RTOG 1005 Benchmark Guidelines

The purpose of the benchmark is to make sure that the treatment plans generated using the irradiation approaches allowed in Arm 2 are able to meet the dosimetric requirements of the protocol and to be exported from your treatment planning system. The protocol describes 7 approaches for the hypofractionation Arm (ARM 2). The approaches that your particular institution will use determine the types of the treatment plans needing to be generated on the benchmark dataset. **Please note that separate IMRT credentialing may be required in accordance with section 5 of the protocol.**

The techniques outlined in the protocol for ARM 2 of the protocol are as follows (all techniques should use heterogeneity correction for the dose calculation):

1. 3DCRT WBI with 3DCRT concurrent boost
2. 3DCRT WBI with IMRT concurrent boost
3. 3DCRT WBI with electron concurrent boost
4. IMRT WBI with 3DCRT concurrent boost
5. IMRT WBI with IMRT concurrent boost
6. IMRT WBI with electron concurrent boost
7. IMRT WBI with IMRT simultaneously integrated boost

It is important that the benchmark submitted for credentialing be representative of the methods used at the individual institutions. In particular if an institution uses Electrons for boost than an electron boost must be used for the benchmark. **Institutions that may use IMRT or 3DCRT need only submit a benchmark for IMRT techniques. Please indicate the technique used for your submission in either an email or in the comments section of the DDSI form.**

The credentialing with benchmark case can be accomplished by doing **at most 2** of the highlighted techniques above for any institution and only 1 if your institution does **not** plan to use the IMRT simultaneously integrated boost technique (7. Above). Please follow these guidelines:

- Institutions **not** using **electrons** should plan the benchmark case using:

  5. IMRT WBI with IMRT concurrent boost (if planning on using IMRT and credentialed for IMRT)

  Or (*it is not necessary to submit a 3DCRT benchmark if you have submitted and IMRT*)

  1. 3DCRT with 3DCRT concurrent boost (for sites not planning on using IMRT)

- Institutions that **may use electrons** should plan the benchmark case using an electron technique:

  6. IMRT WBI with electron concurrent boost (if planning on using IMRT and credentialed for IMRT)

  Or(*it is not necessary to submit a 3DCRT benchmark if you have submitted an IMRT*)

3. 3DCRT WBI with electron concurrent boost (for sites not planning on using IMRT)

- If any institution plans on using a **simultaneously integrated boost** we request that a separate plan with this approach on the benchmark case be generated and submitted (if credentialed for IMRT)

7. IMRT WBI with IMRT simultaneously integrated boost

For simultaneously integrated boost, acceptability on the maximum dose in breast_PTV_eval [i.e., ≤ 46Gy (idea) or ≤ 48 Gy (acceptable)] should be judged that no disconnected isodose lines of 48 Gy are seen in the regions outside the lumpectomy PTV. In other words, it is acceptable if no isolated hot spots of > 48 Gy are found in the regions outside the lumpectomy PTV. For all other treatment options, the maximum dose may be evaluated by turning off the boost fields.

For the benchmark case, it is not difficult to achieve all IDEAL dose-volume criteria as defined in the protocol. For this credentialing purpose, it is considered acceptable if the number of ACCEPTABLE criteria is not more than 2, although the goal is for all criteria to be IDEAL.