**Supporting Info: Optimal Cutoff Concentration of Urinary Cyanoethyl Mercapturic Acid for Differentiating Cigarette Smokers from Nonsmokers**

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***Figure S1***: Flow chart showing the classification of smokers, nonsmokers, and tobacco nonusers in the study

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Characteristic**  | **Level** | **Nonsmokers N** | **Smokers N** | **Nonsmokers Median [25th %ile, 75th %ile]** | **Smokers Median [25th %ile, 75th %ile]** | **Nonsmokers GM [95%CI]** | **Smokers GM [95%CI]** |
|   | All | 3613 | 2090 | 1.37 [0.884, 2.26] | 145 [69.0, 240] | 1.70 [1.58, 1.83] | 107 [94.2, 122] |
| Sex | Male | 1716 | 1181 | 1.25 [0.813, 2.06] | 125 [54.0, 204] | 1.63 [1.49, 1.78] | 89.1 [76.2, 104] |
| Female | 1897 | 909 | 1.46 [0.956, 2.43] | 170 [86.6, 275] | 1.76 [1.61, 1.93] | 131 [113, 153] |
| Age | 21 – 39 | 1115 | 751 | 1.31 [0.826, 2.24] | 102 [34.9, 174] | 1.69 [1.51, 1.90] | 67.3 [54.3, 83.5] |
| 40 – 59 | 1149 | 846 | 1.42 [0.914, 2.39] | 181 [105, 278] | 1.81 [1.60, 2.05] | 148 [127, 173] |
| ≥60 | 1349 | 493 | 1.39 [0.899, 2.16] | 175 [101, 265] | 1.59 [1.46, 1.72] | 144 [126, 164] |
| Race/ Ethnicity | Non-Hispanic White | 1346 | 942 | 1.39 [0.894, 2.27] | 166 [85.5, 256] | 1.73 [1.58, 1.90] | 120 [101, 142] |
| Non-Hispanic Black | 717 | 577 | 1.36 [0.843, 2.53] | 133 [75.9, 216] | 1.86 [1.68, 2.05] | 118 [106, 131] |
| Hispanic | 968 | 358 | 1.28 [0.845, 1.95] | 71.3 [22.5, 148] | 1.51 [1.38, 1.65] | 53.3 [42.5, 66.7] |
| Other Race/Multi-Racial | 582 | 213 | 1.47 [0.916, 2.50] | 132 [73.2, 230] | 1.61 [1.46, 1.78] | 110 [85.3, 141] |

 ***Table S1***. Weighted geometric mean (95% CI) and median (IQR) urinary 2CyEMA [μg/g creatinine] in adult U.S. population by sex, age, race or ethnicity, and smoking status, based on NHANES 2011-2016 (N = 5,703).

Urinary 2CyEMA (ng/mL)

Serum Cotinine (ng/mL)

Creatine adj 2CyEMA

Serum Cotinine (ng/mL)

***Figure S2***. Weighted ROC curves for urinary 2CyEMA concentration and serum cotinine (left), and creatine adjusted 2CyEMA and serum cotinine (right) for exclusive cigarette smoker versus nonsmokers. The 2CyEMA cutoff levels were 7.32 ng/ml (sensitivity 0.933; specificity 0.926) and 11.4 µg/g creatinine (sensitivity 0.924; specificity 0.943)

***Table S2***. Weighted urinary 2CyEMA (µg/g creatinine) cutoff values to distinguish between smoker and nonsmoker by demographic subgroup for adult U.S. population based on NHANES 2011-2016.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **Cutoff (95%CI)** | **Sensitivity** | **Specificity** | **Youden's J Statistic** |
| Age 21 – 39 | 7.69 (3.51, 8.80) | 0.891 | 0.921 | 0.812 |
| Age 40 – 59 | 11.4 (9.37, 17.0) | 0.968 | 0.935 | 0.902 |
| Age ≥60 | 6.30 (6.30, 34.04) | 0.977 | 0.946 | 0.923 |
| Male | 9.37 (3.48, 13,94) | 0.916 | 0.928 | 0.845 |
| Female | 11.4 (6.30, 12.62) | 0.940 | 0.953 | 0.893 |
| Non-Hispanic White | 11.4 (6.30, 13.94) | 0.930 | 0.939 | 0.869 |
| Non-Hispanic Black | 11.4 (9.37, 27.91) | 0.976 | 0.917 | 0.893 |
| Hispanic | 6.30 (3.48, 8.49) | 0.879 | 0.940 | 0.820 |
| Other Race/Multi-Racial | 12.6 (6.30, 18.77) | 0.955 | 0.980 | 0.935 |