Material and Methods
45 patients with early stage lung cancer (cT1-T2, cN0) were treated in our institution from 2014 to 2017 with HT-SBRT. No patients had positive lymph nodes in previous CT or PET/CT scan. No patients were fit for surgical indication due to concomitant medical conditions. The patients was placed with arms above the head, while the hands held a support such as a handlebar. All the CT images were acquired from the skull base to 3 cm below the diaphragm. CT axial imaging was performed at 3-mm intervals. For this purpose a CT Multislice GE Healthcare Discovery 590HT was used. The radiation oncologists contoured the volumes of interest (CTV) according to the RTOG guidelines. The planning target volume (PTV) was generated from the CTV volume by adding a 3 mm margin in all directions. Accurate delineation of organ at risk was performed. Treatment plans were evaluated on a dedicated TPS. In these patients, we used several radiotherapy schedules, according to volume, site of the lesions and guidelines.

Results
At 2-year follow-up, we observed complete response in 18 patients (40%), partial response in 14 (31%), stable disease in 9 (18%), progressive disease in 5 (11%). The median OS was 40 months. We analyzed acute toxicity: G1 Radiation Pneumonitis was seen in 10/45 patients (22%) and G2 was observed in 4/45 patients (8%). No patients need hospitalization. Moreover, G1 dyspnea was observed in 4 patients (11%) and G2 in 2 patients (5%). G1 radiation esophagitis was seen in 4/45 patients (8%). Other major complications (pain or hematologic) were not observed. Radiation-induced rib fracture was not seen in our group of patients.

Conclusion
HT is a safe and feasible technique to treat patients with early stage lung cancer. Acute toxicity was acceptable. This study had several limitations: a small number of patients, an heterogeneous clinical and radiological presentation of treated lung cancer and an incomplete follow up. Also the use of different fractionation must be enrolled into the limits of these analysis.

EP-1345 Serum Lactate Dehydrogenase: A Predictor of Therapeutic Response to Radiation Therapy in SCLC?
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Purpose or Objective
Increased values for serum lactate dehydrogenase (LDH) were significantly associated with a reduced duration of survival in patients with small cell lung cancer (SCLC) in several studies published in recent years. Although serum LDH has been reported as a prognostic biomarker in SCLC, it is not known whether this is due in part to a worse tumor response to radiation therapy. Little is known about how this factor influences prognosis, including the probability of long-term disease-free survival. The present retrospective study aims to analyze whether there is a correlation between the serum LDH and the radiation therapy response and prognostic significance of serum LDH in SCLC treated with thoracic irradiation.

Material and Methods
This retrospective study included all patients diagnosed with SCLC and serum LDH levels at diagnosis and before radiation therapy, treated with thoracic irradiation at CHSJ, between January 2005 and April 2018. A database was created with information obtained from patients' clinical records. The serum LDH was registered at diagnosis and before radiation therapy and its possible association with treatment response, time to tumor relapse/progression, progression-free survival (PFS) and overall survival (OS) was assessed. Statistical analysis was performed with SPSSv24. The impact of the raised values for serum LDH on cancer outcomes was evaluated using the Fisher Exact Test, Kaplan-Meier plots and the log rank test.

Results
The study included 45 patients, 31 males and 14 females, with a median age of 66 years. Median follow-up time was 16 months. Sixteen patients diagnosed with localized disease, who underwent concurrent or sequential chemoradiation therapy, and 29 patients presented with disseminated disease at the diagnosis; having performed thoracic consolidation irradiation after a good response to chemotherapy. Of the 45 patients, 18 were in the high serum LDH group and 27 were in the normal serum LDH group. In comparison to a normal serum LDH, a high serum LDH was significantly associated with worse OS (11.8 months vs 20.6 months, p=0.049, CI 95%) and worse PFS, but not statistically significant (9.9 months vs 16.1 months, p=0.138, CI 95%). There was no relationship between a high serum LDH and treatment response.

Conclusion
Current knowledge about prognostic factors in SCLC includes serum LDH, with high serum LDH being a poor prognostic factor with shorter survival time. The mechanisms underlying this association are not fully understood, and the impact of serum LDH on the response to radiation therapy is not known. The present study showed that there is no association between an increased LDH value and a worse response to radiotherapy, although patients with increased LDH value had shorter PFS and OS. However, due to the small sample size, no definite conclusions can be drawn, and future studies are needed to safely assess a possible relationship between serum LDH and response to radiation therapy.
Results
STAGE 0: We defined in 80 patients the optimal MRI sequences suitable for GTV and organ at risk (OAR) contouring: T2 Turbo Spin Echo (TSE), T2 TSE with fat sat, T1 radial gradient echo, and DIXON TSE. Two radiology-led workshops were organized and inter-observer agreement was assessed for OARs. These led to a consensus-based OAR atlas. A study is being prepared to compare the image quality of the current standard CBCT and MR images at baseline and mid-treatment for treatment verification and set-up correction.

STAGE 1: we will investigate the clinical feasibility of the MRL for standard of care radiotherapy and the scope for adaptive radiotherapy (margin reductions) and detecting changes in oxygenation during treatment on the MRL in patients with locally advanced (LA) Non-small Cell Lung Cancer (NSCLC).

STAGE 2a/b: Based on the results from stage 1 we will design a study aiming to reduce margins around the tumour and dose escalate in patients with LA NSCLC. Table 1 summarizes the ongoing and planned work within the Elekta MR-Linac Consortium.

Conclusion
The aim of this programme of work is to generate robust evidence to support the introduction of the MRL and to improve outcomes of patients with LA NSCLC.

EP-1347 "Risk adaptive" dose prescription in central NSCLC lesions in early stage NSCLC and lung metastases
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Purpose or Objective
Stereotactic ablative radiotherapy (SABR) is considered an innovative approach in early stage non-small cell lung cancer (NSCLC) and lung oligometastases. Initial experiences evaluated SABR in inoperable central (<2 cm from large bronchial tree) lung tumors located. Unacceptable levels of severe lung toxicity have been reported and “risk adaptive” dose prescription was considered an additional tool to overlay organs at risk (OAR). Aim of this study was to evaluate efficacy (local control) and tolerability in patients with a diagnosis of primary or metastatic central lung lesion, treated with a “risk adaptive” SABR approach.

Material and Methods
Patients aged ≥18-years with a histological or radiological proof of single central early stage NSCLC or lung oligometastases were enrolled. OAR were: homoco-ntrolateral lung, heart, spinal cord, esophagus, bronchial tree and chest wall. Total radiation dose was decided according to “risk adaptive” approach. In the case of overlap, sparing of the OAR was favoured to target volume coverage. A number of daily fractions between 4 and 10 was prescribed.

Radiological response was assessed according to RECIST, acute (≤6 months) and late (≥6 months) clinical and radiological toxicities were scored using kiezeoe et al. criteria and Common Terminology Criteria for Adverse Events version 4.0, respectively.

Results
From January 2012 to September 2018, 29 patients with early stage or oligometastatic lung metastases received a SABR treatment. Median Biological equivalent dose prescription and fractions were: 105 Gy (range 96-111) and 10 (range 4-10), respectively. Median follow-up was 19 months. Local control was reported in 25 patients (86%), a local progression in 4 patients (14%). Early radiological abnormalities were identified as follows: no changes in 15 patients (52%), patch ground glass opacity in 9 (31%) and patchy consolidation and ground glass opacity in 5 (17%). Late radiological abnormalities were as follows: no changes in 5 cases (17%), scar-like pattern in 8 (28%), mass-like pattern in 10 (34%), not available in 6 cases (21%). Acute and late clinical pulmonary toxicity ≥ grade 2 were recorded in 2 out of 29 patients (7%) and 3 out of 23 patients (13%).

Conclusion
SABR “risk adaptive” prescription in inoperable central lung tumors is considered a safe and efficacy treatment. Higher accrual and follow-up are necessary to confirm these data.

EP-1348 Clinical outcome of one-fraction early-stage lung SBRT: is it an option in selected patients?
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Purpose or Objective
In our Institution, we follow an in-house protocol that encompasses fractionation schedules and constraints included in the RTOG 0813, 0236 and 0915 protocols (1x30Gy, 3x18-20Gy, 4x12-15Gy and 5x10Gy). Recently, ACROP-ESTRO guidelines suggested different fractionation schedules (3x15Gy and 4x12Gy), obtained by consensus among representatives from several European SBRT centers. The main purpose of this retrospective study was to evaluate the influence of fractionation on clinical outcome (global, specific and local progression-free survival) and toxicity in early-stage lung cancer patients in our Institution.

Material and Methods
We retrospectively analysed all patients treated with SBRT for primary early-stage lung cancers in our department between 1st January 2012 and 31st December 2016. Treatments were carried according to RTOG protocols, and one-fraction schedules were selected for small peripheral tumors located away from the chest wall.

Results
Between 2012 and 2016, 143 early-stage lung cancer patients (with 149 tumors) underwent SBRT. Most were males (79%) with a median age of 73 years (range from 51 to 91). Median follow-up was 22 months. Median maximum diameter was 2.3 cm (from 0.7 to 5.5). Most tumors were adenocarcinomas (69%), followed by squamous carcinomas (28%). Thirty seven tumors were irradiated with 1 fraction of 30Gy, 18 with 3 fractions of 18-20Gy, 52 with 4 fractions of 12-15Gy and 39 with 5 fractions of 10Gy. As a result, 49.7% tumors remained stable, 24.8% exhibited a complete response and 19.5% a partial response. Disease progression was eventually observed in the treated area in 14 patients (9.8%), elsewhere in the lung in 16 patients (11.2%), in the lymph nodes in 15 (10.5%), and a distal progression was noted in 11 patients (7.5%). At 18 months, overall survival (OS) was 77.3%, disease-specific survival (DSS) was 91.9% and local progression-free survival (L-PFS) was 93.7%. The most