



The Royal College of Radiologists
RCR-Cyclotron Trust Visiting Fellowships 2016/17 (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 Spyros Manolopoulos	
2. Name of joint Visiting Fellow (if applicable)	Dr Cheng Boon	
3. Institution(s) of Visiting Fellow(s)	University Hospitals Coventry and Warwickshire Worcestershire Acute Hospitals	
4. Name of Host(s)	Cristina Bono (CNAO) Marco Schwarz (APSS)	
5. Institution(s) of host(s)	Centro Nazionale di Adroterapia Oncologica (CNAO) Azienda Provinciale per i Servizi Sanitari (APSS)	
6. Expenses claimed	£ 217.32 plus €1704.25	
7. Visit Dates (ACTUAL)	a. Start Date 21/05/2017	b. End Date 4/6/2017
8. 2nd visit dates (if applicable)	a. Start date	b. End Date
9. Aims of the visit		
<ul style="list-style-type: none">• Witness clinical radiotherapy practiced in a different country.• Observe treatments not provided in my centre; paediatric patients.• Acquire direct experience of clinical particle therapy.• Proficiency with particle therapy treatment planning and critical evaluation of.• Critical acclaim of particle therapy treatment plans Vs photons (VMAT).• Better understanding of the clinical utilisation and choice between protons and Carbon ions.• Understanding of issues specific to particle therapy planning, e.g. range uncertainties, and related mitigation techniques, e.g. robust planning.• Experience IGRT methods and practice with particle treatments.• Observe the application of QA methods and specific QC tests for particle therapy.• See 4D particle treatments and management of target motion.• Explore possibility for common research and generate interest for my own work on protonCT.		
10. Activities undertaken		
<ul style="list-style-type: none">• Tour of the local facilities and meeting with staff.• Observation of particle therapy treatments for:		

- Ocular melanoma
- Sarcoma; various types, e.g. limb, mandible, liposarcoma etc.
- Chordoma; various types and sites; sacral, basal, clivus etc.
- Chondrosarcoma
- Skull base, various; ACC, meningioma, neuroendocrine, etc.
- ACC maxillary sinus
- Oropharyngeal pleomorphic adenoma
- Craniopharyngioma
- Thyoma
- Pediatric patients (plus, sans GA)
- 4D gated chest treatment
- SRS intracranial (acoustic neuroma); centre's first!
- Observed and planned (spot scanned) particle treatments for various sites, e.g. mucosa melanoma, with protons and carbon ions, and with single field uniform dose (SFUD) or IMPT; this was done "off line" but using clinical data, with the plans critiqued by local experts.
- Discussed range uncertainties and margin calculation with local physicists.
- Discussed RBE models for carbon ions and related issues.
- Observed QA for both physics (various QC tasks, e.g. daily, weekly etc.) and patient specific (dosimetric plan evaluation).
- Gained appreciation and witness clinical application of items particular to particle therapy, e.g. ripple filters and range shifters; ditto for a particle beam treatment gantry!...
- Observed clinical patient positioning and IGRT.
- Presented research on proton CT in departmental seminars and discussed feasibility of conducting experiments at local facilities.

11. Benefits of the visit (short term)

There is a multitude of benefits I gained as a result of my visit. In particular:

- Witnessed, for the first time, how radiotherapy is practiced in a different country.
- Gained a better understanding and first-hand experience of particle therapy.
- Carried out in depth conversations with experts on particle therapy esoteric issues, such as range uncertainties and RBE models.
- Trained in treatment planning with particle beams and versed in accompanying techniques, e.g. robust planning.
- Established contacts with experts in the field of particle beam therapy.

- Transferred data back to my home institute that will further the use of our research TPS, let us harness its particle therapy planning abilities, conduct planning studies to demonstrate particle therapy locally and compare with our own techniques, e.g. VMAT.
- Gained provisional agreement to perform proton CT experiments at either (or hopefully both) CNAO and APSS.

12a Envisaged benefits of the visit longer term (your own practice)

The opportunity to witness how radiotherapy is practiced abroad by working alongside local experts for a relative substantial period was an incredible experience and invaluable gift. The knowledge gained both on specific and generic radiotherapy issues widens my perceptive and helps me develop different approaches to problems that are common to my own clinic and practice, which would have been impossible without the visit.

My new founded knowledge should benefit the teams in both RT departments I work for, i.e. at the UHCW and Worcester Acute hospitals, once disseminated. This, I envisage by lunchtime seminars that offer both the clinical and physics perspective. Furthermore, courtesy of the data, kindly donated by our hosts both at CNAO and APSS, the relative merits and peculiarities of particle therapy will be demonstrated to staff at UHCW and Worcester and it will be possible to compare directly with our own advanced treatment techniques (VMAT).

Moreover, the contacts made in Italy as a result of this visit, will act as a “helpline” on particle therapy related questions and hopefully lead to future research collaborations.

The unique opportunity to discuss professional matters, e.g. training, recruitment shortages etc., their consequences for one’s centre/country and how they are being addressed, was also beneficial and helped widen my professional horizons and “out of the box” thinking.

12b. Envisaged benefits to the wider group (dissemination to others in your centre/clinical oncology community/multiprofessional team)

- Knowledge transfer to the local teams at UHCW, Worcester through multiprofessional departmental seminars; ditto for the academic group that I am affiliated with, i.e. the Medical Physics group at Warwick University.
- Critical evaluation and appraisal of dosimetric benefits of particle therapy plans conducted locally using cases transferred from CNAO/APSS but also using our own data, through planning studies and comparison with own capabilities and practice, e.g. VMAT.
- Development of new projects that will increase the amount of research undertaken in collaboration with Warwick University.
- Further and strengthen the collaboration with existing partners, e.g. UHB, or create new ones, e.g. with the physics teams at the UK proton therapy centres.

13. Please outline any problems you encountered before, during or after your visit	
14. Any additional comments	
Special tribute should be paid to the warm welcome we received by the staff at both centres in Pavia (CNAO) and Trento (APSS), which no superlatives are sufficient to describe and which paid homage to the widely acclaimed Mediterranean hospitality. For this reason, Alfredo, Alessandro, Stephania, Mario, Marco, Roberto, Barbara, Francesco and co. we salute you all. Viva Italia!	
15. Do you have any 'top tips' that you would like to share with prospective visiting fellows?	
Try to spend as much time as possible. Plan ahead and communicate aspirations and objectives to your hosts, but also be flexible to accommodate the clinical reality during your visit...	
Signed: S. Manolopoulos Date: 19/6/2017	
Report approved by:	Clinical Oncology Professional Support and Standards Board
Date	06.10.2017

Please return this form to Miss Irina Beleca, Professional Standards Administrator at: irina_beleca@rcr.ac.uk