2018

Princess Alexandra Hospital
Radiation Oncology
Annual Research Report

Produced by Professor Sandro V Porceddu
Director of Radiation Oncology Research,
Cancer Services, Metro South Health.
Message from Director of Research
Radiation Oncology Princess Alexandra Hospital
Professor Sandro Porceddu

It has been another outstanding year of research for the Princess Alexandra Hospital Radiation Oncology Department. In 2018 the department published 35 peer-review articles and presented at over 100 scientific conferences, which included presentations in over 20 countries, confirming our global reach.

We continue to proudly foster junior members through research higher degrees, with 5 members enrolled in either masters degrees or PhD's. The high quality research undertaken within the unit was rewarded with 10 awards, and $3.2M in grant funding.

There is no doubting the PAH Radiation Oncology Department’s leadership and contribution to high quality innovative and practice-defining research as part of Metro South Health.

We wish to take this opportunity to acknowledge our scientific collaborators and researchers, funding bodies, donors and the pafoundation for their continued support.

Sandro V Porceddu

Director, Radiation Oncology Research
Princess Alexandra Hospital
Message from Manager of Cancer Trials Unit (CTU)
Division of Cancer Services – Princess Alexandra Hospital
Adrienne See

The combined resources of the ROPART and ROPAIR Cancer Trials Offices has resulted in a very busy year with seven new studies being added to the CTU Radiation Oncology Trials portfolio (4 Phase II, 3 Phase III) at the Ipswich Road and Raymond Terrace campuses. This has culminated in 37 new patients being recruited to the 15 studies currently open to accrual. Six studies closed to recruitment during 2018. Another 4 studies closed to follow up and are awaiting final analysis including the TROG 11.03 P-LUNG Study.

Emerging technologies and combination therapies have been at the forefront of the changing Radiation Oncology trials landscape. Such studies such as “HART” (Heart Avoiding Radiation Therapy) and SC.24 (Phase II/III study comparing SBRT vs. Conventional XRT in patients with spinal metastases) push boundaries to improve “pure” radiation oncology techniques, whilst other new studies such SARC032 (A Randomized Trial of Pembrolizumab & Radiotherapy versus Radiotherapy in High-Risk Soft Tissue Sarcoma of the Extremity) and “OUTRUN” (Phase II trial of Osimertinib with or without Stereotactic Radiosurgery for EGRF mutates NSCLC with brain metastases) continue to embrace the emergence of combination therapy with immunotherapy agents.

This emergence of combined therapies has resulted in cross-discipline partnerships with our medical oncology and haematology colleagues.

Another collaboration which has been brokered with the Australian Prostate Cancer Research Centre Queensland (APCRC-Q) offers coordinator assistance to increase recruitment in their respective trials. This is a very exciting alliance and could result in a long-term model to support other smaller research groups within PAH.

Adrienne See
Manager, Clinical Trials Unit
Cancer Services
Princess Alexandra Hospital
Awards and Prizes

Howard Liu
• RO Uhr Clarke Bursary award for 2017.

• Impact of smoking history on locoregional recurrence-free, distant metastasis-free survival and overall survival in Human Papillomavirus (HPV)-associated oropharyngeal cancer (OPC) treated with definitive (chemo) radiotherapy.
  Poster of Distinction, American Head and Neck Society Meeting, Maryland, USA, April 2018.

Kate Brennan, Elizabeth Brown, Jodie Nixon, Lauren Mahoney, Susan Wilton
• The magic power of our hands: Using manual lymphatic drainage to support the radiotherapy journey for head and neck cancer.
  Best clinical poster prize, Australasian Lymphology Conference, Brisbane, Australia, May 2018.

Erin Johns
• Optimising Dose Beyond the Target in Brain Stereotactic Radiotherapy.
  Best paper, Pinnacle Users Group Meeting, Melbourne, Australia, November 2018.

Jessica Boersen
• ASMIRT Early Careers International Travel Scholarship 2018.

• Dose de-escalation for HPV-positive squamous cell carcinoma: is it viable.
  Best student oral presentation, Annual Scientific Meeting of Medical Imaging and Radiation Therapy (ASMIRT), Canberra, Australia, March 2018.

David Pryor
• Preliminary Results of a Multicentre Phase 2 Study of SBRT Boost for Intermediate / High Risk Prostate Cancer (PROMETHEUS).
  Best Scientific Paper Presentation, Australian and New Zealand Urogenital and Prostate Cancer Trials Group Annual Scientific Meeting, Sydney, Australia, July 2018.

• Preliminary Results of a Multicentre Phase 2 Study of SBRT Boost for Intermediate / High Risk Prostate Cancer (PROMETHEUS).
  Best Radiation Oncology Scientific Paper Presentation. Royal Australian and New Zealand College of Radiologists Annual Scientific Meeting, Canberra, Australia, October 2018.

Bena Brown
• Queensland Health Speech Pathology Advisory Committee (QHSPAC) Excellence Award for Research and Knowledge Translation.

Bena Brown, Laurelie Wishart
1. The Cancer Wellness and Research Initiative: A Pilot implementation to investigate consumer engagement, feasibility, and service level efficiency.
   Innovation Grant, Princess Alexandra Hospital Research Foundation – $200,000

2. Evaluation of a telehealth intervention for delivering psychosocial support to people with brain tumour and their families.
   NHMRC Project Partnership funding ($376,857.98) and CCQ cash contribution ($106,000).
   Ownsworth T, Chambers SK, Aitken JF, Foote M, Shum D, Gordon LG, Pinkham M.

3. Pilot study of 18F-Fluoroethyl-L-Tyrosine (FET) hybrid positron emission tomography (PET) and magnetic resonance imaging (MRI) assessment of treatment response in brain malignancies.
   Metro South Health Research Support Scheme Novice Researcher Small Grant – $23,100.

4. A Phase Ib, single centre, open label study of a therapeutic Human Papillomavirus (HPV) DNA vaccine co-administered with anti-PD-L1 immunotherapy, durvalumab (Medi4736), for recurrent and/or metastatic HPV-related head and neck cancer.
   Metro South Health Research Support Scheme Project Grant – $100,000.
   Porceddu S, Frazer I, Ladwa R, Panizza B.

5. Effect of sugar consumption on glioblastoma progression and response to therapy.
   QUT IHBI TRI Seed Funding Scheme – $10,000.
   Bartlett S, Pinkham M, Mazzieri R, Belmer A, Dolcetti R.

   Metro South Health Research Support Scheme Project Grant – $100,000.
   Pryor D, Fawcett J, Saad N, Lee Y, Stuart K, Dowling J, Thomas P.

7. Novel Integration of New prostate radiation schedules with adjuvant Androgen deprivation (NINJA).
   Cancer Australia Priority-driven Collaborative Cancer Research Scheme – $600,000.

8. mFOLFIRINOX and STErerotactic body radiotherapy (SBRT) for pancreatic cancer with high-risk and Locally AdvaNced disease (MASTERPLAN): a multicentre, randomised phase II study of the Australian Gastrointestinal Trials Group (AGITG).
   Medical Research Future Fund Project Grant – $1,512,000.
   Kneebone A, Samra J, He L, Nguyen NQ, Goldstein D, Apte M, Barbour A, Oar A, Chander S, Espinoza D, Pryor D.

   PA Research Foundation Grant 2019 – $100,000 for 1 year.

10. Improving cardiovascular health outcomes in women undergoing irradiation for breast cancer; investigating new cardiac imaging modalities and reviewing cardiac structure injury from radiation therapy.
    PA Research Foundation Grant 2019 – $100,000 for 1 year.
Improving cardiovascular health outcomes in women undergoing irradiation for breast cancer; investigating new cardiac imaging modalities and reviewing cardiac structure injury from radiation therapy.

The early detection of breast cancer and improvements in treatment has led to an increased number of women surviving or living with breast cancer. A proportion of these women are at risk of developing complications related to their cancer treatment, including heart disease. This possibility is increased because breast cancer & heart disease share common risk factors. Attention needs to turn to interventions that can improve the quality of survival of these women.

Radiation therapy delivered to the breast or chest wall reduces the risk of breast cancer recurrence and improves overall survival. However, an increased incidence of heart disease has been observed with older radiation therapy techniques. The introduction of new technology, especially deep inspiration breath hold techniques, significantly reduces the radiation dose received by the heart but does not completely stop it.

This study will evaluate new technology in assessing the heart with the aim of identifying changes in heart structure and function at an early reversible stage. A prospective patient register will be established to identify potential markers of heart damage. A review of patients who have received radiation therapy will determine whether radiation delivered to specific segments of the heart is associated with an increased risk of heart disease.

Head and neck lymphoedema treatment: An examination and development of current standards of care.

This project will investigate swelling of the head and neck after treatment for head and neck cancer. Head and neck swelling (lymphoedema) is highly visible, can be uncomfortable and may cause difficulty with functions like swallowing, breathing and speaking. There is limited research available to assist understanding of this condition or to guide its treatment.

The project is designed as a prospective observational study of the development of acute head and neck lymphoedema in a head and neck cancer population with an embedded randomised controlled trial for participants who go on to develop chronic lymphoedema. Swelling in the neck, chin and face (external structures) will be examined, as well as structures inside the mouth and throat (internal structures).

The first part of the study will seek to investigate which patients develop acute head and neck lymphoedema after cancer treatment and whether it resolves during the recovery phase. The second part of the study will investigate the lymphoedema therapy provided to those people who continue to have problematic head and neck lymphoedema after their cancer treatment. Multiple therapy modalities are used to treat head and neck lymphoedema but there is little research to inform which modalities are most effective. The second part of this project involves a randomised controlled trial comparing two different therapy modalities for the treatment of head and neck lymphoedema: manual lymphatic drainage (massage) and compression.

Liver MaP – A Prospective Pilot Study of a Novel PET / MRI Evaluation of Regional Liver Function to Guide Surgery & Stereotactic Radiation Therapy for Hepatocellular Carcinoma.

This research project will use a combination of dynamic MRI and PET scans using a new radiotracer called FDGal to create a map detailing which parts of a patient’s liver have the best function. The Liver MaP may allow more patients to safely undergo resection of their liver tumour. For patients undergoing stereotactic radiation therapy the Liver MaP could be used to tailor treatment by intentionally shaping the dose away from the well-functioning liver segments whilst maintaining high doses to the tumour. This is anticipated to result in more patients being appropriately selected for curative treatments and a lower risk of post-treatment liver failure.
Research in Higher Degrees

Masters Projects

1. **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.

2. **Erin Johns**
   Investigating brain low dose wash in the treatment of stereotactic radiotherapy for singular brain metastases.
   Queensland University of Technology.
   Supervisors – T Barry, M Pinkham, C Hargrave, L Nissen.

3. **Christopher Noble**
   EPR Dosimetry for Measuring Very Small Fields in Modern Radiotherapy.
   Queensland University of Technology.
   Supervisors - B Perrett, E Horgan.

PhD Projects

4. **Alana Hutchison**
   Utilising dosimetric information to enhance the clinical management of dysphagia in patients undergoing (chemo)radiotherapy for head and neck cancer (HNC).
   University of Queensland School of Health and Rehabilitation Services.
   Supervisors - B Brown, L Wishart, E Ward.

5. **Jodie Nixon**
   Distress in Head and Neck Cancer: Addressing the problem, supporting the patient, enhancing health professional engagement.
   University of Queensland School of Health and Rehabilitation Services.


4. Lambrecht B. A Dosimetric study evaluating different treatment techniques for whole breast radiotherapy. Annual Scientific Meeting of Medical Imaging and Radiation Therapy (ASMIRT), Canberra, Australia, March 2018. Oral Presentation.


Presentations


43. Pinkham M. Plenary Speaker. CNS Workshop (brain tumour biology), Brisbane Cancer Conference, Brisbane, Australia, November 2018. Session Chair.


46. Pinkham M. Cancer Imaging and Technology, PAH Health Symposium, Brisbane, Australia, August 2018. Session Co-Chair.


52. Watson S. A dosimetric study evaluating different treatment techniques for whole breast radiotherapy, Pinnacle Users Group Meeting, Brisbane, Australia, September 2018. Oral Presentation.


74. Jones C, Seshadri V, Markwell T, Perrett B. Commissioning of an Elekta Leksell Gamma Knife (LGK) IconTM Cone Beam Computer Tomography (CBCT) and High Definition Motion Management (HDMM) System. EPSM 2018, Adelaide, Australia, October 2018. Oral Presentation.


78. Seshadri V, Jones C, Markwell T, Perrett B. Investigation into coincidence of Gamma Knife® IconTM frame based and cone beam CT (CBCT) defined isocenters. EPSM 2018, Adelaide, Australia, October 2018. Poster Presentation.


100. Pinkham E. Improving efficiency of service to pre-op breast cancer patients, Australasian Lymphology Conference, Brisbane, Australia, May 2018. Oral Presentation.


### Collaborative Trials Portfolio

<table>
<thead>
<tr>
<th>STUDY</th>
<th>PHASE</th>
<th>SPONSOR / INVESTIGATOR</th>
<th>DISEASE SITE</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMBI-RT</td>
<td>I/II</td>
<td>ANZMTG</td>
<td>Melanoma</td>
<td>Open to recruitment</td>
</tr>
<tr>
<td>EXPERT^</td>
<td>III</td>
<td>BTG/BIG</td>
<td>Breast</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>FASTRACK II</td>
<td>II</td>
<td>TROG/ANZUP</td>
<td>Renal</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>HER-O^</td>
<td>II</td>
<td>TROG</td>
<td>Breast</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>OUTRUN^</td>
<td>II</td>
<td>TROG</td>
<td>Lung</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>RAIDER</td>
<td>II</td>
<td>ICR (UK)/TROG</td>
<td>Bladder</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>RAPPORT</td>
<td>Ib/Ii</td>
<td>Investigator</td>
<td>Renal</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>ROAM^</td>
<td>III</td>
<td>EORTC/TROG</td>
<td>Brain</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>RTN2</td>
<td>III</td>
<td>ANZMTG/TROG</td>
<td>Melanoma</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>SARC032^</td>
<td>II</td>
<td>SARC</td>
<td>Sarcoma</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>SC.24^</td>
<td>III</td>
<td>TROG/CCTG</td>
<td>Mets</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>Split Course Prostate</td>
<td>II</td>
<td>Investigator</td>
<td>Prostate</td>
<td>Open to Recruitment</td>
</tr>
<tr>
<td>CORE*</td>
<td>II/III</td>
<td>ICR (UK)/TROG</td>
<td>Oligometastases</td>
<td>Follow-up</td>
</tr>
<tr>
<td>DCIS</td>
<td>III</td>
<td>TROG/BIG</td>
<td>Breast</td>
<td>Follow-up</td>
</tr>
<tr>
<td>ENZARAD*</td>
<td>III</td>
<td>ANZUP/TROG</td>
<td>Prostate</td>
<td>Follow-up</td>
</tr>
<tr>
<td>HART**</td>
<td>II</td>
<td>TROG</td>
<td>Breast</td>
<td>Follow-up</td>
</tr>
<tr>
<td>HPV*</td>
<td>III</td>
<td>TROG</td>
<td>H+N</td>
<td>Follow-up</td>
</tr>
<tr>
<td>LOW GRADE GLIOMA</td>
<td>III</td>
<td>EORTC/TROG</td>
<td>Brain</td>
<td>Follow-up</td>
</tr>
<tr>
<td>NIMORAL</td>
<td>III</td>
<td>EORTC/TROG</td>
<td>H+N</td>
<td>Follow-up</td>
</tr>
<tr>
<td>PROMETHEUS*</td>
<td>II</td>
<td>Investigator</td>
<td>Prostate</td>
<td>Follow-up</td>
</tr>
<tr>
<td>RAVES</td>
<td>III</td>
<td>TROG</td>
<td>Prostate</td>
<td>Follow-up</td>
</tr>
<tr>
<td>SAFRON II*</td>
<td>II</td>
<td>TROG/ALTG</td>
<td>Mets</td>
<td>Follow-up</td>
</tr>
<tr>
<td>STARS</td>
<td>III</td>
<td>TROG</td>
<td>Breast</td>
<td>Follow-up</td>
</tr>
<tr>
<td>STARS (Pilot)</td>
<td>II</td>
<td>Investigator</td>
<td>Breast</td>
<td>Follow-up</td>
</tr>
</tbody>
</table>

* Closed during the 2018 year
^ Open during the 2018 year

---

All study abbreviations are listed below:

- **ALLG**: Australian Leukaemia and Lymphoma Group
- **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

---

**Acknowledgements in preparing this report**

Melissa Scott, Harish Sharma, Andrew Puffett and the entire PAH Radiation Therapy Research Team