Lung: RTOG 06-17, RTOG 13-08. Esophagus: RTOG 10-10.

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| **Thorax** | **[Conventional]** |  |
| **Heart** | Mean < 26 - 35 Gy  **Mean < 20 Gy** (15 Gy) Wang ’20  70 Gy  60 Gy (33%)06-17  **V 50 Gy < 25%**Speirs- 33%)  45 Gy (35%13-08, 50%10-10, 66%06-17)  40 Gy (80-100%06-17)  30 Gy (50%13-08, 100%10-10)  35 Gy (30% PORT)  V5, V30 06-17 | Cardiac morbidity: Pooled analysis of 6 dose escalation trials for stage III NSCLC [Wang JCO ’17]   * 2y cardiac events for Mean Heart Dose < 10 / 10-20 / >20 Gy of 4→ 7→ 21%.   Among pts w baseline cardiac dz, MHD of 5 / 12 Gy with 2y G3+ cardiac events of 10→ 15% [Dess JCO ’17]  Among pts w healthy hearts, MHD of 23 / 29 Gy with 1y G3+ cardiac events of 10→ 15% [Dess JCO ’17]  Mean heart dose > 10 Gy appears to be associated with mortality in healthy patients [Atkins JACC ’19].  V50 < 25% is independently associated with overall survival [Speirs JTO ’17]  Mean heart dose < 26 Gy has < 15% pericarditis. QUANTEC  V30 < 46% has < 15% pericarditis. QUANTEC  V25 < 10% has < 1% long term cardiac mortality 15y after RT. QUANTEC |
| **Atria** | D45% < 30-44 Gy | **Modeling the impact of Cardio-Pulm toxicity in 0617** [Thor Clin Ca Res ’20]  TBL QS: The authors suggest exploring the utilization of these dosimetric thresholds in standard treatment planning for advanced NSCLC   * Predictive model of survival generated from 306 enrollees and 191 variables, confirmed in validation cohort.   + MOH = mean dose to the hottest % of the structure.   + Heart substructures contoured per RTOG 1106 [RTOG Contouring Atlases]. * Mean lung dose (≤ 15-17 Gy), Atria D45% (< 30-44 Gy), Pericardium MOH55% (< 41-51 Gy), Ventricles MOH5% (< 41-56 Gy) |
| **Pericardium** | MOH55% < 41-51 Gy |
| **Ventricles** | MOH5% < 41-56 Gy |
| **Great vessels/Trachea** | **Not limited per 0617** |  |
| **Bronchial tree** | **Not limited per 0617**  80 Gy QUANTEC  75 Gy (12%) Wang IJROBP ’20 |  |
| **Esophagus** | 74 Gy (1 cc - 1.5 cc)13-08, QUANTEC  Max 105% Rx  Mean < 34 - 37 Gy 06-17  **60 Gy (17%)**  **55 Gy (33%)** | Point doses of 74 Gy appear to be safe even with concurrent carboplatin and paclitaxel. QUANTEC  Mean dose < 34 Gy on RTOG 06-17 is not mandated! QUANTEC  G2+ esophagitis < 30% for the following values: QUANTEC   * V70 < 20% * V50 < 40% * V35 < 50%   The length of partial and near-full circumference esophagus receiving 50-60 Gy appears to contribute to weight loss QS [Han PRO ’20] |
| **Total lung - GTV** | **Mean < 20 Gy** 06-17, 13-08, 10-10  **Mean < 15-17 Gy**Thor ClinCaRes ’20  **20 Gy (37%** - 40%) 06-17, 13-08  20 Gy (25%)10-10  10 Gy (40%)10-10  5 Gy (60% - 65%) 13-08, QUANTEC  5 Gy (50%) 10-10 | For WLI, TD5/5 / TD 50/5 of 17.5→ 24.5 Gy [Emami IJROBP ’91]  For exposure to 33% of the lung, TD 5/5 / TD 50/5 of 45→ 65 Gy [Emami IJROBP ’91].  For RT alone, Lung V20 < 40% will have 15% RP [Graham IJROBP ’99].  For CCRT Lung V20 < 20%, around 20% of patients will have symptomatic RP [Palma IJROBP ’14].  For CCRT Lung V20 < 40%, around 33% of patients will have symptomatic RP [Palma IJROBP ’14].  For CCRT, carboplatin/Paclitaxel in patients > 65y will have > 50% symptomatic RP [Palma IJROBP ’14].  V20 < 30-35% and MLD < 20 Gy has a 20% risk of symptomatic RP. QUANTEC  MLD of 7 / 13 / **20** / 24 / 27 Gy with 5→ 10→ **20**→ 30→ 40% risk of symptomatic RP. QUANTEC  After EPP, Lung V20 ± 7% with 42x increased risk of PRD than those with lower V20 [Rice IJROBP ’07]. |
| **Rib** | **Not limited per 0617** |  |
| **Contra lung** | Mean < 8 Gy  20 Gy (7-10%)  10 Gy (13%)  5 Gy (60-75%) |  |
| **Liver** | Mean 21 Gy  30 Gy (30%) |  |