

Supplemental Table 1: Table of top PheWAS associations (raw  $p < 0.01$ ) including observed allelic ORs, disease prevalence (K), and estimate number of cases needed, assuming a balanced case-control design, to replicate with 80% power.

| <b>DISCRIPTION (ICD9/V CODE)</b>                                      | <b>Allelic OR</b> | <b>prevalence (K)</b> | <b>case size</b> |
|---|-------------------|-----------------------|------------------|
| Alcohol Cirrhosis Liver (571.2)                                       | 5.01              | 0.0025                | 30               |
| Crystal arthropathies (712)   | 1.53              | 0.055                 | 617              |
| Acute Kidney Failure W Lesion Of Tubular Necrosis (584.5)             | 4.41              | 0.0031                | 37               |
| Other Disorder Of Calcium Metabolism (275.49)                         | 1.57              | 0.045                 | 542              |
| Other specified disorders of nervous system (349.8)                   | 3.00              | 0.0043                | 75               |
| Chondrocalcinosis cause unspecified (712.3)                           | 1.53              | 0.050                 | 614              |
| Pulmonary Eosinophilia (518.3)  | 1.89              | 0.019                 | 257              |
| Staphylococcus Aureus Infection (041.11)                              | 1.79              | 0.024                 | 314              |
| Secundum Atrial Sept Defect (745.5)                                   | 2.26              | 0.010                 | 148              |
| Bulbus cordis anomalies and anomalies of cardiac septal closure (745) | 2.19              | 0.011                 | 163              |
| Intestinal malabsorption (579)  | 1.58              | 0.040                 | 538              |
| Histoplasmosis unspecified (115.9)                                    | 3.61              | 0.0038                | 52               |
| Benign neoplasm of other parts of digestive system (211)              | 0.81              | 0.40                  | 2803             |
| Irregular Menstruation (626.4)  | 1.30              | 0.12                  | 1732             |
| Benign Neoplasm Large Bowel (211.3)                                   | 0.81              | 0.38                  | 2781             |
| history of malignant neoplasm of other sites (V10.89)                 | 3.43              | 0.0025                | 58               |
| Other and unspecified alcohol dependence, episodic (303.92)           | 3.34              | 0.0032                | 61               |
| Otorrhea (388.6)  | 1.23              | 0.011                 | 2839             |
| Other closed fracture of upper end of humerus (812.09)                | 1.27              | 0.0046                | 2094             |
| Other Operations On Bones, Except Facial Bones (078.8)                | 1.04              | 0.072                 | 102762           |
| Malignant neoplasm of connective and other soft tissue (171)          | 2.84              | 0.0032                | 84               |
| Unspecified disorder of muscle, ligament, and fascia (728.9)          | 0.94              | 0.061                 | 29958            |
| Erythematous conditions (695)   | 1.27              | 0.17                  | 2130             |
| Adjustment Hearing Aid (V53.2)  | 0.70              | 0.081                 | 886              |
| Pulmonary Infiltrate (518.3)  | 1.87              | 0.017                 | 265              |
| Aftercare Following Surgery Sense Organs (V58.71)                     | 0.78              | 0.16                  | 1881             |
| Lipoma Intra-Abdominal (214.3)  | 0.95              | 0.0067                | 58457            |
| Anterior Wall Infarction Subsequent Care (410.12)                     | 2.25              | 0.0053                | 150              |
| Unspecified monoarthritis, lower leg (716.66)                         | 1.65              | 0.010                 | 428              |
| Fitting and adjustment of urinary devices (V53)                       | 0.82              | 0.44                  | 3348             |

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| Acute Dermatitis Due To Solar Radiation (692.72)                   | 1.55 | 0.027  | 571  |
| Other Malignant Neoplasms of Lymphoid and Histiocytic Tissue (202) | 0.63 | 0.0061 | 526  |
| Sprain Cruciate Lig Knee (844.2)                                   | 0.63 | 0.0061 | 526  |
| Chondrocalcinosis, unspecified, lower leg (712.36)                 | 1.63 | 0.026  | 462  |
| Disorders Of Sacrum (724.6)  | 1.29 | 0.090  | 1786 |
| Adrenogenital Disorders (255.2)                                    | 1.59 | 0.0072 | 510  |
| Tongue Disorder (529.9)  | 0.63 | 0.016  | 503  |
| Pure Hypercholesterolem (272)                                      | 0.83 | 0.82   | 3662 |
| Insect Bite Head-Infect (910.5)                                    | 1.19 | 0.0028 | 3806 |
| Histoplasmosis (115)   | 2.69 | 0.0049 | 95   |