**Supplemental Table 1. ICD-9 and ICD-10 codes used to identify cause-specific emergency department visits.**

|  |  |  |
| --- | --- | --- |
| **Outcome** | **ICD-9 Codes** | **ICD-10 Codes** |
| All Cardiovascular Diseases | All ICD-9 codes listed below | All ICD-10 codes listed below |
| Hypertension | 401-405 | I10-I15 |
| Ischemic Heart Disease | 410-414 | I20-I25 |
| Dysrhythmia | 427 | I46-I49 |
| Congestive Heart Failure | 428 | I50 |
| Stroke | 433-437 | G45, I63-I67 |
| Peripheral Vascular Disease | 440-447 | I70-I79 |
| Myocardial Infarction | 410 | I21-I22 |

**Supplemental Table 2. Three-day distributed lag associations between grouped grasses, trees, and weed pollen concentrations and CVD emergency department visits during 1993-2018.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Group Grasses** | **Group Trees** | **Group Weeds** |
| **All Cardiovascular diseases** | 0.992 (0.987, 0.997) | 0.996 (0.991, 1.001) | 0.999 (0.994, 1.005) |
| **Hypertension** | 0.990 (0.978, 1.002) | 0.990 (0.980, 0.999) | 1.003 (0.996, 1.010) |
| **Ischemic heart disease** | 0.971 (0.951, 0.992) | 1.001 (0.987, 1.014) | 0.991 (0.976, 1.007) |
| **Myocardial infarction** | 0.984 (0.956, 1.013) | 1.004 (0.985, 1.022) | 0.991 (0.976, 1.007) |
| **Congestive heart failure** | 0.988 (0.959, 1.017) | 1.006 (0.993, 1.020) | 0.987, 0.972, 1.003) |
| **Periphreal Heart Disease** | 0.990 (0.925, 1.059) | 1.011 (0.965, 1.058) | 1.014 (0.975, 1.054) |
| **Stroke** | 0.983 (0.962, 1.005) | 0.989 (0.975, 1.003) | 1.000 (0.988, 1.013) |
| **Dysrhythmia** | 0.990 (0.971, 1.010) | 0.999 (0.987, 1.012) | 1.002 (0.991, 1.013) |

**Supplemental Figure 1. Day-of-year mean cardiovascular disease emergency department visits and mean pollen concentrations (grains/m3) by taxa in Atlanta over the 26-year study period**. Dashed lines indicate the seasonal period included for each taxa-specific analysis.

 

**Supplemental Figure 2. Spearman correlations among pollen taxa concentrations, air pollution, and meteorological factors.**



**Supplemental Figure 3. Nonlinear exposure response curves (0-99th percentile) for all cardiovascular disease emergency department visits and grouped trees, weeds, and grasses.** Dashed lines indicate the 5th, 50th, and 95th percentiles for within-season pollen concentrations.







**Supplemental Figure 4. Rate ratios for cardiovascular disease ED visits per standard deviation increase in taxa-specific pollen, controlling for ambient air pollutants (NO2, PM10, ozone) in the models one at a time.** Statistical significance is based on a type I error rate of 0.05.

