

A.



B.

Supplemental Figure 1. Progression Free Survival for the novel volume doubling time (A) 234 days and (B) 279 days.



B.

A.



C.

Supplemental Figure 2: Progression Free Survival for the risk patient risk groups among all patients (**A**) and for early-stage (**B**), and for late-stage patients **(C**) in patient diagnosed in the screening interval T0 to T1.



B.

A.



C.

Supplemental Figure 3: Progression Free Survival for the risk patient risk groups among all patients (**A**) and for early-stage (**B**), and for late-stage patients **(C**) in patient diagnosed in the screening interval T0 to T1 or T1 to T2.

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| Supplemental Table 1: Multivariable Cox proportional hazards models for progression free survival  |
|  | **Screening interval from T0 to T1** | **Screening interval from T0 to T1 and T1 to T2** |
| Characteristic | **All Patients2** **HR (95% CI)** | **Early-Stage patients****HR (95% CI)** | **All Patients2** **HR (95% CI)** | **Early-Stage patients****HR (95% CI)** |
| Risk Group |  |  |  |  |
|  | Low | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) |
|  | Intermediate | 0.54 (0.17, 1.77) | 0.68 (0.18, 2.55) | 1.28 (0.58, 2.80) | 1.30 (0.88, 12.35) |
|  | High | **2.55 (1.05, 6.20)** | 2.37 (0.67, 8.36) | **2.33 (0.90, 6.05)** | **3.30 (0.88, 12.35)** |
|  | Very High | **4.72 (1.85, 12.07)** | **5.92 (1.81, 19.40)** | n/a | n/a |
| Sex |  |  |  |  |
|  | Female | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) |
|  | Male | 1.01 (0.49, 2.09) | 1.13 (0.42, 2.99) | 0.94 (0.47, 1.88) | 1.07 (0.45, 2.52) |
| Stage |  |  |  |  |
|  | I and II | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) |
|  | III and IV | **3.94 (1.54, 10.07)** | n/a | **6.34 (3.08, 13.05)** | n/a |
| Histology |  |  |  |  |
|  | Adenocarcinoma-BAC1 | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) |
|  | Squamous | **2.49 (1.01, 6.11)** | 1.74 (0.57, 5.27) | 1.42 (0.62, 3.28) | 1.11 (0.41, 3.04) |
|  | Small Cell | 1.42 (0.31, 6.58) | n/a | 1.78 (0.40, 7.84) | n/a |
|  | Other NOS | 0.93 (0.38, 2.30) | 0.46 (0.11, 1.97) | 0.81 (0.36, 1.80) | 0.64 (0.21, 1.92) |
| Treatment |  |  |  |  |
|  | Surgical | 1.00 (Reference) | 1.00 (Reference) | n/a | n/a |
|  | Chemotherapy/Other | 2.35 (0.59, 9.33) | **23.53 (2.78, 1999.32)** | n/a | n/a |
|  | Radiotherapy | 2.20 (0.84, 5.74) | 1.65 (0.37, 7.48) | n/a | n/a |
| Self-reported COPD |  |  |  |  |
|  |  No | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) | 1.00 (Reference) |
|  | Yes | 1.58 (0.58, 4.28) | 1.35 (0.39, 4.70) | 1.59 (0.61, 4.13) | 1.08 (0.32, 3.64) |
| Harrell's C index | 0.78 | 0.72 | 0.72 | 0.62 |