addition, three VMAT class solutions were created for this patient group covering most of the rectal carcinoma cases, reducing the time needed to plan individual treatments. The technique has since been implemented clinically at our department.

**EP-1644**

**Absorbed dose due to guide tube path in HDR Brachytherapy**

N. Becerra[1], R. Jimenez[1], M. Prieto[1], N. Anton[1], C. Llonch[1], C. Lopez[1], J. Flores[1], L. Padilla[1], S. Villanueva[1], J. Quera[1]
[1]*Hospital de l'Esperança. Parc de Salut Mar, Radiotherapy, Barcelona, Spain*

**Purpose/Objective:** Since 2010 the treatment of localized skin cancer on the nose is irradiated, in our service, with HDR ($^{192}$Ir) using a custom mold. By the characteristics of the unit, guide tubes passing above the patient. The aim of this study is to determine if the source path leaves dose at the skin and if therefore require special protection.
**Materials and Methods:** A skin tumor on the tip of the nose is simulated in an anthropomorphic phantom on which a customized thermoplastic mold is made with 3 plastic catheters placed covering the tumor. Dosimetry was made with the BrachyVision 3D (v8.1) treatment planning. To determine the dose received we used radiochromic films (Grafchromic EBT2); they are placed one on a flat surface under a block of expanded polystyrene (8cm thickness) and other one over the block, and the three transfer tubes above it. Complete treatment, consisting of 18 sessions of 3 Gy, was administrated. All films were digitized with an Epson Expression 1000XL scanner and analyzed at 24h of irradiation using the ImageJ program. Background (fog) was determined by an unirradiated film. We measured the mean and standard deviation of dose administrated in 3 representative areas (150x150 pixels) of each film, and compared between them.
**Results:** The film that was in contact with the tubes, in spite of the fast speed transfer of the source, indicates that was administrated a significant dose to the patient. The film under the polystyrene block indicates that the dose was decreased considerably.
**Conclusions:** To reduce the dose to the patient is useful to avoid the contact of the transfer tubes with him. The polystyrene blocks, are an easy, cheap and convenient method that can reduce significantly the dose received by the patient. A study to determine optimum materials and to avoid unnecessary irradiation of healthy tissue during treatment with HDR is launched with the physics unit.

**EP-1645**

**Improved reproducibility and reduced lung dose with breathing adapted radiotherapy for breast cancer**

R. Meirino[1], M.A. Infante[1], J. Calama[1], M.E. Lavado[1], J.A. Polo[1], F.A. Calvo[1]
[1]*Clinica La Luz, Radiation Oncology, Madrid, Spain*

**Purpose/Objective:** Adjuvant radiotherapy after breast-conserving surgery for breast cancer implies a risk of late cardiac and pulmonary toxicity. This pilot study evaluates cardiopulmonary dose sparing of respiratory displacement adapted radiotherapy (BART) using free breathing gating.
**Materials and Methods:** 30 patients were computed tomography (CT) scanned with EIG audio coaching during scan and treatment process. Respiration curves were analysed with average maximum IL and standard deviation (SD) for the EIG part of the respiratory signal. Analysis of dosimetric and respiration parameters were performed.
30 patients were CT-scanned during non-coached breathing manouvre including free breathing (FB), end-inspiration gating (IG), end-expiration gating (EG). The Varian Real-time Position Management system (RPM) was used to monitor respiratory movement and to gate the scanner. For each breathing phase, a population based internal margin (IM) was estimated based on average chest wall displacement, and incorporated into an individually optimized isocentric wide tangential photon field treatment plan for each scan. Treatment plans for 42.4 Gy over 16 fractions were calculated.
**Results:** The mean anteroposterior body excursion during FB was 2.5mm. For IG and EG, the mean excursions within gating windows were less at 1mm. The internal margin was reduced in 3 mm. and the dose in lung and heart were reduced in a 5%
**Conclusions:** This preliminary analysis confirms measurable dosimetric benefits for free breathing gated breast cancer radiotherapy.

**EP-1646**

**Development of an in-house TomoTherapy transfer plan check**

N. Nundlall[1], C. Clifford[2], S. Tudor[2], K. Natarajan[1]
[1]*University Hospital Birmingham NHS Foundation Trust, CCISS Radiotherapy Physics, Birmingham, United Kingdom*
[2]*University Hospital Birmingham NHS Foundation Trust, Radiotherapy Physics, Birmingham, United Kingdom*

**Purpose/Objective:** At the UHB Radiotherapy department we have two TomoTherapy HD units. The QA procedure for patients being treated on TomoTherapy (Tomo) is that a patient specific delivery QA (DQA) must be carried out prior to the patient beginning treatment, using out Delta4 phantom. For Category 1 patients, a secondary DQA must be carried out (known as a transfer plan), so there is one plan for each of the two rooms in case of a treatment delivery unit breakdown. The Tomo HD units have dynamic jaws functionality (known as TomoEDGE) which speeds up the delivery time thus enabling us to increase patient throughput. More throughput means more time required on the machines to carry out DQA. The aim of this project is to reduce the workload of patient specific QA on transfer plans. The solution should be auditable, safe, secure, maintainable, not impact on already deployed clinical software and present the required results in a presentable format to attach to patient records in our Oncology Management System (OMS), MOSAIQ.
**Materials and Methods:** The two DICOM Tomo RT plan files were validated and interpreted using dcm4chee library and private Tomo DICOM tags compared using standard Java libraries. A web application was created using the robust infrastructure of Enterprise Java Beans (EJB) to allow the user to load the two plans for comparison. The sinogram from the two plans were compared against each other by taking into account the latency differences between the machines. As TomoEDGE functionality is used, the jaw positions for each projection were also compared. The results of the comparison are displayed in the Graphical User Interface