10% for head and neck and 4.5% for pancreas, in agreement with respective LEM-based prescription doses, adopted in our protocols. Deviations are expected to be close to zero around a prescription DRBE = 5 Gy (RBE). Target under-dosage was shown in LEM-based optimized plans, when uncorrected DRBE were prescribed.

**Conclusion:** The delivery of a voxel by voxel iso-effective plan, if different RBE models are employed, is not feasible; it is however possible to minimize differences in dose deposited in the target. Dose prescription is a clinical task which ultimately depends only on the radiation oncologist clinical decision; in this study we made an attempt to avoid systematic errors which could potentially compromise tumor control. Initial clinical data on local control of adenoid cystic carcinoma treated in our facility confirms the validity of this approach.

**PO-0875**

**Multivariable models for urinary symptoms at 6-24 months after radical RT of prostate cancer**

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**Purpose or Objective:** To assess clinical and dose factors affecting the incidence of urinary symptoms between 6 and 24 months after therapy completion in patients treated with radical RT for prostate cancer.

**Material and Methods:** This study examined the dataset of a prospective study with patients treated with conventional (74-80 Gy at 1.8-2 Gy/fr) or moderately hypofractionated RT (65-75.2 Gy at 2.2-2.7 Gy/fr) in 5 fractions per week. Clinical factors were collected for each patient: comorbidities, drugs, hormone therapies, previous surgeries, smoking, alcohol, age, and body mass index. Bladder DVHs were corrected with alfa/beta=3Gy. Urinary symptoms were evaluated through the IPSS (International Prostate Symptom Score) and ICIQ (International Consultation on Incontinence Modular Questionnaire short form) questionnaires filled in by the patients at start/end of RT and every 6 months until 5 years of follow up. We considered the sum of the 7 IPSS questions and the sum of questions 3-4 of ICIQ for the two endpoints: 1) IPSS≥15 and 2) ICIQ34≥4 at least once between 6 and 24 months after RT. The best predictors to be included in the logistic regression model were identified through backward feature selections on 1000 bootstrap resamplings (the reported NArea identifies the weighted occurrences of the variables at the leading positions); then multivariate regressions on 1000 bootstrap resamplings were employed to compute the odds ratio distributions of the selected variables.

**Results:** 539 patients were enrolled: dose parameters and toxicity data at baseline and between 6-24 months were available for 195 (IPSS) and 197 (ICIQ) patients. 158/195 (81%) and 150/158 (95%) patients did not show toxicity at baseline (IPSS<12 and ICIQ<3, respectively). At 6-24 months, the incidence of IPSS>15 was 42/158 (27%) and of ICIQ34>4 was 34/150 (23%). A 6-variable model (AUC=0.86) was considered for IPSS: basal IPSS (NArea=0.72, OR=1.51) and the change of IPSS at RT end (deltaIPSS) (NArea=0.74, OR=1.16) were the leading risk factors. V62Gy was also a risk factor (NArea=0.36, OR=1.04), while the analogues and antiandrogens in hormone therapies were found protective (NArea=0.34, OR=0.38) and risk parameters (NArea=0.29, OR=2.57), respectively. For ICIQ, a backward feature selection was employed: antiaggregants (OR=2.16, p<0.11), antiandrogens (OR=2.03, p=0.08) and age (OR=1.09, p<0.04) were found as risk factors, whereas none dose parameter was found correlated with toxicity.

**Conclusion:** The analysis shows an important correlation of urinary toxicities at 6-24 months with the patient urinary condition at baseline and, also, with the acute worsening of symptoms. Interestingly, hormone therapies with analogues (protective) and antiandrogens (risk) showed an opposite behaviour for late toxicities. The absence of correlation of incontinence with dose might be due to the very low number of severe toxicities registered.

**PO-0876**

**Voxel-by-voxel NTCP model for lung density changes after IMRT**

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**Purpose or Objective:** Differential diagnosis between benign changes on follow-up CT from progression or recurrence is a difficult task in highly conformal RT because areas of dense consolidation usually develop around the treated tumor. The