

## GHG Face-to-Face: Proton Subcommittee

Friday, April 26, 2019

**Attendees:** Jonny Lee (co-chair), Paige Taylor (co-chair), Catharine Clark, Joerg Lehmann, Jessica Lye, Markus Stock, Enrico Clementel, Coreen Corning, Elizabeth Miles, Stephen Kry, Angelo, Romana, Sarah Kelly, Nicholas, Thomas Kron

### Discussion:

We discussed the variability of target definitions and prescriptions (e.g. EORTC and NCTN trials list prescriptions to PTV, but many clinics prescribe to the CTV and just report dose to PTV). The optimization is not isotropic, whereas photon margin expansion usually is. Robust optimization requires special consideration since centers use different criteria and different optimization scenarios. We should continue to discuss what DICOM data can be collected for robust optimization scenarios. The scenario that may be “worst” for the target might not coincide with the scenario that is “worst” for OARs. And what does robustness mean for sequential treatments or simultaneous integrated boosts? We need to ensure robustness over the course of the treatment.

As we discussed clinical case reviews, the suggestion was made to look at spot spacing and positioning, which can be difficult to review centrally, but could be reviewed during an on-site visit.

The European Particle Therapy Network (EPTN) will host a workshop for proton centers next spring (2020) to review QA practices.

MedAustron has performed 7 beamline audits of proton machines throughout Europe. Some of these activities are privately funded, while others have been supported by PTCOG.

NPL visited 4 centers.

JCOG visited 5 centers. So far Japan only has proton vs. surgery trials.

IROC performed one on-site visit over the past year and provided remote audit services for 40 proton centers. The US has 22 trials that allow proton therapy, 4 of which are randomized photon vs. proton trials.

In the UK, a group called CT Rad research group is promoting clinical trials. They have found inconsistencies in DIBH for photons vs. protons.

The NPL is working to find or make bone-equivalent proton materials.

TRS-398 is being updated and should be published by the end of 2019. This will impact proton beam calibration procedures.

An ICRU 78 revision is in progress but not yet finalized.

### Future Teleconference Ideas:

- Challenges of randomized photon vs. proton trials
- Audit activities: Review various ion therapy QA groups and their audit activities
- Clinical trial QA best practices: Discuss the balance between too little or too much QA, appropriate action levels, and statistical implications
- Proton treatment in heterogeneous media
- Robust optimization: Discuss implementation and how QA centers can compare methods across multiple institutions
- Variable RBE: Invite representatives from Mayo and MedAustron to give overviews of their TPS capabilities, special treatment planning considerations; discuss what data needs to be collected/reviewed for clinical trials

### Action Items:

- Catharine: find new co-chair to replace Jonny
- Paige: schedule next teleconference