The Royal College of Radiologists
RCR-Cyclotron Trust Visiting Fellowships 2015/16 (Clinical Oncology)

POST-VISIT REPORT

1. Name of Visiting Fellow	Dr Alison Ranger	
2. Name of joint Visiting Fellow (if applicable)	Dr Alex Dunlop	
3. Institution(s) of Visiting Fellow(s)	The Royal Marsden NHS Foundation Trust	
4. Name of Host(s)	Dr Eric Strom	
5. Institution(s) of host(s)	MD Anderson Cancer Centre	
6. Expenses claimed	£2475.14	
7. Visit Dates (ACTUAL)	a. 01/05/2106	b. 06/05/2016
8. 2nd visit dates (if applicable)	a. Start date	b. End Date
9. Aims of the visit		
• To observe the use of Proton Beam Therapy (PBT) for the treatment of breast cancer • To learn the practicalities of planning PBT for breast cancer, including gaining an understanding of the complexities of planning PBT, (particularly range uncertainty) and ways to account for this • To observe the delivery of PBT including length of treatment, patient set up, image verification and the potential for breath hold techniques • To gain patient perspectives of the PBT experience • To build a collaboration with the MD Anderson Cancer Centre that will support future UK research in photons versus PBT for treatment of breast cancer		
10. Activities undertaken		

- Monday (am) – simulation of breast patients due to commence accelerated partial breast irradiation using proton beam therapy (PBT). Contouring of target volumes for breast PBT. Tour of MD Anderson Cancer Centre. Review of plans for pan-nodal breast radiotherapy using photons.
- Monday (pm) – Tour of Proton Beam Treatment Centre. Proton beam planning for partial breast treatments. Discussion of beam arrangement, smearing techniques, compensation for range uncertainties.
- Tuesday (am) – Breast radiotherapy on-treatment clinic. Review of patients undergoing proton and photon irradiation. Assessment of acute toxicity of proton beam therapy.
- Tuesday (pm) – Breast radiotherapy new patient clinic. Assessment of patients for PBT. Discussion regarding risks and benefits of PBT compared to photon treatment. Enrolment of patients into clinical trial for PBT accelerated partial breast irradiation.
- Tuesday (evening) – Supper with Dr Eric Strom.
- Wednesday (am) – Breast Radiotherapy follow up clinic. Review of patients with intermediate and late effects of PBT. Review of patients following pan-nodal photon breast radiotherapy.
- Wednesday (pm) – Review of PBT plans for accelerated partial breast irradiation (patients simulated on Monday). Follow up & new patient breast radiotherapy clinic.
- Thursday (am) – PBT start for patients simulated on Monday (5:30am!). Observation of set up, verification imaging and treatment. Time also spent on Linear accelerators reviewing respiratory gating techniques, set up and image verification techniques used for photon treatments.
- Thursday (pm) – Observation of spot scanning (intensity modulated proton therapy, IMPT) treatment for head and neck cancer patients. Observation of further PBT for breast cancer patients including set up, image verification and treatment. Observation of IMPT planning for head and neck patients. Discussion with dosimetrists regarding the advantages and challenges of planning PBT with spot scanning as opposed to passive scattering. Discussion about verification imaging and adaptive radiotherapy techniques in PBT.
- Friday (am) – Chart rounds: Discussion of all proton and photon breast cancer cases due for treatment that week at MD Anderson from all radiation oncologists. Review of plans with debate of rationale and techniques used for more complex cases. MDT clinic: Joint clinic with breast surgeon, medical oncologist and radiation oncologist. Review of new patients with formulation of complete treatment plan and introduction to all disciplines likely to be involved in their care.
- Friday (pm) – Summing up, question and answer session and goodbyes.

11. Benefits of the visit (short term)

- Immediate ability to proceed with proton beam therapy planning as part of the HeartSpare Plus 1A study currently underway at The Royal Marsden Hospital. The information learned regarding beam arrangement and considerations for toxicity will allow us to use more realistic planning techniques to inform our proton beam planning.
- Justification for Proton robustness planning study underway at The Royal Marsden and confirmation that this is both a novel and useful study which will help inform PBT practice worldwide.
- Knowledge of pan-nodal breast cancer radiotherapy techniques used at MD Anderson will help us devise a treatment protocol for the inclusion of the internal mammary chain in the target volume for breast cancer patients at our centre (this has been done for many years at MD Anderson). Recent college consensus guidelines support this but it is not standard practice within the UK.

12. Envisaged benefits of the visit (longer term)

- Excellent collaborative links formed with the breast cancer department and proton beam treatment centre at MD Anderson.
- Greater understanding of current practices in the use of proton beam therapy for the treatment of breast cancer. The benefits and risks of the limited experience so far gained will inform the development of a national UK clinical trial involving PBT for breast cancer. For example the lack of skin sparing using PBT may be a limitation to using the treatment in whole breast/chest wall & pan-nodal treatments however the deeper tissue sparing capabilities of treatment may favour a partial breast technique for low risk patients with an excellent prognosis, in whom long term toxicity could be a significant problem. This may have some relevance to the recently published 5 year results of the IMPORT Low trial and the ongoing debate over intra-cavity brachytherapy.
- I am interested in developing the idea of combined photon and proton beam treatments. I would like to explore whether this would be feasible in the planned UK proton centres and consider development of a clinical trial to incorporate this.
- For my future career, a clearer understanding of the difference between PBT and photon therapy will help inform decisions regarding the appropriateness of considering PBT for the treatment of patients. This will also help me discuss PBT with patients when asked in an informed manor.
- An appreciation of the scale of the proton beam machine and the complexity of its installation in London has motivated me to be involved in ensuring its appropriate use within UK practice. Also, insight into its rapid adoption into clinical practice in the US makes me mindful of the critical importance of the enrolment of UK patients into clinical trials of PBT and their meticulous follow up.

13. Please outline any problems you encountered before, during or after your visit

- MD Anderson has an extremely rigorous occupational therapy process for applicants wishing to stay longer than 5 consecutive days (hence the brevity of our visit). For the information of any future applicants.

14. Any additional comments

Many thanks for this opportunity.

Signed: A. Ranger Date: 10.05.2016

Report approved by:	Clinical Oncology Professional Support & Standards Board (CO PSSB)
Date	22.09.16