



Clinical
Oncology

The Royal College of Radiologists

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

POST-VISIT REPORT

1. Name of Visiting Fellow	Dr Alex Dunlop (Joint Applicant, Medical Physics)	
2. Name of joint Visiting Fellow (if applicable)	Dr Alison Ranger	
3. Institution(s) of Visiting Fellow(s)	The Royal Marsden NHS Foundation Trust	
4. Name of Host(s)	Prof Eric Strom	
5. Institution(s) of host(s)	MD Anderson Cancer Centre, Houston Tx, US	
6. Expenses claimed	£991.92	
7. Visit Dates (ACTUAL)	a. 2 nd May 2016	b. 6 th May 2016
8. 2 nd visit dates (if applicable)	a. -	b. -
9. Aims of the visit	<p>MD Anderson Cancer Centre routinely treats patients requiring partial breast RT using PBT. They use an accelerated partial breast irradiation (APBI) technique delivering 34 Gy to the target in 10 fractions over 1 week. To date they have treated 84 APBI patients using PBT. The specific aims of this visit (for both myself and Dr Alison Ranger) were:</p> <ul style="list-style-type: none">• To learn about their APBI regime (rationale and methods)• To gain practical experience and understanding of PBT hardware• To gain an insight into the treatment planning process used for PBT at MD Anderson (both passive scattering and pencil beam scanning) for a variety of target sites• To see how PBT treatment plan robustness is assessed at MD Anderson• To observe PBT for a number of patients in order to observe patient set-up (including initial CT simulation), on-line verification, and the delivery process• To build a working relationship with MD Anderson with the hope of future research collaborations	
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) – Proton beam therapy (PBT) treatment planning for accelerated partial breast treatment (passive scattering) including verification methods used to assess plan robustness.
- Tuesday (pm) – PBT treatment planning for lung cancer patients using passive scattering techniques.
- 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).
- Thursday (am) – PBT start for patients simulated on Monday. 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) – Assisted with the verification CT analysis for plan robustness for a head and neck IMPT (spot scanning) patient. Also went through the entire planning process for H&N IMPT planning.
- Friday (pm) - summing up and goodbyes

11. Benefits of the visit (short term)

- Will proceed with PBT planning as part of the HeartSpare Plus 1A study currently underway at The Royal Marsden Hospital along with H&N IMPT planning as a side project to the DARS H&N RTTQA trial. 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.
- 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)

- We have formed collaborative links with both the breast cancer department and proton beam treatment centre at MD Anderson.
- Greater understanding of current practices in clinical use of PBT for the treatment of breast cancer, H&N cancer, and a range of other sites. Specifically, I have gained a much better understanding of the PBT treatment planning process for both passive scattering and spot scanning techniques, and the strategies employed to test PBT plan robustness. This knowledge will be used in future research projects.

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

14. Any additional comments

Signed: Alex Dunlop

Date: 15th May 2016

Report approved by:

Clinical Oncology Professional Support & Standards Board (CO PSSB)

Date

22.09.16