Electronic Poster: Physics track: Professional and educational issues

EP-1953
Patient Safety & Quality Control Working Group of the Spanish Society of Radiation Oncology, J. Pardo-Mafrerrer1, E. Del Cerro- Peñalver2, E. Jimenez-Jimenez1
1Hospital Universitari Son Espases. On behalf of the Patient Safety and Quality Control Working Group of the Spanish Society of Radiation Oncology, Palma de Mallorca, Spain
2Hospital Universitario Quiron Madrid. On behalf of the Patient Safety and Quality Control Working Group of the Spanish Society of Radiation Oncology, Radiation Oncology, Madrid, Spain

Purpose or Objective: The aim of the Patient Safety and Quality Control Working Group of Spanish Society of Radiation Oncology (SEOR) was to analyse if the current Spanish legislation (SL): Royal Decrees 1566/1998 (Quality Criteria in RT) and 815/2001 (Justification of medical exposure to ionizing radiation) include the international recommendations on PS, and to implement appropriate measures to correct any possible deficiencies in this regard.

Material and Methods: The following documents were reviewed: “Towards Safer Radiotherapy”, “Radiotherapy Risk Profile”, “Failure Modes and Effects Analysis (FMEA)”, “Preventing Accidental Exposures from New External Beam Radiation Therapy Technologies”, “Safety in Radiation Therapy: A Call to Action meeting recommendations”, and “Safety is not accident” (2nd ed.). From these documents, 11 topics were selected to compare with obligations regarding PS in RT specified in the SL: qualification, training, staffing, documentation/standard operating procedures, incident learning, communication(questioning), QC and preventive maintenance, accreditation, map of processes/risks and prospective risk assessment, strategies and tools development for minimizing risks and safety culture.

Results: SL include none of these issues: Relationship between staffing criteria and PS, Specifications about the number and quality of the documents that depend on a map of processes, Incident tracking, analysing, sharing and learning, Open communication and respectful questioning, Peer review, Maps of processes, Risks and prospective risk assessment, Strategies and tools for minimizing risks and, Safety culture. Due to lack of legal regulations, the SEOR board decided, in 2014, to create a Patient Safety and Quality Control Working Group (PSQCWG) to promote the knowledge and culture of QC and PS among professionals, to develop actions to improve information and training on QC and PS, and develop and implement systems to inform and report adverse events (errors and near misses) in order to learn from them and improve PS. Its challenges are:

Conclusion: Being PS improvement a priority, by creating PSQCWG, the SEOR intends to implement safe practices in RT, promoting research on PS and QC, and develop their own recommendations on PS, according to the internationally elaborated and adapting them, if necessary, to the reality of our country by updating Spanish legislation.

EP-1954
Quality of Contouring in Radiation Oncology - Where to draw the line?
S. Vinod1, M. Min1, M. Jameson1, L. Holloway1
1Liverpool Hospital, Cancer Therapy Centre, Liverpool, Australia

Purpose or Objective: Volume delineation is a potential source of error in radiotherapy, which can result in poorer clinical outcomes and increased toxicities. The aims of this study were to review the literature on interobserver variability (IOV), assess the dosimetric effects of IOV and identify interventions shown to reduce IOV.

Material and Methods: Medline and Pubmed databases were queried for relevant articles using the keywords “radiotherapy” and “volume delineation”, “contouring”, “observer variation”, “interobserver variability”, “variation”, “systematic error”, “quality assurance”, “delineation”, “interobserver” and “intraobserver” to identify articles which evaluated IOV target or organ-at-risk (OAR) volume delineation for multiple (>2) observers. The search was limited to English language articles published from 1/1/2000-31/12/2014. Reference lists of identified articles were scrutinised to identify relevant studies.

Results: 116 studies were identified, with the most common sites studied being breast cancer (n=20), lung cancer (n=17), germinotumour cancers (n=16) and OARs (n=29). The commonest volumes assessed were CTV (n=47) and GTV (n=38). CT alone (n=91) was the predominant dataset used for contouring. 81 studies used statistical tests to analyse the significance of their results. 31 studies evaluated the effect of additional imaging on IOV, with PET shown to reduce IOV in lung and rectal cancers and lymphoma but not head and neck cancers. There were mixed results for the benefits of MRI in brain tumours and breast cancers but it reduced IOV in OAR delineation. 25 studies evaluated the dosimetric effects of IOV, with most studies showing differences in OAR doses but the effect on PTV coverage was variable. 25 studies evaluated the effect on an intervention to reduce IOV. IOV was significantly reduced in 7/9 studies evaluating guidelines, and all 6 studies evaluating the provision of an autocontour to edit. Teaching interventions showed significant improvement in IOV in 4 studies, improvement without statistical analysis in 4 studies and no difference in 1 study.

Conclusion: Despite the large number of studies evaluating IOV, only a minority evaluated the dosimetric consequences of this or the use of interventions to reduce this. Additional imaging datasets reduced IOV in some cancer types. Guidelines or protocols and the provision of an autocontour reduced IOV in volume delineation.

EP-1955
Teaching radiation interactions and dosimetry through Monte Carlo simulations: VisualMC
C. Baker1, A. Nahum1
1The Clatterbridge Cancer Centre - Wirral NHS Foundation Trust, Physics Department, Bebington- Wirral, United Kingdom

Purpose or Objective: An appreciation and understanding of the interaction of radiation with matter is essential for all professionals working in radiotherapy, whether from a superficial and qualitative or deep and quantitative perspective. The underlying theory is challenging to fully grasp at any level, often leading to confusion and a difficulty in retaining information. Interactive teaching, particularly with visualisation, provides students with a more enjoyable learning experience and promotes deeper learning. Here we describe a Monte Carlo (MC) simulation package designed to achieve educational objectives through interactive learning.

Material and Methods: A MC system originally designed for students to visualise the paths of electrons, positrons and photons as they traverse matter has been extended to score

Conclusion: Being PS improvement a priority, by creating PSQCWG, the SEOR intends to implement safe practices in RT, promoting research on PS and QC, and develop their own recommendations on PS, according to the internationally elaborated and adapting them, if necessary, to the reality of our country by updating Spanish legislation.