.50 (2017 – 2018)

INVESTIGATORS (RBWH STAFF IN BOLD)	RBWH RESEARCH GROUPS / DEPARTMENTS	PROJECT TITLE	GRANTING BODY	AMOUNT IN 2017	TOTAL AMOUNT (YEARS)
Prof Coulthard Dr Prior , Prof Rose, Dr Reid	Department of Medical Imaging, Australian e-Health Research Centre, CSIRO	CONSULT: A connectivity-based surgical planning tool, incorporating advanced functional neuroimaging.	Advanced Queensland Fellowship	\$60,000.00	\$180,000.00 (2017 – 2019)
Prof Coulthard Dr Prior Prof Rose Dr Reid	Department of Medical Imaging, Australian e-Health Research Centre, CSIRO	CONSULT: A connectivity-based surgical planning tool, incorporating advanced functional neuroimaging.	CSIRO	\$60,000.00	\$180,000.00 (2017 – 2019)
Dr Nigel Mott , Dr Dwarakanathan Ranganathan	Department of Medical Imaging, Department of Renal Medicine	RadCath Study	RBWH Foundation	\$35,000.00	\$35,000.00 (2017 – 2018)

2017 RESEARCH PUBLICATIONS

TYPE (JOURNAL ARTICLE / BOOK / BOOK CHAPTER / LETTER)	PUBLICATION INFORMATION (RBWH STAFF IN BOLD)
Journal Article	Wen X, Marshall H, Leong SC, O'Rourke L, Steinke K , Mirjalili N, Bowman R, Yang IA, Fong K. Is digital tomosynthesis on par with computed tomography for the detection and measurement of pulmonary nodules? J Thorac Imaging. 2017. 32(6):W67-W68.
Journal Article	Alurwaili AR, Pannek K, Coulthard A , Herderson R, Kurniawan ND, 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. 2017. Doi : 10.1016/j.neurad.2017.03.007
Journal Article	Boyd RN, Davies PS, Ziviani J, Trast S, Barber L, Ware R, Rose S, Coulthard A , et al. PREDICT-CP: Study protocol of implementation of comprehensive surveillance to predict outcomes for school-aged children with cerebral palsy. BMJ Open. 2017. doi: 10.1136/bmjopen-2016-014950.
Journal Article	George JM, Fiori S, Fripp J, Pannek K, Bursle J , Moldrich RX, Guzzetta A, Coulthard A , Ware RS, Rose SE, Colditz PB, Boyd RN. Validation of an MRI brain injury and growth scoring system in very preterm infants scanned at 29- to 35-week postmenstrual age. AJNR Am J Neuroradiol. 2017. 38(7):1435-1442
Journal Article	Neep MJ, Steffens T, Riley V, Eastgate P , McPhail SM. Development of a valid and reliable test to assess trauma radiograph interpretation performance. Radiography. 2017. 23(2):153-158.
Journal Article	Ferguson CD , Luis CR , Steinke K . Safety and efficacy of microwave ablation for medically inoperable colorectal pulmonary metastases: Single-centre experience. J Med Imaging Radiat Oncol. 2017. 61(2):243-249.
Journal Article	Brown NI , Leschke P , Way M , Smith DD , Cleland P . Pre-oncall key conditions training for first-year radiology registrars. J Med Imaging Radiat Oncol. 2017 Jun;61(3):339-343
Journal Article	Odenthal C , Simpson S Jr, Oughton J , van der Mei I, Rose S, Fripp J, Lucas R, Taylor B, Dear K, Ponsonby AL, Coulthard A ; Ausimmune AusLong Investigator Groups. Midsagittal corpus callosum area and conversion to multiple sclerosis after clinically isolated syndrome: A multicentre Australian cohort study. J Med Imaging Radiat Oncol. 2017. 61(4):453-460
Journal Article	Thaker DA, Douglas E, Blazak J, Xu W, Hughes B, Burge M, Steinke K , Wyld D. An analysis of incidental and symptomatic pulmonary embolism (PE) in medical oncology patients. Asia Pac J Clin Oncol. 2017. 13(3):243-248.

TYPE (JOURNAL ARTICLE / BOOK / BOOK CHAPTER / LETTER)	PUBLICATION INFORMATION (RBWH STAFF IN BOLD)
Journal Article	Stephens M, Kim DI, Shepherd B, Gustafson S , Thomas P. Intense Uptake in Amyloidosis of the Seminal Vesicles on 68Ga-PSMA PET Mimicking Locally Advanced Prostate Cancer. Clin Nucl Med. 2017. 42(2):147-148.
Journal Article	Lane A, Lee L, Traves D, Lee A. Intracranial translucency assessment at first trimester nuchal translucency ultrasound. J Med Imaging Radiat Oncol. 2017. 61(2):185-189.
Journal Article	Brown N, Leschke P , Way M, Smith D and Cleland P . Pre-oncall key conditions training for first-year radiology registrars. J Med Imaging Radiat Oncol. 2017. Doi:10.1111/1754-9485.12582.
Letter to the Editor	Stoddart S, Handy M, Cleland P , Wall D, Brown A. Traumatic dislocation of the first rib: A case report and review of the literature. Emergency Medicine Australasia. 2017. 29:746-748.
Case Report	Abeysekera A, Lee J, Ghosh S, Hacking C . Migration of eroded laparoscopic adjustable gastric band causing small bowel obstruction and perforation. BMJ Case Report. 2017. doi: 10.1136/bcr-2017-219954.
Journal Article	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. International Journal of Diagnostic Imaging and Radiation Therapy. 2017.
Journal Article	Bukhari W, Prian K, Waters P, Woodhall M, O’Gorman C, Clarke L, Coulthard A , et al. Incidence and prevalence of NMOSD in Australia and New Zealand. J Neurol Neurosurg Psychiatry. 2017 88(8): 632-638.
iBook	Scally P . Disease Profiler. 2017. https://geo.itunes.apple.com/au/book/disease-profiler/id1229466633?mt=13
Book Chapter	Sommerville J . Radiological Diagnosis. In Dubey, Siba P., Schick, Bernhard ed. Juvenile Angiofibroma. Springer, 2017.

2017 CONFERENCE PRESENTATIONS – INVITED SPEAKER, ORAL AND POSTER:

TYPE (ORAL / POSTER / INVITED)	PRESENTATION INFORMATION (RBWH STAFF IN BOLD)
Oral	Smith C. (Radiographer) CT Extremities. Rad Aim 2017.
Oral	Gockel M. (Sonographer) Localisations using Mammography. Breast Interest Group. Queenstown, New Zealand. April 2017
Oral	Gockel M. (Sonographer) The History of Mammography. Australian Society of Breast Disease. Gold Coast. October 2017
Oral	Smith K. (Sonographer) Alcoholic Liver Disease. ASA International Conference. October 2017
Oral	Miller P. (Sonographer) CT versus US in Trauma. ASA International Conference. October 2017
Oral	Napier D. (Sonographer) Role of ultrasound in the diagnosis of penile fractures. ASA International Conference. October 2017
Oral	Burton J. (Sonographer) Conducted a workshop on Ultrasound of the Neck. ASA International Conference. October 2017
Oral	Jenvey P. Revascularization outcome measures for mechanical thrombectomy in acute ischaemic stroke with large vessel occlusion. RANZCR. Perth. October, 2017.
Oral	Jenvey P. Scapholunate interosseous ligament injuries: current concepts in radiological diagnosis. RANZCR. Perth. October, 2017.
Oral	Jenvey P. Primary craniospinal hypotension: a diagnostic headache. RANZCR. Perth. October, 2017.
Oral	Robertson S. Imaging findings after hippocampal resection for temporal lobe epilepsy. RANZCR. Perth. October, 2017.

TYPE (ORAL / POSTER / INVITED)	PRESENTATION INFORMATION (RBWH STAFF IN BOLD)
Oral	Thalagala H. Acute ischaemic stroke with large vessel occlusion: establishing baseline timing metrics for a workflow improvement protocol. RANZCR. Perth. October, 2017.
Invited Speaker	Clouston J. Vascular and lymphatic malformations. IRSA. 2017.
Invited Speaker	Sommerville J. Perineural tumour spread. ANZSNR Darwin 2017.
Invited Speaker	Sommerville J. Protocols for head and neck CT. RADAIM 2017.
Invited Speaker	Sommerville J. Imaging of perineural tumour spread RADAIM 2017.
Invited Speaker	Sommerville J. Spaces of the suprahyoid neck RADAIM 2017.
Invited Speaker	Sommerville J. Imaging of the skull base. ANZHNCS ASM 2017.
Invited speaker	Mewis J and Robinson K. Many Departments – One Directorate (The roles of the DON and Ass NUM). MINA National Conference. Melbourne, 2017.
Poster	S Hapugoda, C Hacking , F Gaillard and A Dixon. AAST Liver trauma grading system: a pictorial essay. RANZCR. Perth. October, 2017.
Poster	T Brennen, M Skalski, F Gaillard, A Dixon and C Hacking . Review of CT imaging features in renal trauma correlated to the American Association for the Surgery of Trauma (AAST) organ injury scale. RANZCR. Perth. October, 2017.
Poster	A Jahangiri, A Dixon, F Gaillard, M Skalski and C Hacking . Teardrop cervical spine fractures: a pictorial comparison - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	A Slater, M Prior and C Hacking . Anatomical distribution of ureteric calculi in CT KUB: a single-centre audit - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	A Slater, M Prior and C Hacking . Tracing the ureters and VUJ on unenhanced CT KUB: does experience count - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	J Harvey and C Hacking . Abducens nerve dysfunction: a pictorial essay - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	J Harvey and C Hacking . Imaging findings in sternal osteomyelitis: a case report and review of the literature - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	J Harvey and C Hacking . Fool me thrice: a case report of a twice-missed fracture of the lateral process of the talus (snowboarder's fracture) - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	F Delaney, I Bickle, A Dixon, C Hacking and H Knipe. Hypotension and the abdominal CT - Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting - Perth, WA - 19 – 22 Oct 2017.
Poster	M Fielder, P Jenvey and A Coulthard . Causes, pathology, radiological findings and clinical consequences of superficial siderosis. RANZCR. Perth. October, 2017.
Poster	R Nelles, P Jenvey, W Hogg, J Hocking, N Waters and A Coulthard . Mechanical thrombectomy for acute stroke with large vessel occlusion: a single centre audit. RANZCR. Perth. October, 2017.
Poster	V Tang, P Eastgate, J Clouston . Audit of Contrast-Media Extravasation in a Tertiary Hospital. RANZCR. Perth. October, 2017.
Poster	S Aroney, K Steinke . CTPA imaging for suspected pulmonary emboli: Are we 'Choosing Wisely'? RANZCR New Zealand. 2017
Poster	B Riggall, K Steinke . CT head imaging in suspected mild trauma brain injury: Are we 'Choosing Wisely'? RANZCR New Zealand. 2017
Poster	M Sharpless, K Steinke . CT imaging in suspected traumatic cervical spine injury: Are we 'Choosing Wisely'? RANZCR New Zealand. 2017
Poster	J Woodford, P Thomas, A Gillman, P Jenvey, J Roberts , S Rose, N Dowson, N Anstey and J McCarthy. Advanced medical imaging in subpatent malaria: can it help us understand where the parasites go and organ-specific host responses? ASTMH. Baltimore (USA), 2017.