**RTOG 1106 Frequently Asked Questions**

**Dry Run**

Q: Can you provide a patient summary for the dry run patient?

The dry run #3 patient is a 77 year old gentleman with significant comorbidities. He has Stage 3B T3N3M0 NSCLC of the right upper lobe with positive right hilar, mediastinal, and supraclavicular nodes. He has received no previous chemotherapy or radiation therapy and has good performance status.

Q: Are patients with N3 disease-supraclavicular nodes eligible for the study?

A: Yes, these nodes should be included in the CT1GTVN or PET1MTVN, as noted on imaging.

Q: Why are there so many datasets?

A: This dry run is meant to be a true credentialing dry run for the RTOG1106 study and therefore is designed to be a full imaging dataset from a patient being treated under the protocol. For the purpose of this dry run, please consider the patient will be treated free breathing with no motion control. As such, the patient received a 4DCT (10 phases plus an untagged/average scan for dose calculations) for ITV delineation, a contrast CT scan to aid in GTV delineation (if needed), and a PET/CT. The same image set is given for the adaptive phase of treatment. We realize that contouring on all 4DCT phases may be a bit cumbersome and if it’s not feasible in your planning system, you may use the most extreme phases of the 4DCT (generally the 0% and 50% phases) to create an ITV and make sure it encompasses the tumor motion.

Q: Why isn’t there a MIP (Maximum Intensity Projection) dataset provided to contour on?

A: We aren’t recommending using the MIP to contour ITVs for this study since we expect that a lot of the tumors may be near the mediastinum or chestwall and the MIP contours may not be accurate in those areas. Therefore, we suggest contouring on each of the 4DCT phases and using the composite to create an ITV. Obviously this may be a lot of work if your treatment planning system doesn’t handle the 4DCT phases well. In that case, it would be acceptable to contour on the most extreme phases of the 4DCT and just make sure you have included any additional motion from other phases due to hysteresis.

Q: Are there any special submission instructions?

A: Please follow the submission guidelines outlined in Section 12 of the protocol (which is available on the dry run webpage). It is important that receive the same submission data this is required for actual cases for the dry run so we can verify your institution’s ability to provide the necessary information in digital format. You should use the sftp account that you use for participation in other trials for submission to ITC. If you need your login information, please call ITC at (314) 747-5415 and someone should be able to assist you. Being that this is a Dry Run, there would be no T1 Radiotherapy Form to complete. The case should be labeled as a dry run on the submission form. You should contact itc@wustl.edu to notify them of data submission along with a DDSI form, as required for the general ITC submissions.

**Contouring**

Q: Should the CT and PET GTV contours be completely independent?

A: Yes, the CT contours should be done without any knowledge of the PET imaging and vice versa. For example, if there is an enlarged node on CT that isn’t PET avid, then it should be included in the CTGTVN, but not in the PETMTVN.

Q: There are a lot of structures listed in the atlas online – do I have to contour them all?

A: No, the majority of the structures in the atlas are optional to contour for this protocol. The only required OARs are the Lungs, Brachial Plexus (only required for upper lobe GTVs and only the ipsilateral BP needed), Heart, Esophagus, Spinal Cord, and Body. All of the heart vessels do not need to be contoured separately.

Q: Should the entire pericardium be included in the heart contour?

A: No, only slices on which the heart and pericardium both appear should there be “heart” contours. Those contours should include the pericardial sac. The guidelines on the first slide of the atlas details that the heart contour should start 1 slice below the pulmonary artery trunk passing the midline and end at the diaphragm.

Q: Which GTV should I subtract to create the “LUNG” contour for mean lung dose calculations?

A: The LUNG contour should be RTLUNG + LTLUNG – PreGTV. So, it should include the subtraction of the CT and PET GTVs from the initial plan. For the adaptive plan in Arm 2, the LUNG contour should not be redefined.
Screening Plan

**Q: What is the target volume for the screening plan?**

A: The PrePTV is the only target volume for the screening plan. In the event that your screening plan needs to be completed before the Pre-tx PET/CT is available, the CT1GTV + 1 cm can be used as the target for the screening plan.

**Q: Does the screening plan have to meet the OAR limits?**

A: No, the screening plan does not have to meet the OAR limits. The screening plan should be a quality conformal plan, but we don’t want it to take an unnecessarily long amount of time to plan since it will not be treated and the dose level (74 Gy) may not be what is used for the treatment plan. We realize that this could affect the mean lung dose achieved, but we believe this will be a minimal effect.

**Q: What is the primary dataset to use for dose calculations?**

A: The primary dataset will depend on your mode of motion management. The primary dataset, CT1, will be defined as follows:

- For free-breathing treatment with a 4D CT simulation: CT1 = Average CT generated from 4DCT;
- For free-breathing treatment without 4D CT simulation: CT1 = Non-contrast enhanced normal exhale CT scan;
- For motion controlled treatments: CT1 = Non-contrast enhanced CT scan at the motion controlled state.

**Arm 1/2 Planning**

**Q: What are the target volumes for the initial and adaptive plans in Arm 2?**

A: The Arm 2 initial plan target (and is the PrePTV, which is a combination of the CT1 and PET1 targets, and should receive the initial dose prescribed on table 6.1.2a and based on mean lung dose in the screening plan. The Arm 2 adaptive plan targets are the CT2PTV – which should be optimized to get >70 Gy in the composite plan and the DurPTV – which is based on the PET2 target and should receive (up to) the Arm 2 adaptive prescription dose from the protocol table 6.1.2a.

**Q: What is the primary dataset to use for dose calculations?**

A: The primary dataset will depend on your mode of motion management. The primary dataset, CT1, will be defined as follows:

- For free-breathing treatment with a 4D CT simulation: CT1 = Average CT generated from 4DCT;
- For free-breathing treatment without 4D CT simulation: CT1 = Non-contrast enhanced normal exhale CT scan;
- For motion controlled treatments: CT1 = Non-contrast enhanced CT scan at the motion controlled state.

For adaptive planning in Arm 2, CT1 will remain the primary dataset for all dose calculations and dose accumulation. CT2 should be registered to CT1 and used for target volume contouring only.

**Q: What is the priority in areas of OAR/PTV overlap or when the PTV is in very close proximity to a normal tissue with a maximum dose limit?**

A: The normal tissue limits should be the top priority. It is considered an acceptable deviation in the protocol (see section 6.7.2) to underdose the PTV in areas of overlap or close proximity with OARs. In this situation, we’d like the minimum dose to the PTV in the overlap region to be as close as possible to the maximum dose allowed in the overlapping OAR. **However, every effort should be made to still achieve >95% coverage of the target volume with the prescription dose. In the Arm 1 and the Initial Plan of Arm 2, this may not be possible if there is extreme overlap. In the Adaptive Plan of Arm 2, the dose/fraction may be reduced in order to meet OAR dose and target coverage limits.**

**Q: My final composite mean lung dose is < 20 Gy. Is this acceptable?**

A: Yes, we don’t expect every case to be limited by the MLD or be right at 20 Gy. Depending on the other OARs, tumor location, and PTV reduction in the adaptive plan, the MLD may end up being < 20 Gy. As long as you use the maximum allowable dose based on your screening plan, your final MLD can end up being < 20 Gy. If your screening plan is not conformal and doesn’t aim to reduce MLD, then you may see a very large discrepancy. In this situation, the screening plan should be reevaluated to see if it could have been improved (which would have resulted in a lower MLD and higher dose bin).

**Q: How should I judge dose to the circumferential esophagus?**

A: The circumferential dose is the highest dose enclosing the entire axial contour of the esophagus on one or more axial cuts. To obtain this dose, you can just scroll through the cuts and see where the highest isodose covers the entire contour. This value should be < 70 Gy in the composite plan.