2017
Princess Alexandra Hospital
Radiation Oncology
Annual Research Report

Produced by Professor Sandro V Porceddu
Director of Radiation Oncology Research,
Cancer Services, Metro South Health.
It gives me great pleasure to provide you with the 2017 Princess Alexandra Hospital Radiation Oncology Department (Ipswich Road Campus) Annual Research Report. This year’s report again highlights the strong research culture embedded within the department and our goal to convert clinical observations and interactions into research events.

We have achieved an outstanding number of national and international publications and presentations (many which are practice-defining), continue to support research higher degrees, received substantial grant funding and been the recipients of prestigious awards.

As a department with a high clinical throughput we continue to face a number of challenges to maintain our research excellence. With the emergence of immunotherapies in the clinical domain and dominance of industry-led trials, ensuring we continue to develop and support investigator-led trials remains paramount.

Many important scientific questions with or without commercial benefit are still best answered by these trials. We have also seen the emergence of stereotactic radiotherapy trials in a number of disease sites, and as a unit with one of the largest experiences in this field, along with our cutting-edge technology, we remain national leaders in this space.

I would like to take this opportunity to thank the many organisations that partner with us including the PAH Cancer Services Clinical Trials Unit, the PA Foundation, PAH SERTA, QFAB and TRI.

Sandro V Porceddu
Director, Radiation Oncology Research
Princess Alexandra Hospital
2017 Study Review

In 2017, 4 new studies were opened under the Radiation Oncology Cancer Trials banner – 2 Collaborative Group Studies (1 Phase III & 1 Phase II) and two Investigator initiated studies (1 Phase II & 1 Phase I/II). The nature of the majority of new trials being proposed is a reflection of the changing global face of radiation oncology, trending towards newer technologies such as Stereotactic Body Radiotherapy, Gamma Knife and Stereotactic Radiosurgery.

With this comes the challenge of ensuring we have the technical capabilities to be able to deliver on this new wave of research protocols. In 2017, several niche trials opened in diseases that previously had limited treatment options such as “FASTRACK” (Focal Ablative Stereotactic Radiosurgery for Cancer of the Kidney) and “CORE” (conventional care versus radioablation – Stereotactic Ablative Body Radiotherapy (SABR) for extracranial Oligometastases).

The combination of immunotherapy and these newer technologies has also come to the forefront resulting in collaboration with our medical oncology colleagues to offer our patients the most current treatment and research options such as “RAPPORT” (Stereotactic Radiotherapy and Anti-PD1 antibody for Oligometastatic Renal Tumours) and “NIVORAD” (Nivolumab and SABR in advanced Non small cell lung cancer).

Across the Radiation Oncology Cancer Trials portfolio there are currently 11 other recruiting studies (7 Phase III, 3 Phase II and 1 Phase I/II). All but two of these studies are collaborative group studies badged under the auspices of TROG. Two studies were closed to follow-up during the year, with 5 other studies still undergoing follow-up.

2017 saw the amalgamation of the Cancer trials unit at Radiation Oncology Raymond Terrace (ROPART) to come under the umbrella of the CTU PAH. This presents exciting opportunities for combined research resources, staffing support and greater collaboration across the two campuses to ensure patients have the best opportunity to access ground breaking research studies.

The greatest challenge to the Radiation Oncology Cancer Trials team remains around the research dollar. With reduced grant funding from the NHMRC, there have been a higher proportion of investigator-initiated studies in collaboration with our southern counterparts with little to no funding. Whilst this puts a greater burden on our resources, the PAH CTU remains committed to continue to forge the way in radiation oncology research trials and maintain our proud record of being a significant contributor to the ever evolving nature of radiation oncology research and treatment technologies.

Adrienne See
Manager, Clinical Trials Unit
Cancer Services
Princess Alexandra Hospital
Individual Achievements

**Awards and Prizes**

Elizabeth Brown  
Faculty of Health, Queensland University of Technology, 2017 Vice Chancellor Performance Award

Luke Nicholls  
Varian Prize, RANZCR Annual Scientific Meeting, Perth 2017

Nicola Jones  
Varian Harold Anderson Memorial Radiation Therapist Student Prize (paper), ASMMIRT 2017

Nina Lin  
Best Radiation Therapy Paper Student, ASMMIRT 2017

ScreenIT  
- Winner “Shaping our Future’ MSHHS Board Chair’s Award  
- eHealth Award Finalist “Clinical Innovator”

Laurelie Wall  
- Head and Neck Cancer Alliance Award, Dysphagia Research Society 25th Scientific Meeting (USA)  
- Oral Presentation, Dysphagia Research Society 25th Scientific Meeting (USA) - 2nd place.

Sandro Porceddu  
TROG – Outstanding Contribution by a member

**Research Higher Degrees (Masters Projects)**

Alisha Wintour  
Development and Evaluation of an Information Pamphlet for HPV Positive Oropharyngeal Cancer patients, Queensland University of Technology  
Supervisors - E Brown, SV Porceddu, P Yates, S Chambers.

Helen Frewen  
Failure Mode and Effects Analysis in a Paperless Radiotherapy Department, Queensland University of Technology  
Projects and Recipients

Improving outcomes for patients with melanoma brain metastases using novel personalised and response-adapted treatment strategies
PA Research Foundation Translation Research Innovation Award - $500,000 over 5 years.
MB Pinkham, M Foote, V Atkinson, S Olson, T Watkins, N Haas, H Schaider, M Stark, S Stehbens

Use of a telehealth platform to improve mental health and quality of life in people with brain tumour and their families: a pilot study
PAH Research Support Scheme Project Grant - $25,000
MB Pinkham, T Ownsworth, M Foote, Melissa Kendall, S Chambers, J Oram, K Lucas

Pre-Implementation of ScreenIT Lung/Oesophagus: Evaluation of baseline services, needs analysis and psychometric testing
PAH Research Support Scheme Project Grant $75,000 over 2 years.
B Cartmill, M Lehman, E Ward, L Wall, S Chambers, E Isenring, J Nixon

ScreenIT: Optimising allied health intervention in patients with head and neck cancer and their carers using an electronic screening program. The expansion of the ScreenIT model of care across the full head and neck cancer service at the Princess Alexandra Hospital
Health Practitioner Research Scheme - $99,924
B Cartmill, L Ward, L Wall, S Porceddu, B Panizza, K Hancock, J Nixon, S Pang, K Sutherland, E Pinkham

A randomised trial of osimertinib and SRS in mutation-driven NSCLC patients with small volume brain metastases (OUTRUN)
Astra Zeneca - $1.73m
Fiona Hegi-Johnson, Chee Lee, YY Soon, MB Pinkham, et al.
PAH Radiation Oncology Wins Varian Prize
Dr Luke Nicholls was awarded the prestigious 2017 Varian Prize for his research paper titled “Radiological kinetics of brain metastases and clinical implications for patients treated with stereotactic radiosurgery (SRS)”.

This is a highly contested award given to the best scientific paper presented by a radiation oncology trainee at the RANZCR annual scientific meeting.

Anecdotally, certain patients experienced significant progression between diagnostic MRI and the MRI on the day of Gamma Knife treatment. We aimed to characterise the kinetics of brain metastases (both in size and number) in patients treated with SRS and find potential predictive factors. Clinically significant progression (>3mm growth or 1 new met) occurred in 60% of patients. Faster growth was associated with younger age, poorer performance status, non-small cell lung cancer, melanoma and uncontrolled extra-cranial disease.

Patients with significant progression were also more likely to develop distant intracranial recurrence. This has implications for any centre treating patients with (SRS), as certain patient populations would benefit from an MRI closer to SRS and/or closer MRI surveillance after treatment.

PAH Radiation Oncology Awarded $500,000 for Melanoma Research
Dr Mark Pinkham and his team were awarded the PA Research Foundation Translation Research Innovation Award to conduct innovative research into brain metastases from metastatic melanoma. Brain metastases are a serious complication of advanced melanoma. Various treatment options exist, but sometimes it is uncertain if one approach is preferred over another. This project lays the foundation for a translational research programme between PAH and TRI to focus on this problem.

We are building a clinical database and biobank of blood and tissue samples from patients with melanoma at different stages of their disease. By looking for genetic signals in routine blood tests, we aim to better understand which treatment options might be best suited to an individual patient. By analysing tissue samples, we also aim to investigate how melanoma in the brain can become resistant to current treatments and how this might be overcome. This could lead to new treatments or combinations of treatments in the future.

World First in Advanced Skin Cancer
Led by investigators at the Princess Alexandra Hospital Radiation Oncology Unit and the Peter MacCallum Cancer Centre in collaboration with the Trans Tasman Radiation Oncology Group the results of the TROG 05.01 POST Trial were presented at the American Society of Clinical Oncology (ASCO) meeting in 2017.

The first and only Phase III randomised trial of its kind demonstrated that the addition of chemotherapy to post-operative radiotherapy did not improve cure rates in patients with advanced cutaneous squamous cell carcinoma of the head and neck. Contrary to previously published retrospective series the study demonstrated that cure rates in excess of 85% could be achieved with surgery & high quality post-operative radiotherapy. It also demonstrated that the rate of severe long-term effects from the radiotherapy was less than 3%, and will save many patients from the unnecessary side effects of chemotherapy.
New Dimension to ScreenIT; Mask Anxiety Detection and Management

ScreenIT is a web-based screening tool designed to capture patient-reported outcomes regarding the presence of chemoradiotherapy-induced side-effects, and their impact on swallowing, nutrition and distress, to enable appropriate management by the oncology multi-disciplinary team. It was introduced into the Radiation Oncology Unit, Princess Alexandra Hospital, Ipswich Road Campus in 2014, and has undergone multiple phases of development.

One of the areas that has benefited from this research is for patients who experience mask anxiety while undergoing treatment for head and neck cancer. The incidence of mask anxiety is under-reported and can have major psychological implications throughout the course of head and neck cancer treatment. A distress score of greater than four generates a referral to the occupational therapist. This allows the patient to receive timely support and strategies to manage mask anxiety prior to the commencement of radiation therapy.

Over the next 12 months we plan to use the ScreenIT tool to assess the incidence and experience of patients with mask anxiety with a view to developing more effective interventions in this group of patients.

Evaluation of Respiratory Induced Kidney Motion to Reduce Treatment Toxicity

Stereotactic ablative body radiotherapy (SABR), a high precision technique used to deliver large radiation therapy doses to small areas of the body, is a promising emerging treatment for primary renal cell carcinoma. However, respiratory induced kidney motion can be a limiting factor in the optimal delivery of SABR to this region. SABR to the abdominal region requires effective motion management strategies to reduce the risk of missing the tumour and increasing normal tissue damage.

In our paper by West K et al (JMIRO 2018) we assessed the effectiveness of a pneumatic abdominal compression belt in reducing respiratory induced kidney motion.

This study found that at least one kidney in all patients had greater than 5 mm motion as a result of respiration without the use of compression. With the use of the pneumatic abdominal compression belt, kidney motion was reduced by 5-10 mm. This study showed that the pneumatic abdominal compression belt was effective in reducing kidney motion and facilitates the safe and accurate delivery of SABR to patients with renal cell carcinoma. As a result of this study, our department utilises this device clinically as part of our motion management strategy to minimise respiratory induced abdominal motion for patients receiving SABR.

2. Nicholls L, Foote M, Pinkham M. An assessment of the clinical impact of same day MRI prior to Gamma Knife radiosurgery for brain metastases. RANZCR ASM, Perth 2017. **Awarded Varian Prize


11. Porceddu SV. Challenging the treatment paradigm that all patients with locally advanced cSCCHN require surgery. Australian and New Zealand Head and Neck Cancer Society Annual Scientific Meeting, Brisbane 2017.

12. Porceddu SV. Results of a randomised trial of post-operative chemo-radiotherapy versus radiotherapy in high-risk cutaneous SCCHN (TROG 05.01-POST Trial). Australian Skin and Skin Cancer Group, 2018 Annual Scientific Meeting, Brisbane 2017.


37. Wall L. What are the costs of delivering intensive, prophylactic swallowing therapy to patients with head and neck cancer via Telehealth? An economic analysis of a 3 arm RCT. Australia and New Zealand Head and Neck Cancer Society, Annual Scientific Meeting, Brisbane, 2017.


42. Nixon J. Distress in head and neck cancer: Can you recognise it, can you respond to it. The benefits of a brief communication training intervention. Australia and New Zealand Head and Neck Cancer Society, Annual Scientific Meeting, Brisbane, 2017.


## Collaborative & industry-led studies

### Princess Alexandra Hospital Radiation Oncology Dept Study Participation List

<table>
<thead>
<tr>
<th>STUDY</th>
<th>PHASE</th>
<th>SPONSOR/ INVESTIGATOR</th>
<th>DISEASE SITE</th>
<th>STATUS</th>
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<td>ANZMTG</td>
<td>Melanoma</td>
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<td>TROG/ALTG</td>
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<td>Breast</td>
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<td>Follow-up</td>
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### Collaborative Groups

ALTG: Australasian Lung Cancer Trials Group  
ANZMTG: Australia New Zealand Melanoma Trials Group  
ANZUP: Australia New Zealand Urogenital and Prostate Cancer Trials Group  
BIG: Breast International Group  
EORTC: European Organisation for Research and Treatment of Cancer  
ICR (UK): Institution of Cancer Research (UK)  
TROG: Trans Tasman Radiation Oncology Group
The Princess Alexandra Hospital Radiation Oncology wish to sincerely thank all those who have kindly donated over the past year.

Mary Xu in memory of Garry Reichert - $1.5 million

$100,000+
Graham and Trish Bell

$10,000+
Jennifer Brice
Taylor Family

$5000+
Robyn Schey

$2000+
Colin and Paula Codd
Johns Family
Flak Family

$100+
Reginald Lewis