

RTOG 1106

Normal Structure Standard Names, Contouring Requirements, and Dose Tolerances

Standard Name	Contouring Requirements	Dose Tolerances
SpinalCord	The spinal cord will be contoured based on the bony limits of the spinal canal. The spinal cord should be contoured starting at least 10 cm above the superior extent of the PTV and continuing on every CT slice to at least 10 below the inferior extent of the PTV	Max. dose < 50 Gy
Esophagus	The esophagus will be contoured using mediastinal windowing on CT to correspond to the mucosal, submucosa, and all muscular layers out to the fatty adventitia. The esophagus should be contoured from the beginning at the level of cricoid to its entrance to the stomach at GE junction.	Max. dose < 72 Gy Mean dose < 34 Gy The esophagus should not be circumferentially irradiated with greater than 70 Gy.
BrachialPlexus	The defined ipsilateral brachial plexus originates from the spinal nerves exiting the neuroforamine on the involved side from around C5 to top of T2. In contrast to prior RTOG lung studies of contouring the major trunks of the brachial plexus by the use of subclavian and axillary vessels as a surrogate for identifying the location of the brachial plexus, this trial request contouring the nerves according to the detailed atlas on above website.	Max. dose < 63 Gy
Trachea	The trachea and proximal bronchial tree will be contoured as two separate structures using mediastinal windows on CT to correspond to the mucosal, submucosa and cartilage rings and airway channels associated with these structures. For this purpose, the trachea will be divided into two sections: the proximal trachea and the distal 2 cm of trachea. The proximal trachea will be contoured as one structure, and the distal 2 cm of trachea will be included in the structure identified as proximal bronchial tree. Contouring of the proximal trachea should begin superiorly subglottic fossa at the level of cricoid and continue inferiorly to the superior aspect of the proximal bronchial tree.	
ProxBronchTree	The trachea and proximal bronchial tree will be contoured as two separate structures using mediastinal windows on CT to correspond to the mucosal, submucosa and cartilage rings and airway channels associated with these structures. For this purpose, the trachea will be divided into two sections: the proximal trachea and the distal 2 cm of trachea. The proximal trachea will be contoured as one structure, and the distal 2 cm of trachea will be included in the structure identified as proximal bronchial tree. The proximal bronchial tree will include the most inferior 2 cm of distal trachea and the proximal airways on both sides as shown on atlas. The following airways will be included according to standard anatomic relationships: the distal 2 cm of trachea, the carina, the right and left mainstem bronchi, the right and left upper lobe bronchi, the intermedius bronchus, the right middle lobe bronchus, the lingular bronchus, and the right and left lower lobe bronchi. Contouring of the lobar bronchi will end immediately at the site of a segmental bifurcation. If there	Max. dose < 80 Gy $D_{1cc} < 72$ Gy

	are parts of the proximal bronchial tree that are within GTV, they should be contoured separately, as “proximal bronchial tree GTV”, not as part of the “proximal bronchial tree”.	
Lungs	Contouring of (both) lungs should be carried out using pulmonary windows. The right and left lungs can be contoured separately, but they should be considered as one structure for lung dosimetry. All inflated and collapsed lung should be contoured; however, gross tumor (GTV) and trachea/ipsilateral bronchus as defined above should not be included in this structure.	MLD (computed for both lungs exclusive of the GTVs) for the total treatment must be less than or equal to 20 Gy
Heart	The heart will be contoured along with the pericardial sac. The superior aspect (or base) will begin at the level of the inferior aspect of the aortic arch (aortopulmonary window) and extend inferiorly to the apex of the heart.	Mean dose \leq 30 Gy V40 < 80% V60 < 30%
GreatVessels	The great vessels (aorta, vena cava, pulmonary artery, pulmonary vein) will be contoured separately from the heart, using mediastinal windowing on CT to correspond to the vascular wall and all muscular layers out to the fatty adventitia (5 mm from the contrast enhanced vessels). The great vessel should be contoured starting at least 10cm above the superior extent of the PTV and continuing on every CT slice to at least 10 cm below the inferior extent of the PTV. For right sided tumors, the vena cava will be contoured, and for left sided tumors, the aorta will be contoured. Tumor involved vessels are defined by the overlapped between DurPTV and GreatVessels	Healthy vessels: Max dose < 85 Gy D _{1cc} < 80 Gy Tumor-involved vessels: Max. dose < 70 Gy D _{1cc} < 65 Gy

Notes:

1. “Max dose” is computed as the minimum dose to the hottest 0.03cc of a structure.
2. D_{1cc} indicates the minimum dose to the hottest 1cc of a structure