

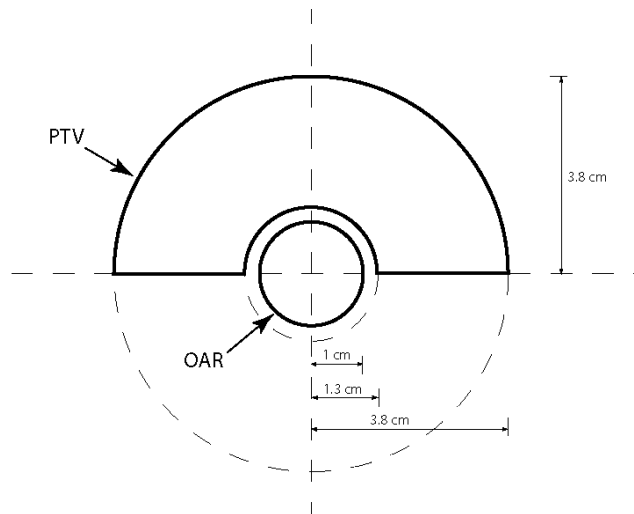
Proton Radiation Therapy Benchmark

COG requires credentialing of each “high technology” technique used by each institution to treat patients on COG protocols. Institutions treating patients on COG protocols with protons must satisfactorily complete this case and the accompanying questionnaire. The benchmark is not site specific, i.e. it applies to treatment with protons of all disease sites, and satisfactory completion will be considered to be credentialing for all treatments with protons.

BENCHMARK CASE:

Patient Data Selection:

For the benchmark case, a planning CT scan in the head region from your institution shall be used. The image data set shall extend at least 10 cm superiorly/inferiorly with slice thickness no greater than 3 mm. The geometry of the target volume (PTV) and the organ at risk (OAR) to be included is described below.



The primary organ at risk (OAR) is a central (midplane) cylinder 2.0 cm in diameter, which extends at least 5 cm caudad/cephalad. The planning target volume (PTV) to be treated is a half annulus 2.5 cm wide that has the same center as the OAR and surrounds the cylinder by 180 degrees. It too shall extend at least 5 cm caudad/cephalad. There shall be a 3 mm separation between the PTV and OAR. In other words, the annulus has an inner radius of 1.3 cm and an outer radius of 3.8 cm.

Desired Dose Distribution:

The aim of the plan is to deliver the prescribed dose of 200 cGy per fraction uniformly to 100% of the PTV and not more than 120 cGy (60% of the prescribed dose) to 5% of the organ at risk (OAR). The constraint on the organ at risk has priority over the target volume coverage. That is, the constraint of no more than 60% of the prescribed dose to 5% of the OAR shall be achieved. To accomplish the OAR constraint, target volume (PTV) coverage may be sacrificed if necessary. If the plan is reported in relative dose, the normalization shall be stated explicitly.

Dose Calculations:

Dose distributions shall be calculated on the axial slices through the PTV and OAR. Isodose distributions may be in absolute dose or in terms of relative dose. If represented in terms of relative dose, the conversion to absolute dose must be clearly described. Dose volume histograms for the PTV and the OAR shall be calculated. In addition, a DVH for “unspecified tissue” shall be calculated. Unspecified tissue is defined as tissue contained within the skin, but which is not otherwise contained within delineated structures

Material to be submitted:

Planning Dosimetry

1. Copies of representative axial CT slices of the patient through the target and OAR shall be submitted. The PTV and the OAR shall be shown. The dose distribution shall be superimposed. At least one coronal and one sagittal slice shall be submitted showing OAR, PTV and isodose contours.
2. Dose volume histograms for the PTV, OAR, and unspecified tissue.
3. A description of the plan and printouts of all beams parameters.
4. A description of the procedures for absolute dose calibration for each beam.

Please return completed forms and supporting documents to:

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