**CNCR\_31782\_e.Supporting Information\_TABLE S1.** Association between transplant status and cancer-specific mortality, adjusting for receipt of first-course therapy\*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Cancer site** | **Total N** | **Cancer-specific deaths** | **aHR1**† | **95%CI** | **aHR2**‡ | **95%CI** |
| Oral cavity/pharynx |  |  |  |  |  |  |
| Recipient | 620 | 191 | 1.31 | (1.13, 1.51) | 1.35 | (1.17, 1.55) |
| Non-recipient | 180,581 | 619,018 | 1 | referent | 1 | referent |
| Colorectum |  |  |  |  |  |  |
| Recipient | 851 | 332 | 1.82 | (1.63, 2.03) | 1.78 | (1.60, 1.99) |
| Non-recipient | 816,099 | 289,623 | 1 | referent | 1 | referent |
| Esophagus |  |  |  |  |  |  |
| Recipient | 130 | 77 | 1.07 | (0.53 1.33) | 1.00 | (0.80, 1.26) |
| Non-recipient | 71,114 | 53,029 | 1 | referent | 1 | referent |
| Stomach |  |  |  |  |  |  |
| Recipient | 223 | 146 | 1.46 | (1.24, 1.71) | 1.47 | (1.25, 1.73) |
| Non-recipient | 126,741 | 84,511 | 1 | referent | 1 | referent |
| Liver |  |  |  |  |  |  |
| Recipient | 185 | 104 | 0.80 | (0.66, 0.97) | 0.87 | (0.71, 1.05) |
| Non-recipient | 82,500 | 57,398 | 1 | referent | 1 | referent |
| Pancreas |  |  |  |  |  |  |
| Recipient | 221 | 185 | 1.46 | (1.27, 1.69) | 1.40 | (1.21, 1.62) |
| Non-recipient | 160,646 | 138,876 | 1 | referent | 1 | referent |
| Larynx |  |  |  |  |  |  |
| Recipient | 153 | 44 | 1.22 | (0.91, 1.64) | 1.25 | (0.93, 1.68) |
| Non-recipient | 65,347 | 22,876 | 1 | referent | 1 | referent |
| Lung |  |  |  |  |  |  |
| Recipient | 1,738 | 1,232 | 1.40 | (1.32, 1.48) | 1.43 | (1.35, 1.51) |
| Non-recipient | 920,805 | 701,298 | 1 | referent | 1 | referent |
| Melanoma |  |  |  |  |  |  |
| Recipient | 506 | 135 | 2.74 | (2.31, 3.25) | 3.01 | (2.54, 3.56) |
| Non-recipient | 297,737 | 39,576 | 1 | referent | 1 | referent |
| Breast |  |  |  |  |  |  |
| Recipient | 786 | 146 | 2.15 | (1.83, 2.53) | 2.23 | (1.89, 2.62) |
| Non-recipient | 1,234,642 | 205,384 | 1 | referent | 1 | referent |
| Prostate |  |  |  |  |  |  |
| Recipient | 1,488 | 93 | 1.12 | (0.91, 1.37) | 1.06 | (0.87, 1.30) |
| Non-recipient | 1,234,762 | 84,511 | 1 | referent | 1 | referent |
| Bladder |  |  |  |  |  |  |
| Recipient | 324 | 140 | 1.83 | (1.55, 2.17) | 1.93 | (1.64, 2.28) |
| Non-recipient | 183,184 | 59,883 | 1 | referent | 1 | referent |
| Kidney |  |  |  |  |  |  |
| Recipient | 1,464 | 257 | 1.23 | (1.08, 1.39) | 1.18 | (1.04, 1.33) |
| Non-recipient | 202,867 | 58,090 | 1 | referent | 1 | referent |
| Thyroid |  |  |  |  |  |  |
| Recipient | 370 | 12 | 1.41 | (0.80, 2.48) | 1.08 | (0.61, 1.91) |
| Non-recipient | 179,847 | 7,623 | 1 | referent | 1 | referent |
| DLBCL |  |  |  |  |  |  |
| Recipient | 1,233 | 404 | 1.33 | (1.21, 1.47) | 1.24 | (1.12, 1.36) |
| Non-recipient | 113,569 | 47,180 | 1 | referent | 1 | referent |
| Myeloma |  |  |  |  |  |  |
| Recipient | 182 | 66 | 1.06 | (0.83, 1.35) | 1.14 | (0.90, 1.45) |
| Non-recipient | 92,900 | 49,509 | 1 | referent | 1 | referent |

Abbreviations: HR, hazard ratio; CI, confidence interval; aHR, adjusted hazard ratio; DLBCL, diffuse large B-cell lymphoma

\* Treatment information was available for all cancer registries for all years with the exception of Pennsylvania (data restricted to 1998-2013), Kentucky (2004-2013) and Illinois (2005-2013).

† Cox regression models were adjusted for sex, age (<40, 40-84 in 5 year increments, 85+), race (white, black, other), stage (local, regional, distant, unknown), and diagnosis year (1987-1991, 1992-1996, 1997-2001, 2002-2005, 2006-2009, 2010-2014). Results differ slightly from those in Table 2 because of the restriction to cancer registries and calendar years with available cancer treatment information.

‡ Models were adjusted with same adjustment variables as for HR1 plus the additional variables: surgery received (yes, no, unknown), radiotherapy received (yes, no, unknown), chemotherapy received (yes, no, unknown). Breast and prostate cancers were also adjusted for hormone therapy received (yes, no, unknown). DLBCL and myeloma were not adjusted for surgery, but were adjusted for immune therapy (yes, no, unknown).

**CNCR\_31782\_e.Supporting Information\_TABLE S2**: Association between transplant status and overall mortality

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Cancer site, and transplant status** | **Deaths** | **Mortality rate\*** | **HR** | **95% CI** | **aHR†** | **95%CI** |
| Oral cavity/pharynx |  |  |  |  |  |  |
| Recipient | 469 | 174.7 | 1.25 | (1.14, 1.36) | 1.76 | (1.61, 1.93) |
| Non-recipient | 128,242 | 131.7 | 1 | referent | 1 | referent |
| Colorectum |  |  |  |  |  |  |
| Recipient | 665 | 238.6 | 1.62 | (1.51, 1.75) | 2.32 | (2.15, 2.50) |
| Non-recipient | 650,204 | 133.5 | 1 | referent | 1 | referent |
| Esophagus |  |  |  |  |  |  |
| Recipient | 125 | 598.2 | 1.02 | (0.85, 1.21) | 1.37 | (1.15, 1.63) |
| Non-recipient | 76,791 | 518.9 | 1 | referent | 1 | referent |
| Stomach |  |  |  |  |  |  |
| Recipient | 208 | 646.6 | 1.39 | (1.21, 1.59) | 1.67 | (1.45, 1.91) |
| Non-recipient | 126,465 | 369.8 | 1 | referent | 1 | referent |
| Liver |  |  |  |  |  |  |
| Recipient | 165 | 548.3 | 0.86 | (0.74, 1.01) | 0.93 | (0.79, 1.08) |
| Non-recipient | 76,347 | 723.6 | 1 | referent | 1 | referent |
| Pancreas |  |  |  |  |  |  |
| Recipient | 222 | 1327.3 | 1.32 | (1.16, 1.50) | 1.54 | (1.35, 1.76) |
| Non-recipient | 176,922 | 969.5 | 1 | referent | 1 | referent |
| Larynx |  |  |  |  |  |  |
| Recipient | 123 | 244.7 | 1.73 | (0.87, 1.50) | 1.97 | (1.65, 2.35) |
| Non-recipient | 55,587 | 129.7 | 1 | referent | 1 | referent |
| Lung |  |  |  |  |  |  |
| Recipient | 1,733 | 687.5 | 1.21 | (1.15, 1.27) | 1.51 | (1.44, 1.58) |
| Non-recipient | 1,016,718 | 496.0 | 1 | referent | 1 | referent |
| Melanoma |  |  |  |  |  |  |
| Recipient | 325 | 156.8 | 3.02 | (2.71, 3.37) | 3.87 | (3.47, 4.31) |
| Non-recipient | 100,465 | 47.6 | 1 | referent | 1 | referent |
| Breast |  |  |  |  |  |  |
| Recipient | 429 | 123.8 | 2.18 | (1.98, 2.40) | 3.34 | (3.04, 3.67) |
| Non-recipient | 578,661 | 59.0 | 1 | referent | 1 | referent |
| Prostate |  |  |  |  |  |  |
| Recipient | 704 | 100.4 | 1.66 | (1.55, 1.79) | 2.68 | (2.49, 2.89) |
| Non-recipient | 635,351 | 68.9 | 1 | referent | 1 | referent |
| Bladder |  |  |  |  |  |  |
| Recipient | 256 | 267.0 | 1.75 | (1.55, 1.98) | 2.39 | (2.21, 2.71) |
| Non-recipient | 163,399 | 132.8 | 1 | referent | 1 | referent |
| Kidney |  |  |  |  |  |  |
| Recipient | 683 | 130.6 | 1.08 | (1.10, 1.16) | 1.85 | (1.72, 2.00) |
| Non-recipient | 117,007 | 111.4 | 1 | referent | 1 | referent |
| Thyroid |  |  |  |  |  |  |
| Recipient | 126 | 70.5 | 3.54 | (2.97, 4.22) | 5.19 | (4.35, 6.19) |
| Non-recipient | 23,523 | 20.2 | 1 | referent | 1 | referent |
| DLBCL |  |  |  |  |  |  |
| Recipient | 859 | 215.1 | 1.27 | (1.19, 1.36) | 1.98 | (1.85, 2.12) |
| Non-recipient | 81,453 | 155.5 | 1 | referent | 1 | referent |
| Myeloma |  |  |  |  |  |  |
| Recipient | 143 | 250.9 | 1.04 | (0.88, 1.22) | 1.60 | (1.35, 1.88) |
| Non-recipient | 83,283 | 242.7 | 1 | referent | 1 | referent |

Abbreviations: HR, hazard ratio; CI, confidence interval; aHR, adjusted hazard ratio; DLBCL, diffuse large B-cell lymphoma

\* Mortality rate per 1000 person-years.

† Cox regression models were adjusted for sex, age (<40, 40-84 in 5 year increments, 85+), race (white, black, other), stage (local, regional, distant, unknown), and diagnosis year (1987-1991, 1992-1996, 1997-2001, 2002-2005, 2006-2009, 2010-2014).

**CNCR\_31782\_e.Supporting Information\_TABLE S3**: Association between transplant status and cancer-specific mortality after 2001

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Cancer site, and transplant status** | **Cancer-specific deaths** | **Cancer-specific mortality rate\*** | **HR** | **95%CI** | **aHR** | **95%CI** |
| Oral Cavity and pharynx |  |  |  |  |  |  |
| Recipient | 127 | 111.5 | 1.05 | (0.89, 1.26) | 1.29 | (1.09, 1.54) |
| Non-recipient | 30,489 | 99.2 | 1 | referent | 1 | referent |
| Colon and rectum |  |  |  |  |  |  |
| Recipient | 231 | 150.4 | 1.40 | (1.23, 1.59) | 1.80 | (1.58, 2.05) |
| Non-recipient | 135,343 | 101.6 | 1 | referent | 1 | referent |
| Esophagus |  |  |  |  |  |  |
| Recipient | 71 | 517.8 | 0.97 | (0.77, 1.23) | 1.31 | (1.04, 1.66) |
| Non-recipient | 29,758 | 479.2 | 1 | referent | 1 | referent |
| Stomach |  |  |  |  |  |  |
| Recipient | 116 | 562.2 | 1.43 | (1.19, 1.72) | 1.53 | (1.27,1.83) |
| Non-recipient | 41,629 | 349.3 | 1 | referent | 1 | referent |
| Liver\* |  |  |  |  |  |  |
| Recipient | 81 | 340.6 | 0.71 | (0.57, 0.88) | 0.74 | (0.59, 0.92) |
| Non-recipient | 38,189 | 578.1 | 1 | referent | 1 | referent |
| Pancreas |  |  |  |  |  |  |
| Recipient | 149 | 1411.2 | 1.42 | (1.21, 1.67) | 1.49 | (1.27, 1.75) |
| Non-recipient | 81,389 | 902.6 | 1 | referent | 1 | referent |
| Larynx |  |  |  |  |  |  |
| Recipient | 27 | 95.9 | 0.88 | (0.60, 1.28) | 1.13 | (0.77, 1.64) |
| Non-recipient | 10,498 | 102.4 | 1 | referent | 1 | referent |
| Lung |  |  |  |  |  |  |
| Recipient | 930 | 559.1 | 1.10 | (1.03, 1.18) | 1.37 | (1.29, 1.46) |
| Non-recipient | 368,728 | 488.0 | 1 | referent | 1 | referent |
| Melanoma |  |  |  |  |  |  |
| Recipient | 85 | 81.7 | 2.63 | (2.13, 3.25) | 2.69 | (2.17, 3.33) |
| Non-recipient | 19,065 | 28.2 | 1 | referent | 1 | referent |
| Breast |  |  |  |  |  |  |
| Recipient | 101 | 54.6 | 1.72 | (1.42, 2.09) | 2.16 | (1.78, 2.63) |
| Non-recipient | 81,021 | 31.0 | 1 | referent | 1 | referent |
| Prostate |  |  |  |  |  |  |
| Recipient | 56 | 13.7 | 0.88 | (0.68, 1.15) | 1.09 | (0.84, 1.42) |
| Non-recipient | 42,387 | 15.5 | 1 | referent | 1 | referent |
| Bladder |  |  |  |  |  |  |
| Recipient | 109 | 201.0 | 1.52 | (1.26, 1.83) | 1.66 | (1.38, 2.01) |
| Non-recipient | 29,751 | 118.2 | 1 | referent | 1 | referent |
| Kidney |  |  |  |  |  |  |
| Recipient | 198 | 57.1 | 0.72 | (0.63, 0.83) | 1.45 | (1.26, 1.67) |
| Non-recipient | 30,046 | 75.7 | 1 | referent | 1 | referent |
| Thyroid |  |  |  |  |  |  |
| Recipient | 12 | 11.7 | 1.42 | (0.80, 2.50) | 1.94 | (1.10, 3.42) |
| Non-recipient | 3,546 | 8.3 | 1 | referent | 1 | referent |
| DLBCL |  |  |  |  |  |  |
| Recipient | 285 | 149.8 | 1.14 | (1.01, 1.28) | 1.66 | (1.48, 1.87) |
| Non-recipient | 22,138 | 119.6 | 1 | referent | 1 | referent |
| Myeloma |  |  |  |  |  |  |
| Recipient | 48 | 155.0 | 0.94 | (0.71, 1.25) | 1.29 | (0.97, 1.72) |
| Non-recipient | 23,943 | 162.8 | 1 | referent | 1 | referent |

Abbreviations: HR, hazard ratio; CI, confidence interval; aHR, adjusted hazard ratio; DLBCL, diffuse large B-cell lymphoma

\* Mortality rate per 1000 person-years.

† Cox regression models were adjusted for sex, age (<40, 40-84 in 5 year increments, 85+), race (white, black, other), stage (local, regional, distant, unknown), and diagnosis year (2002-2005, 2006-2009, 2010-2014).