63 LINCOLN'S INN FIELDS, LONDON WC2A 3JW
T. +44(0)20 7405 1282 enquiries@rcr.ac.uk
www.rcr.ac.uk

The Royal College of Radiologists
RCR-Cyclotron Trust Visiting Fellowships 2014/15 (Clinical Oncology)

POST-VISIT REPORT

PLEASE NOTE: This report must be completed and emailed to the RCR within 2 months of the end of your visit.

1. Name of Visiting Fellow	**Dr. Omar Al-Salihi**	
2. Name of joint Visiting Fellow (if applicable)		
3. Institution(s) of Visiting Fellow(s)	**University Hospital Southampton**	
4. Name of Host(s)	**Dr. Daniel Indelicato and Team**	
5. Institution(s) of host(s)	**University of Florida Proton Therapy Institute**	
6. Expenses claimed	**£ 2521 (capped at £2000)**	
7. Visit Dates (ACTUAL)	**a. Start Date 17/8/2015**	**b. End Date 28/8/2015**
8. 2nd visit dates (if applicable)	**a. Start date**	**b. End Date**
9. Aims of the visit		

I applied for the Cyclotron Fellowship to enable me to enhance, broaden and fine tune my understanding of treatment with Protons. One of my main roles at Southampton is to provide treatment for paediatric tumours with photon treatment but also to refer appropriate patients for proton treatment. As a team at Southampton, we have built up several years of experience and a strong relationship with the centre in Jacksonville. With this in mind, I really wanted to get a more detailed 'nuts and bolts' insight into the specific issues with proton treatment but also a better appreciation of logistic involved and also to be able to gain a comparative insight into the working of various multi-disciplinary groups attached to the proton centre. I really wanted to come away with a more nuanced view of the problems and uncertainties that can arise with proton treatment and safeguards that were put into place at the dosimetry and physics stage of planning treatment prior to clinician review.

More broadly, I was keen to look at other aspects including the training that residents and fellows in radiation oncology gain and contrast this with that received by our SpRs here in the UK.

Finally, I was very keen to strengthen relationships with colleagues at the proton centre in the medium to longer term and also be able to give the team there an idea of how our service worked at Southampton (in fact Dr. Indelicato had already invited me to prepare a couple of talks to present at the weekly paediatric team meetings held at the centre!)

10. Activities undertaken

Prior to my arrival I was emailed a timetable of activities for the two weeks. This was not rigid however and there was flexibility allowed after discussion with various team members. I will attach a copy of timetable in addition. Activities fell into following areas:

1: Observation of new consultations with the resident and attending for both paediatric , TYA and adult cases. This was useful from the perspective of the detailed discussions around likely acute and long term effects but also the advantages proton treatment would provide. Very realistic discussions were held with parents, children and adult patients. They were never told that proton therapy had higher efficacy but that it has a better profile in reducing longer term effects, particularly neuro-cognitive, in children.

2: Attendance of multi-disciplinary meetings at Nemours and Wolfson children's hospital which included paediatric neuro-surgery cases and presentations by paediatric oncology. Attendance of adult meetings including neuro-surgical meetings at Jacksonville campus

3: Attendance of weekly site specific meetings at proton centre (update of patients on treatment and those awaiting) including paediatric, adult neuro and lung/ lymphoma patients. Very useful to look at organisation of logistics with other team members including physics and dosimetry.

4: Weekly morning meeting (chart rounds) to review patients planned by all teams with comments on problems with proton plan where dose constraints were not being met. I found this very informative as it allowed for an open discussion amongst consultants and trainees about individual plans. This is something that were are not yet able to provide locally due to time and resource constraints.

5: Educational meetings (usually lunch and after 5pm) where residents and medical students presented latest evidence/ paper to be critically analysed and discussed by all (with linked video-conference with team at Gainesville campus).

6: Extremely useful sessions with dosimetry and physics staff to look at individual plans and solutions achieved together with how individual organ constraints were met. Currently protons are delivered at the centre by double scatter technique with the aim of newer pencil beam technique being brought in within next few months. I was able to gain an appreciation of issues around uncertainty of stopping position of protons and possible variation in BED at tail of Bragg peak and how these considerations were put into practice particularly when looking at organs at risk. An appreciation of concepts like 'beam smearing' and 'match and patch' fields. An understanding of 'uncertainty factors built into plan to allow some flexibility of shape or position change of tumour. A look at potential benefits of pencil beam to allow inverse planning but that there would be more uncertainties with this technique when it came to treating 'moving targets' like tumours in thorax.

7: I spent a morning on the 'Blue Gantry' which treats the paediatric cohort of patients. Usually the first 8-12 patients receive General Anaesthetic due to age. An appreciation of interaction with anaesthetic team and recovery areas next to gantry. Also a realisation that with double scatter technique, each field delivered would require insertion of heavy brass block for beam shaping followed by individual compensator. An understanding of the imaging used during course of treatment (often fiducial markers even for some thoracic tumours).

8: During the paediatric team meetings (Tuesday lunch) I was invited to give two talks. The first week I spoke to the team about Southampton generally and our radiotherapy department specifically. I think they found it useful particularly being aware of current issues with radiotherapy delivery in the NHS. Also I spoke about some 'challenging cases' that I had treated with some discussions and suggestions from the team at the meeting. The following week I showed the team our DVD which we had created locally at Southampton which is an introduction for parents, older children and TYA patients embarking on radiotherapy. It included some of our patients who had kindly taken part in DVD. This was really well received by the team at meeting.

11. Benefits of the visit (short term)
I think I have gained a far more detailed understanding of the benefits but also the potential areas of caution and pitfalls that may arise when delivering proton treatment. Also an understanding of how the two techniques of double scatter and pencil beam differ and the potential areas where each technique may offer a more optimal solution. An appreciation of the educational opportunities that are available to trainees at the centre which may benefit our centre (particularly with reference to team discussions of radiotherapy plans or chart rounds). I think visiting the proton centre and interacting with staff will enable me to give a more nuanced view of the treatment to parents and patients when we are discussing referral process.
12a. Envisaged benefits of the visit longer term (your own practice)
For the future, when the two proton therapy centres open in London and Manchester, as paediatric radiotherapist I would be very keen to be part of delivery this treatment for my local patients at the centres where possible. This visit has provided me with a 'taster' of technology which will be available to us in the UK soon and so I would aim to continue to expand my knowledge and understanding in due course. This would ideally involve visits to centres in Europe in the near future. To continue to develop our relationship with the team in Jacksonville.
12b. Envisaged benefits to the wider group (dissemination to others in your centre/clinical oncology community/multiprofessional team)
1: Informing our SpRs locally of the issues surrounding proton treatment and encouraging the senior members to look at the possibility of visiting a centre in the US and Europe in anticipation of the future delivery of protons here in the UK 2: T o enable more detailed discussions with Clinical Oncology colleagues locally about issues related to proton therapy particularly to provide advice around cases where referral is being anticipated and more broadly how we as e centre anticipate our role in the future. 3: To enable more informed discussions at MDTS with paediatric oncology/ neuro-surgical colleagues about issues around proton treatment.
13. Please outline any problems you encountered before, during or after your visit
I cannot say I encountered any problems. Team in Jacksonville were extremely welcoming and very friendly. I thoroughly enjoyed my time there. It also allowed me to reflect in certain ways on my own practice and interactions with patients.
14. Any additional comments
15. Do you have any 'top tips' that you would like to share with prospective visiting fellows?

1: Wherever you visit, find a 'friendly' physicist or dosimetrist who is willing to give up some time and is able to explain the nuances of planning with protons. From my perspective this was very important.	
Signed: Dr. Omar Al-Salihi	**Date: 09/09/2015**
Report approved by:	**Clinical Oncology Professional Support and Standards Board**
Date	**17/09/2015**