Purpose or Objective: Stereotactic ablative radiotherapy (SABR) is routinely used for the treatment of early stage lung cancer and is increasingly used to treat other primary tumour sites. There are currently 6 UK studies (of which 3 are randomised) investigating the utility of SABR in the treatment of oligometastatic disease (breast, lung, prostate), lung, prostate, pancreas and hepatobiliary primary malignancies. These are supported by CRUK and currently open in or set up to begin recruitment in 2016. In addition, a HNS Commissioning Through Evaluation (CTE) programme was commenced in 2015 to evaluate SABR in situations where clinical trials are not available. In an attempt to standardise protocols and the associated radiotherapy planning we sought to generate consensus normal tissue dose constraints tolerances across these UK studies.

Material and Methods: Members of the various SABR studies’ trial management groups, facilitated by the UK Radiotherapy Trials Quality Assurance Group (RTTQA), met to generate a unified table of normal tissue dose constraints. As a starting point, the UK SABR Consortium Guidelines, the AAPM TG-101 report and other seminal publications were used to define a baseline reference. These initial constraints values were revised, where appropriate, by taking into consideration any updated or more robust data that better informed a given dose constraint value in the opinion of the panel.

Results: A total of 1847 pts (904 right-sided and 943 left-sided) were treated with either 40 Gy/15 fx (912 pts) or 50 Gy/25 fx (935 pts). 388 of the left-sided pts were treated with gated RT, and 440 without. No information about gating was available for the remaining 115 pts. Dmax(CTV) was less than 110% of the prescription dose in 99.4% of the plans. More than 2 cm3 of the CTV received 107-110% of the dose in 99.4% of the plans. For 92.3% of the hypo-fractionated plans, less than 2% of the CTV was covered with doses above 105%, whereas 3.9% and 3.5% of the plans had minor and major deviations, respectively. For 80.8% of the pts, the part of the CTV covered with at least 95% of the prescription dose was in compliance with the guidelines. Minor and major deviations were observed for 12.6% and 6.6% of the pts, respectively. By taking laterality into consideration, 90.8% of the right-sided pts were in compliance with the guidelines compared to only 71.2% of the left-sided pts. For the left-sided pts with available information about gating, it was found that 87.4% and 59.3% of the pts treated with and without gated RT, respectively, were in compliance, thus indicating that shielding of the heart resulted in CTV underdosage. This was supported by compliance to the protocol heart dose constraints guidelines for 941 left-sided pts. Only one hypo-fractionated pt showed a major deviation in V35Gy and a minor deviation in V17Gy (data missing for one pt). The lung dose satisfied the protocol guidelines for 99.4% of the pts.

Conclusion: A high degree of compliance with protocol guidelines was found for the DBCG HYPO trial. Only a few pts received CTV doses above 107% of the prescription dose. The CTV volume covered with less than 95% dose deviated from protocol guidelines for about 40% of the left-sided pts treated without gated RT. With gated RT this number decreased to about 12%, almost equal to that of right-sided pts. This indicates that gated RT for left-sided pts reduces the necessity of CTV dose compromise due to heart shielding.

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UK stereotactic ablative radiotherapy trials normal tissue dose constraints tolerance consensus
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Purpose and Objective: The BSD-2000/3D system (BSD Medical Cooperation, Salt Lake City, USA) is used to treat deep seated tumors with hyperthermia (to temperatures of 41-43°C) in combination with radiotherapy. Treatment planning for this system is done with the software SigmaHyperplan (Dr. Sennewald Medizintechnik GmbH, Munich, Germany). In this study a method and first results for pre-treatment verification of clinical patient treatment plans using a 3D SAR scanning phantom developed at the Kantonsspital Aarau are presented.

Material and Methods: Treatment plans for individual patients were generated with SigmaHyperplan and applied to a saline phantom model. The result is a set of data for the