**Supplementary Table 1.** ICD-9 and ICD-10 codes listed in records of outpatient and inpatient visits used to define risk factors

|  |  |
| --- | --- |
| **Risk factor** |  |
| Alcohol abuse | **ICD-9:** 2910, 2911, 2912, 2913, 2914, 2915, 2918, 29181, 29182, 29189, 2919, 30300, 30301, 30302, 30303, 30390, 30391, 30392, 30393, 30500, 30501, 30502, 30503, 5711, 5712, 5713, 4255, 5353, 7903, V113; **ICD-10:** K7581, E244, G312, G721, K7041, K852, K8520, K8521, K8522, K860, O354XX0, O354XX1, O354XX2, O354XX3, O354XX4, O354XX5, O354XX9, T518X1A, T518X1D, T518X1S, T518X3A, T518X3D, T518X3S, T518X4A, T518X4D, T518X4S, T5191XA, T5191XD, T5191XS, T5193XA, T5193XD, T5193XS, T5194XA, T5194XD, T5194XS, Z0283, Z6372, Z7141, Z7142, Z811, F1010, F10120, F10121, F10129, F1014, F10150, F10151, F10159, F10180, F10181, F10182, F10188, F1019, F1020, F1021, F10220, F10221, F10229, F10230, F10231, F10232, F10239, F1024, F10250, F10251, F10259, F1026, F1027, F10280, F10281, F10282, F10288, F1029, F10920, F10921, F10929, F1094, F10950, F10951, F10959, F1096, F1097, F10980, F10981, F10982, F10988, F1099, G621, I426, K2920, K2921, K700, K7010, K7011, K702, K7030, K7031, K7040, K709, O99310, O99311, O99312, O99313, O99314, O99315, P043, Q860, T518X2A, T518X2D, T518X2S, T5192XA, T5192XD, T5192XS, R780, Y900, Y901, Y902, Y903, Y904, Y905, Y906, Y907, Y908, Y909 |
| Smoking | **ICD-9:** 3051, 30510, 30511, 30512, 30513, V1582; **ICD-10:** O99330, O99331, O99332, O99333, O99334, O99335, P042, P9681, T65211A, T65211D, T65211S, T65213A, T65213D, T65213S, T65214A, T65214D, T65214S, T65221A, T65221D, T65221S, T65223A, T65223D, T65223S, T65224A, T65224D, T65224S, T65291A, T65291D, T65291S, T65293A, T65293D, T65293S, T65294A, T65294D, T65294S, Z5731, Z716, Z720, Z7722, Z812, F17220, F17221, F17223, F17228, F17229, F17290, F17291, F17293, F17298, F17299, T65212A, T65212D, T65212S, T65222A, T65222D, T65222S, T65292A, T65292D, T65292S |
| GERD | **ICD-9:** 530.81; **ICD-10:** K21.9 |
| *Helicobacter pylori* | **ICD-9:** 041.86; **ICD-10:** B96.81 |

ICD, International Classification of Diseases; GERD, gastroesophageal reflux disease

**Supplementary Table 2.** Incidence rates for esophageal and stomach cancers in HIV-infected and HIV-uninfected controls according to CD4 count

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | HIV- controls | HIV+ patients | |
| Outcome | | CD4≤200 | CD4>200 |
| Esophageal adenocarcinoma | |  |  |  |
|  | Rate\* (95% CI) | 12.3 (12.3-12.4) | 4.42 (4.41-4.43) | 7.59 (7.58-7.60) |
| Esophageal squamous cell carcinoma | |  |  |  |
|  | Rate\* (95% CI) | 4.20 (4.20- 4.20) | 10.8 (10.8-10.8) | 7.05 (7.03- 7.06) |
| Gastric cardia cancer | |  |  |  |
|  | Rate\* (95% CI) | 2.61 (2.61- 2.61) | 0.48 (0.47-0.48) | 2.71 (2.70- 2.72) |
| Gastric non-cardia cancer | |  |  |  |
|  | Rate\* (95% CI) | 3.06 (3.05-3.06) | 7.16 (7.15-7.17) | 2.71 (2.70-2.72) |

\*Incidence rate per 100,000 person-years.

**Supplementary Table 3.** Incidence rates for esophageal and stomach cancers in HIV-infected patients and HIV-uninfected controls according to percent viral load undetectable

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | HIV- controls | HIV+ patients | |
| Outcome | | VL undetectable <80% | VL undetectable ≥80% |
| Esophageal adenocarcinoma | |  |  |  |
|  | Rate\* (95% CI) | 12.3 (12.3-12.4) | 3.89 (3.88-3.90) | 7.47 (7.46-7.49) |
| Esophageal squamous cell carcinoma | |  |  |  |
|  | Rate\* (95% CI) | 4.20 (4.20- 4.20) | 8.34 (8.32-8.35) | 9.81 (9.80-9.82) |
| Gastric cardia cancer | |  |  |  |
|  | Rate\* (95% CI) | 2.61 (2.61- 2.61) | 1.09 (1.08-1.09) | 1.90 (1.90-1.91) |
| Gastric non-cardia cancer | |  |  |  |
|  | Rate\* (95% CI) | 3.06 (3.05-3.06) | 6.53 (6.51-6.54) | 3.81 (3.80-3.82) |

\*Incidence rate per 100,000 person-years.

**Supplementary Table 4.** Hazard ratios and 95% confidence intervals for the association between HIV infection and the risks of esophageal and stomach malignancies with infected patients stratified by CD4 count

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Outcome** |  |  | **Fully adjusted HR (95% CI)** | |
|  | **HIV+ patients with:** | **HIV- controls** | **Excluding BMI** | **Including BMI** |
| Esophageal adenocarcinoma1 | Nadir CD4≤200 | 1.00 (ref) | 1.16 (0.69 -1.95) | 1.21 (0.71 -2.05) |
| Nadir CD4>200 | 1.00 (ref) | 0.50 (0.24 -1.07) | 0.51 (0.24 -1.10) |
| Esophageal squamous cell carcinoma2 | Nadir CD4≤200 | 1.00 (ref) | 2.20 (1.35 -3.60) | 1.39 (0.84 -2.29) |
| Nadir CD4>200 | 1.00 (ref) | 0.75 (0.35 -1.60) | 0.56 (0.26 -1.20) |
| Gastric cardia cancer3 | Nadir CD4≤200 | 1.00 (ref) | 0.28 (0.04 -2.07) | 0.24 (0.03 -1.85) |
| Nadir CD4>200 | 1.00 (ref) | 1.42 (0.55 -3.66) | 1.31 (0.50 -3.44) |
| Gastric non-cardia cancer4 | Nadir CD4≤200 | 1.00 (ref) | 1.37 (0.73 -2.56) | 1.01 (0.53 -1.94) |
| Nadir CD4>200 | 1.00 (ref) | 0.57 (0.22 -1.45) | 0.46 (0.18 -1.18) |

1Adjusted for age (<40, 40-59, ≥60), race/ethnicity (white, black, other/unknown), GERD (ever, never), smoking (ever, never), and BMI (<25, 25-<30, ≥30, missing).

2Adjusted for age (<40, 40-59, ≥60), race/ethnicity (white, black, other/unknown), smoking (ever, never), alcohol abuse (yes, no), and BMI (<25, 25-<30, ≥30, missing).

3Adjusted for age (<40, 40-59, ≥60), race/ethnicity (white, black, other/unknown), GERD (ever, never), smoking (ever, never), and BMI (<25, 25-<30, ≥30, missing).

4Adjusted for age (<40, 40-59, ≥60), race/ethnicity (white, black, other/unknown), smoking (ever, never), *H. pylori* infection (yes, no), and BMI (<25, 25-<30, ≥30, missing).