



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	Mr Ellis Marshall	
2. Name of joint Visiting Fellow (if applicable)	Dr Muhammad Fawad UI Qamar	
3. Institution(s) of Visiting Fellow(s)	Oxford University Hospitals NHS Foundation Trust	
4. Name of Host(s)	Dr Zuofeng Li	
5. Institution(s) of host(s)	University of Florida Health Proton Institute	
6. Expenses claimed	£1427.65	
7. Visit Dates (ACTUAL)	a. 02/07/16	b. 12/07/16
8. 2 nd visit dates (if applicable)	a. Start date	b. End Date
9. Aims of the visit	<ul style="list-style-type: none">- Improve and further personal understanding of proton therapy, in particular the practicalities and planning techniques required for both complex and simple sites- Assess the benefits of proton therapy for non-complex sites- Improve understanding of the potential uncertainties (including beam range, lateral scatter modelling, penumbra modelling, setup error, interfractional motion and changes in patient anatomy) in proton beam planning first hand in a clinical environment and how these impact clinical decisions such as margin requirements	
10. Activities undertaken	<ul style="list-style-type: none">- Observed treatment setup and delivery of proton beam therapy, including; brain, prostate, Head and Neck, breast and craniospinal irradiation (paediatric patients).- Attended multiple 'Chart Round' meetings, observed discussion of a number clinical cases between both Clinicians and Physics staff and the decision process for treatment progression- Worked with Technicians on Daily and Weekly QA sessions and on aperture and compensator QA- Understood the fundamentals of Proton Cyclotron and principles of Proton therapy with IBA engineers and Technicians. Observed operation of beam preparation prior to treatment delivery and changing of treatment snouts for different field sizes- Attended the departments 10 Year anniversary evening and learnt about the obstacles that had to be overcome to reach UFPTI's current standing in the proton community- Attended Tumour board meeting for different sites including sarcoma and breast- Spent time observing breast and IMC treatment planning, including discussion on treatment techniques and setup related issues. Reviewed the dose distributions achieved in several cases against their departmental protocols	

- Observed the control room operations and discussed the differences between passive scattering, uniform scanning and pencil beam scanning delivery techniques
- Observed the development of clinical PBT treatment plans by dosimetrists and physics staff. Including prostate, breast, Craniospinal
- Observed the reviewing of clinical plans with Clinicians and dosimetrists
- Provided with clear understand of the role of different treatment elements; aperture, compensator. And techniques for ensuring accurate delivery of treatment, i.e. smearing and smoothing as well as the use of patch and through fields for avoidance of highly sensitive OAR's
- Attended patient lunch drop in sessions, which provided a real insight into the patient experience of proton therapy and learn about how receiving proton therapy abroad affects UK patients. Also attended an excellent talk by a Child Support Specialist.
- Provided with excellent educational material and teaching sessions on the differences between proton beam therapy, uniform scanning and double scattering techniques.
- Attended private teaching sessions on PBT treatments and discussion regarding potential uncertainties in delivery and how we counteract these issues, i.e. proximal and distal margins and smearing margin
- Additional discussion on the importance of accurate IGRT for PBT patients and the impact of sub optimised imaging techniques

11. Benefits of the visit (short term)

- Improved understanding of the underlying physics principles behind the production of a clinical proton beam
- Improved understanding of planning techniques for PBT
- Improved understanding of differences between pencil beam, double scattering and uniform scanning
- Better appreciation of the inherent uncertainties and limitations in each different PBT technique
- Improved understanding of how to reduce inherent uncertainties and how this can impact on dose distributions
- Through observing clinical treatments I've gained an appreciation of the logistical and practical issues surrounding PBT, i.e. use compensators and apertures, as well as managing beam requests
- Provided with excellent educational information which I can use to produce informative posters etc for the benefit of department

12. Envisaged benefits of the visit (longer term)

As we move towards opening NHS based PBT centres I believe the experience I have gained can be applied to the future needs of NHS patients.

- In particular my understanding of different planning techniques and approaches for a number of different sites can be used to help develop future planning protocols and to educate fellow staff members by disseminating this information via departmental presentations

- My new understanding of the inherent uncertainties and limitations of PBT will allow me to better advise on future treatment protocols and influence future clinical trial proposals at the new Oxford University Proton research centre
- Developed good working relations with members of the UF proton therapy centre which will be beneficial for future advice and support when the NHS begins commissioning of its centres
- Observing the operation of a different department and their approach to patient centred care should help to develop own approach to patients in the UK
- Through observation of treatments and discussions with physics staff the importance of good IGRT for PBT has become very clear. When discussing PBT facilities and future developments this is something that must be taken into account. As while the precision of delivery has improved the margin for error has also decreased.
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13. Please outline any problems you encountered before, during or after your visit

No problems were encountered. All staff members were keen to assist us and answer any questions we had during the duration of our visit.

14. When do you intend to submit an article for the RCR Newsletter?

2 months

15. Any additional comments

I'd like to thank the RCR for the opportunity to visit the proton centre and for the value experience it has given me.

Signed: Ellis Marshall Date: 18/08/16

Report approved by: Clinical Oncology Professional Support & Standards Board (CO PSBB)

Date 22.09.16