

## Supplemental Materials

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**Table 1. Definition of Inclusion Criteria for Pneumonia and Urinary Tract Infection**

| <b>Inclusion criteria</b>  | <b>Definition</b>  |
|--|--|
| Pneumonia in the 3 days prior to and including index date                | ICD-9 Dx Codes:<br>{“480.0”, “480.1”, “480.2”, “480.3”, “480.8”, “480.9”, “481”, “482.0”, “482.1”, “482.2”, “482.3”, “482.30”, “482.31”, “482.32”, “482.39”, “482.4”, “482.40”, “482.41”, “482.42”, “482.49”, “482.8”, “482.81”, “482.82”, “482.83”, “482.84”, “482.89”, “482.9”, “483.0”, “483.1”, “483.8”, “484.1”, “484.3”, “484.5”, “484.6”, “484.7”, “484.8”, “485”, “486”, “487.0”, “507.0”, “507.1”, “507.8”} |
| Urinary tract infections in the 3 days prior to and including index date | ICD-9 Dx Codes:<br>{“590.0”, “590.01”, “590.1”, “590.10”, “595.0”, “595.1”, “595.2”, “595.3”, “595.4”, “595.8”, “595.81”, “595.82”, “595.89”, “595.9”, “599.0”}  |

**Table 2. Definition of Exclusion Criteria**

| Exclusion Criteria                    | Definition  |
|---------------------------------------|---|
| Prior history of self-harm behaviours | ICD-9 E-codes:<br>{ "E950", "E950.0", "E950.1", "E950.2", "E950.3", "E950.4", "E950.5", "E950.6", "E950.7", "E950.8", "E950.9", "E951", "E951.0", "E951.1", "E951.8", "E952", "E952.0", "E952.1", "E952.8", "E952.9", "E953", "E953.0", "E953.1", "E953.8", "E953.9", "E954", "E955", "E955.0", "E955.1", "E955.2", "E955.3", "E955.4", "E955.5", "E955.6", "E955.7", "E955.9", "E956", "E957", "E957.0", "E957.1", "E957.2", "E957.9", "E958", "E958.0", "E958.1", "E958.2", "E958.3", "E958.4", "E958.5", "E958.6", "E958.7", "E958.8", "E958.9", "E959" }  |
| HIV                                   | ICD-9 Dx codes:<br>{ "042", "079.53", "V08" }<br><br>Drugs:<br>{ "ABACAVIR SULFATE", "ABACAVIR SULFATE/DOLUTEGRAVIR SODIUM/LAMIVUDINE", "ABACAVIR SULFATE/LAMIVUDINE", "AMPRENAVIR/VITAMIN E", "AMPRENAVIR/VITAMIN E/PROPYLENE GLYCOL", "ATAZANAVIR SULFATE", "ATAZANAVIR SULFATE/COBICISTAT", "BICTEGRAVIR SODIUM/EMTRICITABINE/TENOFOVIR ALAFENAMIDE FUMAR", "DARUNAVIR ETH/COBICISTAT/EMTRICITABINE/TENOFOVIR ALAFENAMIDE", "DARUNAVIR ETHANOLATE", "DARUNAVIR ETHANOLATE/COBICISTAT", "DELAVIRDINE MESYLATE", "DIDANOSINE", "DIDANOSINE/CALCIUM CARBONATE/MAGNESIUM", "DIDANOSINE/SODIUM CITRATE", "EFAVIRENZ", "EFAVIRENZ/EMTRICITABINE/TENOFOVIR DISOPROXIL FUMARATE", "EFAVIRENZ/LAMIVUDINE/TENOFOVIR DISOPROXIL FUMARATE", "ELVITEGRAVIR/COBICISTAT/EMTRICITABINE/TENOFOVIR ALAFENAMIDE", "ELVITEGRAVIR/COBICISTAT/EMTRICITABINE/TENOFOVIR DISOPROXIL", "EMTRICITABINE", "EMTRICITABINE/TENOFOVIR ALAFENAMIDE FUMARATE", "EMTRICITABINE/TENOFOVIR DISOPROXIL FUMARATE", "ENFUVRTIDE", "ETRAVIRINE", "FOSAMPRENAVIR CALCIUM", "INDINAVIR SULFATE", "DOLUTEGRAVIR SODIUM/RILPIVIRINE HCL", "EMTRICITABINE/RILPIVIRINE HCL/TENOFOVIR ALAFENAMIDE FUMARATE", "EMTRICITABINE/RILPIVIRINE HCL/TENOFOVIR DISOPROXIL FUMARATE", "LOPINAVIR/RITONAVIR", "MARAVIROC", "NELFINAVIR MESYLATE", "NEVIRAPINE", "OMBITASVIR/PARITAPREVIR/RITONAVIR", "OMBITASVIR/PARITAPREVIR/RITONAVIR SODIUM", "RALTEGRAVIR POTASSIUM", "RILPIVIRINE HCL", "RITONAVIR", "ABACAVIR SULFATE/LAMIVUDINE/ZIDOVUDINE", "LAMIVUDINE/ZIDOVUDINE", "SAQUINAVIR", "SAQUINAVIR MESYLATE", "STAVUDINE", "TIPRANAVIR", "TIPRANAVIR/VITAMIN E TPGS", "ZALCITABINE", "ZIDOVUDINE" }  |
| Cancer                                | ICD-9 Dx codes:<br>{ "140", "140.0", "140.1", "140.3", "140.4", "140.5", "140.6", "140.8", "140.9", "141", "141.0", "141.1", "141.2", "141.3", "141.4", "141.5", "141.6", "141.8", "141.9", "142", "142.0", "142.1", "142.2", "142.8", "142.9", "143", "143.0", "143.1", "143.8", "143.9", "144", "144.0", "144.1", "144.8", "144.9", "145", "145.0", "145.1", "145.2", "145.3", "145.4", "145.5", "145.6", "145.8", "145.9", "146", "146.0", "146.1", "146.2", "146.3", "146.4", "146.5", "146.6", "146.7", "146.8", "146.9", "147", "147.0", "147.1", "147.2", "147.3", "147.8", "147.9", "148", "148.0", "148.1", "148.2", "148.3", "148.8", "148.9", "149", "149.0", "149.1", "149.8", "149.9", "150", "150.0", "150.1", "150.2", "150.3", "150.4", "150.5", "150.8", "150.9", "151", "151.0", "151.1", "151.2", "151.3", "151.4", "151.5", "151.6", "151.8", "151.9", "152", "152.0", "152.1", "152.2", "152.3", "152.8", "152.9", "153", "153.0", "153.1", "153.2", "153.3", "153.4", "153.5", "153.6", "153.7", "153.8", "153.9", "154", "154.0", "154.1", "154.2", "154.3", "154.8", "155", "155.0", "155.1", "155.2", "156", "156.0", "156.1", "156.2", "156.8", "156.9", "157", "157.0", "157.1", "157.2", "157.3", "157.4", "157.8", "157.9", "158", "158.0", "158.8", "158.9", "159", "159.0", "159.1", "159.8", "159.9", "160", "160.0", "160.1", "160.2", "160.3", "160.4", "160.5", "160.8", "160.9", "161", "161.0", "161.1", "161.2", "161.3", "161.8", "161.9", "162", "162.0", "162.2", "162.3", "162.4", "162.5", "162.8", "162.9", "163", "163.0", "163.1", "163.8", "163.9", "164", "164.0", "164.1", "164.2", "164.3", "164.8", "164.9", "165", "165.0", "165.8", "165.9", "170", "170.0", "170.1", "170.2", "170.3", "170.4", "170.5", "170.6", "170.7", "170.8", "170.9", "171", "171.0", "171.2", "171.3", "171.4", "171.5", "171.6", "171.7", "171.8", "171.9", "172", "172.0", "172.1", "172.2", "172.3", "172.4", "172.5", "172.6", "172.7", "172.8", "172.9", "173", "173.0", "173.00", "173.01", "173.02", "173.09", "173.1", "173.10", "173.11", "173.12", "173.19", "173.2", "173.20", "173.21", "173.22", "173.29", "173.3", "173.30", "173.31", "173.32", "173.39", "173.4", "173.40", "173.41", "173.42", "173.49", "173.5", "173.51", "173.52", "173.59", "173.6", "173.60", "173.61", "173.62", "173.69", "173.7", "173.70", "173.71", "173.72", "173.79", "173.8", "173.80", "173.81", "173.82", "173.89", "173.9", "173.90", "173.91", "173.92", "173.99", "174", "174.0", "174.1", "174.2", "174.3", "174.4", "174.5", "174.6", "174.8", "174.9", "175", "175.0", "175.9", "176", "176.0", "176.1", "176.2", "176.3", "176.4", "176.5", "176.8", "176.9", "179", "180", "180.0", "180.1", "180.8", "180.9", "181", "182", "182.0", "182.1", "182.8", "183", "183.0", "183.2", "183.3", "183.4", "183.5", "183.8", "183.9", "184", "184.0", "184.1", "184.2", "184.3", "184.4", "184.8", "184.9", "185", "186", "186.0", "186.9", "187", "187.1", "187.2", "187.3", "187.4", "187.5", |

|   |
|---|
| <p> "187.6", "187.7", "187.8", "187.9", "188", "188.0", "188.1", "188.2", "188.3", "188.4", "188.5", "188.6",<br/> "188.7", "188.8", "188.9", "189", "189.0", "189.1", "189.2", "189.3", "189.4", "189.8", "189.9", "190",<br/> "190.0", "190.1", "190.2", "190.3", "190.4", "190.5", "190.6", "190.7", "190.8", "190.9", "191", "191.0",<br/> "191.1", "191.2", "191.3", "191.4", "191.5", "191.6", "191.7", "191.8", "191.9", "192", "192.0", "192.1",<br/> "192.2", "192.3", "192.8", "192.9", "193", "194", "194.0", "194.1", "194.3", "194.4", "194.5", "194.6",<br/> "194.8", "194.9", "195", "195.0", "195.1", "195.2", "195.3", "195.4", "195.5", "195.8", "196", "196.0",<br/> "196.1", "196.2", "196.3", "196.5", "196.6", "196.8", "196.9", "197", "197.0", "197.1", "197.2", "197.3",<br/> "197.4", "197.5", "197.6", "197.7", "197.8", "198", "198.0", "198.1", "198.2", "198.3", "198.4", "198.5",<br/> "198.6", "198.7", "198.8", "198.81", "198.82", "198.89", "199", "199.0", "199.1", "199.2", "200",<br/> "200.0", "200.00", "200.01", "200.02", "200.03", "200.04", "200.05", "200.06", "200.07", "200.08",<br/> "200.1", "200.10", "200.11", "200.12", "200.13", "200.14", "200.15", "200.16", "200.17", "200.18",<br/> "200.2", "200.20", "200.21", "200.22", "200.23", "200.24", "200.25", "200.27", "200.28",<br/> "200.3", "200.30", "200.31", "200.32", "200.33", "200.34", "200.35", "200.36", "200.37", "200.38",<br/> "200.4", "200.40", "200.41", "200.42", "200.43", "200.44", "200.45", "200.46", "200.47", "200.48",<br/> "200.5", "200.50", "200.51", "200.52", "200.53", "200.54", "200.55", "200.56", "200.57", "200.58",<br/> "200.6", "200.60", "200.61", "200.62", "200.63", "200.64", "200.65", "200.66", "200.67", "200.68",<br/> "200.7", "200.70", "200.71", "200.72", "200.73", "200.74", "200.75", "200.76", "200.77", "200.78",<br/> "200.8", "200.80", "200.81", "200.82", "200.83", "200.84", "200.85", "200.86", "200.87", "200.88",<br/> "201", "201.0", "201.00", "201.01", "201.02", "201.03", "201.04", "201.05", "201.06", "201.07",<br/> "201.08", "201.1", "201.10", "201.11", "201.12", "201.13", "201.14", "201.15", "201.16", "201.17",<br/> "201.18", "201.2", "201.20", "201.21", "201.22", "201.23", "201.24", "201.25", "201.26", "201.27",<br/> "201.28", "201.4", "201.40", "201.41", "201.42", "201.43", "201.44", "201.45", "201.46", "201.47",<br/> "201.48", "201.5", "201.50", "201.51", "201.52", "201.53", "201.54", "201.55", "201.56", "201.57",<br/> "201.58", "201.6", "201.60", "201.61", "201.62", "201.63", "201.64", "201.65", "201.66", "201.67",<br/> "201.68", "201.7", "201.70", "201.71", "201.72", "201.73", "201.74", "201.75", "201.76", "201.77",<br/> "201.78", "201.9", "201.90", "201.91", "201.92", "201.93", "201.94", "201.95", "201.96", "201.97",<br/> "201.98", "202", "202.0", "202.00", "202.01", "202.02", "202.03", "202.04", "202.05", "202.06",<br/> "202.07", "202.08", "202.1", "202.10", "202.11", "202.12", "202.13", "202.14", "202.15", "202.16",<br/> "202.17", "202.18", "202.2", "202.20", "202.21", "202.22", "202.23", "202.24", "202.25", "202.26",<br/> "202.27", "202.28", "202.3", "202.30", "202.31", "202.32", "202.33", "202.34", "202.35", "202.36",<br/> "202.37", "202.38", "202.4", "202.40", "202.41", "202.42", "202.43", "202.44", "202.45", "202.46",<br/> "202.47", "202.48", "202.5", "202.50", "202.51", "202.52", "202.53", "202.54", "202.55", "202.56",<br/> "202.57", "202.58", "202.6", "202.60", "202.61", "202.62", "202.63", "202.64", "202.65", "202.66",<br/> "202.67", "202.68", "202.7", "202.70", "202.71", "202.72", "202.73", "202.74", "202.75", "202.76",<br/> "202.77", "202.78", "202.8", "202.80", "202.81", "202.82", "202.83", "202.84", "202.85", "202.86",<br/> "202.87", "202.88", "202.9", "202.90", "202.91", "202.92", "202.93", "202.94", "202.95", "202.96",<br/> "202.97", "202.98", "203", "203.0", "203.00", "203.01", "203.02", "203.1", "203.10", "203.11",<br/> "203.12", "203.8", "203.80", "203.81", "203.82", "204", "204.0", "204.00", "204.01", "204.02", "204.1",<br/> "204.10", "204.11", "204.12", "204.2", "204.20", "204.21", "204.22", "204.8", "204.80", "204.81",<br/> "204.82", "204.9", "204.90", "204.91", "204.92", "205", "205.0", "205.00", "205.01", "205.02", "205.1",<br/> "205.10", "205.11", "205.12", "205.2", "205.20", "205.21", "205.22", "205.3", "205.30", "205.31",<br/> "205.32", "205.8", "205.80", "205.81", "205.82", "205.9", "205.90", "205.91", "205.92", "206", "206.0",<br/> "206.00", "206.01", "206.02", "206.1", "206.10", "206.11", "206.12", "206.2", "206.20", "206.21",<br/> "206.22", "206.8", "206.80", "206.81", "206.82", "206.9", "206.90", "206.91", "206.92", "207", "207.0",<br/> "207.00", "207.01", "207.02", "207.1", "207.10", "207.11", "207.12", "207.2", "207.20", "207.21",<br/> "207.22", "207.8", "207.80", "207.81", "207.82", "208", "208.0", "208.00", "208.01", "208.02", "208.1",<br/> "208.10", "208.11", "208.12", "208.2", "208.20", "208.21", "208.22", "208.8", "208.80", "208.81",<br/> "208.82", "208.9", "208.90", "208.91", "208.92", "230", "230.0", "230.1", "230.2", "230.3", "230.4",<br/> "230.5", "230.6", "230.7", "230.8", "230.9", "231", "231.0", "231.1", "231.2", "231.8", "231.9", "232",<br/> "232.0", "232.1", "232.2", "232.3", "232.4", "232.5", "232.6", "232.7", "232.8", "232.9", "233", "233.0",<br/> "233.1", "233.2", "233.3", "233.30", "233.31", "233.32", "233.39", "233.4", "233.5", "233.6", "233.7",<br/> "233.9", "234", "234.0", "234.8", "234.9", "235", "235.0", "235.1", "235.2", "235.3", "235.4", "235.5",<br/> "235.6", "235.7", "235.8", "235.9", "236", "236.0", "236.1", "236.2", "236.3", "236.4", "236.5", "236.6",<br/> "236.7", "236.9", "236.90", "236.91", "236.99", "237", "237.0", "237.1", "237.2", "237.3", "237.4",<br/> "237.5", "237.6", "237.7", "237.70", "237.71", "237.72", "237.73", "237.79", "237.9", "238", "238.0",<br/> "238.1", "238.2", "238.3", "238.4", "238.5", "238.6", "238.7", "238.71", "238.72", "238.73", "238.74",<br/> "238.75", "238.76", "238.77", "238.79", "238.8", "238.9", "239", "239.0", "239.1", "239.2", "239.3",<br/> "239.4", "239.5", "239.6", "239.7", "239.8", "239.81", "239.89", "239.9"} </p> |
|---|

Abbreviations: HIV, human immunodeficiency virus.

**Table 3. Definition of Covariates**

| Covariates                                | Definitions   |
|---|---|
| <b>Mental disorders</b>                   |   |
| Anxiety disorder                          | ICD-9 Dx codes:<br>{“300.0”, “300.00”, “300.01”, “300.02”, “300.09”, “300.2”, “300.20”, “300.21”, “300.22”, “300.23”, “300.29”, “300.3” }   |
| Depression                                | ICD-9 Dx codes:<br>{“293.83”, “296.90”, “309.28”, “311”, “296.2”, “296.20”, “296.21”, “296.22”, “296.23”, “296.24”, “296.25”, “296.26”, “296.3”, “296.30”, “296.31”, “296.32”, “296.33”, “296.34”, “296.35”, “296.36”, “298.0”, “300.4”, “309.0”, “309.1” }   |
| Sleep disorder                            | ICD-9 Dx codes:<br>{ “307.4”, “307.40”, “307.41”, “307.42”, “307.43”, “307.44”, “307.45”, “307.46”, “307.47”, “307.48”, “307.49”, “347.0”, “347.00”, “347.01”, “347.1”, “347.10”, “347.11”, “780.5”, “780.50”, “780.51”, “780.52”, “780.53”, “780.54”, “780.55”, “780.56”, “780.57”, “780.58”, “780.59” }   |
| Psychotic disorders                       | ICD-9 Dx codes:<br>{ “290.8”, “290.9”, “295.0”, “295.00”, “295.01”, “295.02”, “295.03”, “295.04”, “295.05”, “295.1”, “295.10”, “295.11”, “295.12”, “295.13”, “295.14”, “295.15”, “295.2”, “295.20”, “295.21”, “295.22”, “295.23”, “295.24”, “295.25”, “295.3”, “295.30”, “295.31”, “295.32”, “295.33”, “295.34”, “295.35”, “295.4”, “295.40”, “295.41”, “295.42”, “295.43”, “295.44”, “295.45”, “295.5”, “295.50”, “295.51”, “295.52”, “295.53”, “295.54”, “295.55”, “295.6”, “295.60”, “295.61”, “295.62”, “295.63”, “295.64”, “295.65”, “295.7”, “295.70”, “295.71”, “295.72”, “295.73”, “295.74”, “295.75”, “295.8”, “295.80”, “295.81”, “295.82”, “295.83”, “295.84”, “295.85”, “295.9”, “295.90”, “295.91”, “295.92”, “295.93”, “295.94”, “295.95”, “297.0”, “297.1”, “297.2”, “297.3”, “297.8”, “297.9”, “298.1”, “298.2”, “298.3”, “298.4”, “298.8”, “298.9”, “299.0”, “299.00”, “299.01”, “299.1”, “299.10”, “299.11”, “299.8”, “299.80”, “299.81”, “299.9”, “299.90”, “299.91”, “780.1” }  |
| Mania                                     | ICD-9 Dx codes:<br>{ “296.0”, “296.00”, “296.01”, “296.02”, “296.03”, “296.04”, “296.05”, “296.06”, “296.1”, “296.10”, “296.11”, “296.12”, “296.13”, “296.14”, “296.15”, “296.16”, “296.4”, “296.40”, “296.41”, “296.42”, “296.43”, “296.44”, “296.45”, “296.46”, “296.5”, “296.50”, “296.51”, “296.52”, “296.53”, “296.54”, “296.55”, “296.56”, “296.6”, “296.60”, “296.61”, “296.62”, “296.63”, “296.64”, “296.65”, “296.66”, “296.7”, “296.8”, “296.80”, “296.81”, “296.82”, “296.89” }  |
| Attention-deficit/ hyperactivity disorder | ICD-9 Dx codes:<br>{ “312.0”, “312.00”, “312.01”, “312.02”, “312.03”, “312.1”, “312.10”, “312.11”, “312.12”, “312.13”, “312.2”, “312.20”, “312.21”, “312.22”, “312.23”, “312.3”, “312.30”, “312.31”, “312.32”, “312.33”, “312.34”, “312.35”, “312.39”, “312.4”, “312.8”, “312.81”, “312.82”, “312.89”, “312.9”, “314.0”, “314.00”, “314.01”, “314.1”, “314.2”, “314.8”, “314.9” }   |
| Delirium                                  | ICD-9 Dx codes:<br>{ “290.11”, “290.41”, “292.81”, “349.82”, “290.3”, “291.0”, “293.0”, “293.1”, “293.8”, “293.81”, “293.82”, “293.83”, “293.84”, “293.89”, “293.9”, “348.3”, “348.30”, “348.31”, “348.39” }  |
| Dementia                                  | ICD-9 Dx codes:<br>{ “290.0”, “290.11”, “290.12”, “290.3”, “290.40”, “290.41”, “290.42”, “290.43”, “290.8”, “292.82”, “294.0”, “294.9”, “330.3”, “331.0”, “331.1”, “331.3”, “331.6”, “331.8”, “331.82”, “331.83”, “290.1”, “290.10”, “290.13”, “290.2”, “290.20”, “290.21”, “290.4”, “290.9”, “294.1”, “294.10”, “294.11”, “294.2”, “294.20”, “294.21”, “294.8”, “330.0”, “330.1”, “330.2”, “330.8”, “330.9”, “331.11”, “331.19”, “331.2”, “331.4”, “331.5”, “331.7”, “331.81”, “331.89”, “331.9” }   |
| Substance Abuse                           | ICD-9 Dx codes:<br>{ “305.1”, “970.1”, “291.0”, “291.2”, “291.4”, “291.81”, “292.0”, “292.12”, “292.2”, “292.8”, “292.82”, “292.83”, “292.84”, “292.85”, “292.89”, “303.0”, “303.03”, “303.90”, “303.92”, “303.93”, “304.00”, “304.01”, “304.02”, “304.03”, “304.1”, “304.11”, “304.13”, “304.21”, “304.32”, “304.41”, “304.42”, “304.43”, “304.5”, “304.51”, “304.63”, “304.7”, “304.8”, “304.80”, “304.82”, “304.9”, “304.90”, “304.91”, “304.92”, “305.0”, “305.00”, “305.01”, “305.02”, “305.2”, “305.21”, “305.22”, “305.23”, “305.3”, “305.30”, “305.33”, “305.40”, “305.41”, “305.50”, “305.51”, “305.52”, “305.6”, “305.60”, “305.62”, “305.72”, “305.80”, “305.9”, “305.90”, “305.91”, “305.92”, “305.93”, “357.5”, “425.5”, “571.0”, “571.2”, “648.3”, “648.30”, “648.32”, “965.00”, “965.02”, “967.0”, “967.2”, “967.3”, “967.5”, “967.9”, “969.73”, “969.79”, “V11.3”, “291.1”, “291.3”, “291.5”, “291.8”, “291.82”, “291.89”, “291.9”, “292.1”, “292.11”, “292.81”, “292.9”, “303.00”, “303.01”, “303.02”, “303.9”, “303.91”, “304.0”, “304.10”, “304.12”, “304.2”, “304.20”, “304.22”, “304.23”, “304.3”, “304.30”, “304.31”, “304.33”, “304.4”, “304.40”, “304.50”, “304.52”, “304.53”, “304.6”, “304.60”, “304.61”, “304.62”, “304.70”, “304.71”, “304.72”, “304.73”, “304.81”, “304.83”, “304.93”, “305.03”, “305.20”, “305.31”, “305.32”, “305.4”, “305.42”, “305.43”, “305.5”, “305.53”, “305.61”, “305.63”, “305.7”, “305.70”, “305.71”, “305.73”, “305.8”, “305.81”, “305.82”, “305.83”, “571.1”, “571.3”, “648.31”, “648.33”, “648.34”, “965.0”, “965.01”, “965.09”, “967”, “967.1”, “967.4”, “967.6”, “967.8”, “969.4”, “969.5”, “969.6”, “969.72”, “970.81”, “E860.0” } |
| Personality disorders                     | ICD-9 Dx codes:<br>{“301.0”, “301.1”, “301.10”, “301.11”, “301.12”, “301.13”, “301.2”, “301.20”, “301.21”, “301.22”, “301.3”, “301.4”, “301.5”, “301.50”, “301.51”, “301.59”, “301.6”, “301.7”, “301.8”, “301.81”, “301.82”, “301.83”, “301.84”, “301.89”, “301.9” }  |

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| Adjustment reaction with disturbance other than depressed mood | ICD-9 Dx codes:<br>{“309.2”, “309.21”, “309.22”, “309.23”, “309.24”, “309.28”, “309.29”, “309.3”, “309.4”, “309.8”, “309.81”, “309.82”, “309.83”, “309.89”, “309.9”}  |
| Other mental disorder  | ICD-9 Dx codes:<br>{ “300.5”, “300.7”, “300.6”, “300.1”, “300.10”, “300.11”, “300.12”, “300.13”, “300.14”, “300.15”, “300.16”, “300.19”, “300.8”, “300.81”, “300.82”, “300.89”, “302.0”, “302.1”, “302.2”, “302.3”, “302.4”, “302.5”, “302.50”, “302.51”, “302.52”, “302.53”, “302.6”, “302.7”, “302.70”, “302.71”, “302.72”, “302.73”, “302.74”, “302.75”, “302.76”, “302.79”, “302.8”, “302.81”, “302.82”, “302.83”, “302.84”, “302.85”, “302.89”, “302.9”, “306.0”, “306.1”, “306.2”, “306.3”, “306.4”, “306.5”, “306.50”, “306.51”, “306.52”, “306.53”, “306.59”, “306.6”, “306.7”, “306.8”, “306.9”, “307.0”, “307.1”, “307.2”, “307.20”, “307.21”, “307.22”, “307.23”, “307.3”, “307.5”, “307.50”, “307.51”, “307.52”, “307.53”, “307.54”, “307.59”, “307.6”, “307.7”, “307.8”, “307.80”, “307.81”, “307.89”, “307.9”, “308.0”, “308.1”, “308.2”, “308.3”, “308.4”, “308.9”, “310.0”, “310.1”, “310.2”, “310.8”, “310.81”, “310.89”, “310.9”, “313.0”, “313.1”, “313.2”, “313.21”, “313.22”, “313.23”, “313.3”, “313.8”, “313.81”, “313.82”, “313.83”, “313.89”, “313.9”, “315.0”, “315.00”, “315.01”, “315.02”, “315.09”, “315.1”, “315.2”, “315.3”, “315.31”, “315.32”, “315.34”, “315.35”, “315.39”, “315.4”, “315.5”, “315.8”, “315.9”, “300.9” } |
| <b>Neurological disorders</b>                                  |   |
| Seizure /Epilepsy  | ICD-9 Dx codes:<br>{ “345”, “345.0”, “345.00”, “345.01”, “345.1”, “345.10”, “345.11”, “345.2”, “345.3”, “345.4”, “345.40”, “345.41”, “345.5”, “345.50”, “345.51”, “345.6”, “345.60”, “345.61”, “345.7”, “345.70”, “345.71”, “345.8”, “345.80”, “345.81”, “345.9”, “345.90”, “345.91”, “780.3”, “780.31”, “780.32”, “780.39”, “780.33” }   |
| Peripheral neuropathy and neuropathic pain                     | ICD-9 Dx codes:<br>{“336.9”, “341.9”, “729.2”, “955.5”, “955.6”, “955.7”, “337.1”, “357.81”, “951.4”, “953.4”, “337.2”, “337.20”, “337.21”, “337.22”, “337.29”, “350.1”, “350.2”, “350.8”, “350.9”, “351.0”, “351.1”, “351.8”, “351.9”, “353.0”, “353.1”, “353.2”, “353.3”, “353.4”, “353.5”, “353.6”, “353.8”, “353.9”, “354.0”, “354.1”, “354.2”, “354.3”, “354.4”, “354.5”, “354.8”, “354.9”, “355.0”, “355.1”, “355.2”, “355.3”, “355.4”, “355.5”, “355.6”, “355.7”, “355.71”, “355.79”, “355.8”, “355.9”, “356.0”, “356.1”, “356.2”, “356.3”, “356.4”, “356.8”, “356.9”, “952.0”, “952.00”, “952.01”, “952.02”, “952.03”, “952.04”, “952.05”, “952.06”, “952.07”, “952.08”, “952.09”, “952.1”, “952.10”, “952.11”, “952.12”, “952.13”, “952.14”, “952.15”, “952.16”, “952.17”, “952.18”, “952.19”, “952.2”, “952.3”, “952.4”, “952.8”, “952.9”, “053.12”}  |
| Migraine   | ICD-9 Dx codes:<br>{ “346.0”, “346.00”, “346.01”, “346.02”, “346.03”, “346.1”, “346.10”, “346.11”, “346.12”, “346.13”, “346.2”, “346.20”, “346.21”, “346.22”, “346.23”, “346.3”, “346.30”, “346.31”, “346.32”, “346.33”, “346.4”, “346.40”, “346.41”, “346.42”, “346.43”, “346.5”, “346.50”, “346.51”, “346.52”, “346.53”, “346.6”, “346.60”, “346.61”, “346.62”, “346.63”, “346.7”, “346.70”, “346.71”, “346.72”, “346.73”, “346.8”, “346.80”, “346.81”, “346.82”, “346.83”, “346.9”, “346.90”, “346.91”, “346.92”, “346.93” }   |
| Parkinson disease  | ICD-9 Dx codes:<br>{“332.0”, “332.1”, “332”}  |
| Multiple sclerosis   | ICD-9 Dx codes:<br>{“340”}<br><br>Drugs:<br>{“ALEMTUZUMAB”, “CLADRIBINE”, “DIMETHYL FUMARATE”, “DIROXIMEL FUMARATE”, “FINGOLIMOD HCL”, “GLATIRAMER ACETATE”, “INTERFERON BETA-1A”, “INTERFERON BETA-1A/ALBUMIN HUMAN”, “INTERFERON BETA-1B”, “MITOXANTRONE HCL”, “NATALIZUMAB”, “OCRELIZUMAB”, “OFATUMUMAB”, “PEGINTERFERON BETA-1A”, “SIPONIMOD”, “TERIFLUNOMIDE”}   |
| <b>Other comorbidities</b>                                     |   |
| Congestive heart failure                                       | ICD-9 Dx Codes:<br>{ “398.91”, “402.01”, “402.11”, “402.91”, “404.01”, “404.03”, “404.11”, “404.13”, “404.93”, “428.0”, “428.1”, “428.2”, “428.20”, “428.21”, “428.22”, “428.23”, “428.3”, “428.30”, “428.31”, “428.32”, “428.33”, “428.4”, “428.40”, “428.41”, “428.42”, “428.43”, “428.9”}  |
| Ischemic heart disease   | ICD-9 Dx Codes:<br>{“410.0”, “410.00”, “410.01”, “410.02”, “410.1”, “410.10”, “410.11”, “410.12”, “410.2”, “410.20”, “410.21”, “410.22”, “410.3”, “410.30”, “410.31”, “410.32”, “410.4”, “410.40”, “410.41”, “410.42”, “410.5”, “410.50”, “410.51”, “410.52”, “410.6”, “410.60”, “410.61”, “410.62”, “410.7”, “410.70”, “410.71”, “410.72”, “410.8”, “410.80”, “410.81”, “410.82”, “410.9”, “410.90”, “410.91”, “410.92”, “411.0”, “411.1”, “411.8”, “411.81”, “411.89”, “412”, “413.0”, “413.1”, “413.9”, “414.0”, “414.00”, “414.01”, “414.02”, “414.03”, “414.04”, “414.05”, “414.06”, “414.07”, “414.1”, “414.10”, “414.11”, “414.12”, “414.19”, “414.2”, “414.3”, “414.4”, “414.8”, “414.9”}   |
| Any stroke (ischemic, hemorrhagic)                             | ICD-9 Dx Codes:<br>{“430”, “431”, “433.0”, “433.2”, “433.20”, “433.3”, “433.90”, “434.0”, “434.10”, “434.90”, “434.91”, “436”, “433.00”, “433.01”, “433.1”, “433.10”, “433.11”, “433.21”, “433.30”, “433.31”, “433.8”, “433.80”, “433.81”, “433.9”, “433.91”, “434.00”, “434.01”, “434.1”, “434.11”, “434.9”}   |
| Atrial fibrillation  | ICD-9 Dx codes:<br>{“427.3”, “427.31”, “427.32”}  |

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| Common autoimmune disorders | ICD-9 codes:<br>{ "136.1", "242", "242.01", "281.0", "282", "283.0", "340", "357.0", "358.0", "364.01", "446.7", "555.2", "555.9", "696", "710.2", "710.4", "720.0", "245.2", "364.00", "443.1", "446", "446.1", "446.2", "446.21", "446.29", "446.4", "446.5", "555.0", "555.1", "579.0", "694.4", "704.01", "710.0", "710.1", "710.3", "714", "725", "696.0", "696.1", "696.2", "696.3", "696.4", "696.5", "696.8", "714.0", "714.1", "714.2", "714.4", "714.8", "714.81", "714.89", "714.9", "358.00", "358.01", "446.0", "446.20", "556.0", "556.1", "556.2", "556.3", "556.4", "556.5", "556.6", "556.8", "556.9", "694.5", "694.6", "694.60", "694.61" }  |
| Diabetes                    | ICD-9 Dx Codes:<br>{ "250.0", "250.00", "250.01", "250.02", "250.03", "250.1", "250.10", "250.11", "250.12", "250.13", "250.2", "250.20", "250.21", "250.22", "250.23", "250.3", "250.30", "250.31", "250.32", "250.33", "250.4", "250.40", "250.41", "250.42", "250.43", "250.5", "250.50", "250.51", "250.52", "250.53", "250.6", "250.60", "250.61", "250.62", "250.63", "250.7", "250.70", "250.71", "250.72", "250.73", "250.8", "250.80", "250.81", "250.82", "250.83", "250.9", "250.90", "250.91", "250.92", "250.93" }   |
| Skin disorders              | ICD-9 Dx Codes:<br>{ "V19.4", "680", "680.0", "680.1", "680.2", "680.3", "680.4", "680.5", "680.6", "680.7", "680.8", "680.9", "681", "681.0", "681.00", "681.01", "681.02", "681.1", "681.10", "681.11", "681.1", "682", "682.0", "682.1", "682.2", "682.3", "682.4", "682.5", "682.6", "682.7", "682.8", "682.9", "684", "685", "685.0", "685.1", "686", "686.0", "686.00", "686.01", "686.09", "686.1", "686.8", "686.9", "690", "690.1", "690.10", "690.11", "690.12", "690.18", "690.8", "691", "691.0", "691.8", "692", "692.0", "692.1", "692.2", "692.3", "692.4", "692.5", "692.6", "692.7", "692.70", "692.71", "692.72", "692.73", "692.74", "692.75", "692.76", "692.77", "692.79", "692.8", "692.81", "692.82", "692.83", "692.84", "692.89", "692.9", "693", "693.0", "693.1", "693.8", "693.9", "694", "694.0", "694.1", "694.2", "694.3", "694.4", "694.5", "694.6", "694.60", "694.61", "694.8", "694.9", "695", "695.0", "695.1", "695.10", "695.11", "695.12", "695.13", "695.14", "695.15", "695.19", "695.2", "695.3", "695.4", "695.5", "695.50", "695.51", "695.52", "695.53", "695.54", "695.55", "695.56", "695.57", "695.58", "695.59", "695.8", "695.81", "695.89", "695.9", "696", "696.0", "696.1", "696.2", "696.3", "696.4", "696.5", "696.8", "697", "697.0", "697.1", "697.8", "697.9", "698", "698.0", "698.1", "698.2", "698.3", "698.4", "698.8", "698.9", "700", "701", "701.0", "701.1", "701.2", "701.3", "701.4", "701.5", "701.8", "701.9", "702", "702.0", "702.1", "702.11", "702.19", "702.8", "703", "703.0", "703.8", "703.9", "704", "704.0", "704.00", "704.01", "704.02", "704.09", "704.1", "704.2", "704.3", "704.4", "704.41", "704.42", "704.8", "704.9", "705", "705.0", "705.1", "705.2", "705.21", "705.22", "705.8", "705.81", "705.82", "705.83", "705.89", "705.9", "706", "706.0", "706.1", "706.2", "706.3", "706.8", "706.9", "707", "707.0", "707.00", "707.01", "707.02", "707.03", "707.04", "707.05", "707.06", "707.07", "707.09", "707.1", "707.10", "707.11", "707.12", "707.13", "707.14", "707.15", "707.19", "707.2", "707.20", "707.21", "707.22", "707.23", "707.24", "707.25", "707.8", "707.9", "708", "708.0", "708.1", "708.2", "708.3", "708.4", "708.5", "708.8", "708.9", "709", "709.0", "709.00", "709.01", "709.09", "709.1", "709.2", "709.3", "709.4", "709.8", "709.9" } |
| Renal dysfunction           | ICD-9 Dx Codes:<br>{ "585.1", "585.2", "585.3", "585.4", "585.5", "585.6", "585.9", "586", "403", "403.0", "403.00", "403.01", "403.1", "403.10", "403.11", "403.9", "403.90", "403.91", "404", "404.0", "404.00", "404.01", "404.02", "404.03", "404.1", "404.10", "404.11", "404.12", "404.13", "404.9", "404.90", "404.91", "404.92", "404.93", "274.10", "440.1", "442.1", "453.3", "581", "581.0", "581.1", "581.2", "581.3", "581.8", "581.81", "581.89", "581.9", "593", "593.0", "593.1", "593.2", "593.3", "593.4", "593.5", "593.6", "593.7", "593.70", "593.71", "593.72", "593.73", "593.8", "593.81", "593.82", "593.89", "593.9", "753.0", "753.3", "866.00", "866.01", "866.1", "866.10", "866.11", "866.12", "866.13", "572.4", "580", "580.0", "580.4", "580.8", "580.81", "580.89", "580.9", "584", "584.5", "584.6", "584.7", "584.8", "584.9", "791.2", "791.3" }   |
| Liver disease               | ICD-9 Dx codes:<br>{ "070.0", "070.1", "070.2", "070.20", "070.21", "070.22", "070.23", "070.3", "070.30", "070.31", "070.32", "070.33", "070.4", "070.41", "070.42", "070.43", "070.44", "070.49", "070.5", "070.51", "070.52", "070.53", "070.54", "070.59", "070.6", "070.7", "070.70", "070.71", "070.9", "456.0", "456.1", "456.2", "456.20", "456.21", "570", "571.0", "571.1", "571.2", "571.3", "571.4", "571.40", "571.41", "571.42", "571.49", "571.5", "571.6", "571.8", "571.9", "572.0", "572.1", "572.2", "572.3", "572.4", "572.8", "573.0", "573.1", "573.2", "573.3", "573.4", "573.5", "573.8", "573.9", "576.8", "782.4", "789.5", "789.51", "789.59" }  |
| Asthma/COPD                 | ICD-9 Dx codes:<br>{ "493.0", "493.00", "493.01", "493.02", "493.1", "493.10", "493.11", "493.12", "493.2", "493.20", "493.21", "493.22", "493.8", "493.81", "493.82", "493.9", "493.90", "493.91", "493.92" }<br>{ "493.0", "493.00", "493.01", "493.02", "493.1", "493.10", "493.11", "493.12", "493.2", "493.20", "493.21", "493.22", "493.8", "493.81", "493.82", "493.9", "493.90", "493.91", "493.92" }   |

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|                       | TARTRATE”, “PIRBUTEROL ACETATE”, “BUDESONIDE/FORMOTEROL FUMARATE”, “TIOTROPIUM BROMIDE”, “SALMETEROL XINAFOATE”, “THEOPHYLLINE/POTASSIUM IODIDE”, “FLUTICASONE FUROATE”, “FORMOTEROL FUMARATE”, “ZAFIRLUKAST”, “FLUTICASONE PROPIONATE/SALMETEROL XINAFOATE”, “IPRATROPIUM BROMIDE/ALBUTEROL SULFATE”, “ALBUTEROL”, “TERBUTALINE SULFATE”, “LEVALBUTEROL HCL”, “BUDESONIDE”, “MOMETASONE FUROATE”, “THEOPHYLLINE/EPHEDRINE HCL/PHENOBARBITAL”, “IPRATROPIUM BROMIDE”, “THEOPHYLLINE/EPHEDRINE/HYDROXYZINE”, “FLUTICASONE PROPIONATE”, “MONTELUKAST SODIUM”, “METAPROTERENOL SULFATE”, “THEOPHYLLINE ANHYDROUS”, “BUDESONIDE, MICRONIZED”, “THEOPHYLLINE IN DEXTROSE 5 % IN WATER”, “THEOPHYLLINE/DIETARY SUPPLEMENT,MISC.COMB.NO.9”, “THEOPHYLLINE/CAFFEINE/AA NO.13/CINNAMON/HERBAL 135”}   |
| <b>Medication use</b> |  |
| Opioids               | { “HYDROCODONE TANNATE/CHLORPHENIRAMINE TANNATE”, “CODEINE/ASPIRIN/SALICYLAMIDE/ACETAMINOPHEN/CAFFEINE”, “HYDROCODONE BITARTRATE/ACETAMINOPHEN/DIETARY SUPPLEMENT #11”, “HYDROMORPHONE HCL/GUAIFENESIN”, “HYDROMORPHONE HCL IN DEXTROSE 5 %-WATER/PF”, “OXYCODONE HCL/ASPIRIN”, “CODEINE PHOSPHATE/PYRILAMINE MALEATE”, “CODEINE POLISTIREX/CHLORPHENIRAMINE POLISTIREX”, “FENTANYL HCL”, “MEPERIDINE HCL/ATROPINE SULFATE”, “MORPHINE SULFATE/DEXTROSE 5%-WATER/PF”, “CODEINE/CALCIUM IODIDE”, “FENTANYL CITRATE/DROPERIDOL”, “MORPHINE SULFATE LIPOSOMAL/PF”, “OXYCODONE/ASPIRIN”, “MORPHINE SULFATE/NALTREXONE HCL”, “MORPHINE SULFATE/DEXTROSE 5 % IN WATER”, “MEPERIDINE HCL IN 0.9 % SODIUM CHLORIDE”, “HYDROMORPHONE HCL/BUPIVACAINE HCL IN 0.9% SODIUM CHLORIDE/PF”, “PROPOXYPHENE NAPSYLATE”, “MEPERIDINE HCL/PROMETHAZINE HCL”, “HYDROCODONE BITARTRATE/ASPIRIN”, “CODEINE PHOSPHATE”, “HYDROCODONE POLISTIREX/CHLORPHENIRAMINE POLISTIREX”, “CODEINE SULFATE”, “CODEINE PHOSPHATE/BROMODIPHENHYDRAMINE HCL”, “HYDROCODONE BITARTRATE/HOMATROPINE METHYLBROMIDE”, “HYDROCODONE BITARTRATE”, “MEPERIDINE HCL/PF”, “FENTANYL CITRATE/ROPIVACAINE HCL/SODIUM CHLORIDE 0.9%/PF”, “HYDROCODONE BITARTRATE/HOMATROPINE”, “HYDROMORPHONE HCL IN 0.9 % SODIUM CHLORIDE/PF”, “MORPHINE SULFATE IN 0.9 % SODIUM CHLORIDE/PF”, “HYDROMORPHONE HCL/PF”, “OXYCODONE HCL/OXYCODONE TEREPHTHALATE/ASPIRIN”, “HYDROMORPHONE HCL IN 0.9 % SODIUM CHLORIDE”, “MORPHINE SULFATE IN 0.9 % SODIUM CHLORIDE”, “MORPHINE SULFATE/PF”, “HYDROCODONE BITARTRATE/PSEUDOEPHEDRINE HCL/GUAIFENESIN”, “FENTANYL CITRATE IN 0.9 % SODIUM CHLORIDE/PF”, “PROPOXYPHENE HCL/ASPIRIN/CAFFEINE”, “HYDROCODONE/IBUPROFEN”, “FENTANYL CITRATE/BUPIVACAINE HCL IN 0.9 % SODIUM CHLORIDE/PF”, “CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE”, “OXYMORPHONE HCL”, “PROPOXYPHENE HCL/ACETAMINOPHEN”, “FENTANYL CITRATE/PF”, “FENTANYL CITRATE”, “TRAMADOL HCL/ACETAMINOPHEN”, “FENTANYL”, “MEPERIDINE HCL”, “PROPOXYPHENE HCL”, “HYDROMORPHONE HCL”, “OXYCODONE HCL”, “PROPOXYPHENE NAPSYLATE/ACETAMINOPHEN”, “OXYCODONE HCL/ACETAMINOPHEN”, “TRAMADOL HCL”, “MORPHINE SULFATE”, “HYDROCODONE BITARTRATE/ACETAMINOPHEN”, “ASPIRIN/CODEINE PHOSPHATE”, “CARISOPRODOL/ASPIRIN/CODEINE PHOSPHATE”, “FENTANYL CITRATE IN DEXTROSE 5 % IN WATER/PF”, “HYDROCODONE BITARTRATE/CHLORPHENIRAMINE MALEATE”, “MORPHINE SULFATE IN SODIUM CHLORIDE, ISO-OSMOTIC/PF”, “TRAMADOL HCL/DIETARY SUPPLEMENT,MISC. CB.11”} |
| Lithium               | {“LITHIUM CARBONATE”, “LITHIUM CITRATE”, “LITHIUM CITRATE TETRAHYDRATE”}   |
| Antipsychotics        | { “ACEPROMAZINE MALEATE”, “ARIPIRAZOLE”, “ASENAPINE MALEATE”, “CHLORPROMAZINE HCL”, “CLOZAPINE”, “FLUPHENAZINE DECANOATE”, “FLUPHENAZINE ENANTHATE”, “FLUPHENAZINE HCL”, “HALOPERIDOL”, “HALOPERIDOL DECANOATE”, “HALOPERIDOL LACTATE”, “ILOPERIDONE”, “LOXAPINE”, “LOXAPINE HCL”, “LOXAPINE SUCCINATE”, “LURASIDONE HCL”, “MESORIDAZINE BESYLATE”, “MOLINDONE HCL”, “OLANZAPINE”, “OLANZAPINE PAMOATE”, “OLANZAPINE/FLUOXETINE HCL”, “PALIPERIDONE”, “PALIPERIDONE PALMITATE”, “PERPHENAZINE”, “PERPHENAZINE/AMITRIPTYLINE HCL”, “PIMOZIDE”, “PROMAZINE HCL”, “PROPIOMAZINE HCL”, “QUETIAPINE FUMARATE”, “RISPERIDONE”, “RISPERIDONE MICROSPHERES”, “THIORIDAZINE HCL”, “THIOTHIXENE”, “THIOTHIXENE HCL”, “TRIFLUOPERAZINE HCL”, “TRIFLUPROMAZINE HCL”, “ZIPRASIDONE HCL”, “ZIPRASIDONE MESYLATE” }   |
| Antidepressants       | { “BUPROPION HBR”, “DESVENLAFAXINE FUMARATE”, “ISOCARBOXAZID”, “PHENELZINE SULFATE”, “VORTIOXETINE HYDROBROMIDE”, “DESVENLAFAXINE”, “PAROXETINE MESYLATE”, “FLUOXETINE”, “PROTRIPTYLINE HCL”, “IMIPRAMINE PAMOATE”, “OLANZAPINE/FLUOXETINE HCL”, “DESVENLAFAXINE SUCCINATE”, “TRIMIPRAMINE MALEATE”, “AMITRIPTYLINE HCL/CHLORDIAZEPOXIDE”, “CLOMIPRAMINE HCL”, “NEFAZODONE HCL”, “AMOXAPINE”, “MAPROTILINE HCL”, “ESCITALOPRAM OXALATE”, “DULOXETINE HCL”, “MIRTAZAPINE”, “PERPHENAZINE/AMITRIPTYLINE HCL”, “DESIPRAMINE HCL”, “NORTRIPTYLINE HCL”, “CITALOPRAM HYDROBROMIDE”,   |



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|----------------------|--|
|                      | <p>“PAROXETINE HCL”, “SERTRALINE HCL”, “IMIPRAMINE HCL”, “FLUOXETINE HCL”, “VENLAFAXINE HCL”, “TRAZODONE HCL”, “BUPROPION HCL”, “DOXEPIH HCL”, “AMITRIPTYLINE HCL”, “BUPROPION HCL/DIETARY SUPPLEMENT COMBINATION NO.15”, “BUPROPION HCL/DIETARY SUPPLEMENT COMBINATION NO.16”, “FLUOXETINE HCL/DIETARY SUPPLEMENT NO.17”, “FLUOXETINE HCL/DIETARY SUPPLEMENT NO.8”, “FLUVOXAMINE MALEATE”, “LEVOMILNACIPRAN HCL”, “TRAZODONE HCL/DIETARY SUPPLEMENT NO.8”, “VILAZODONE HCL” }</p>   |
| NSAIDs               | <p>{ “IBUPROFEN/FAMOTIDINE”, “CHLORPHENIRAMINE MALEATE/PHENYLEPHRINE HCL/IBUPROFEN”, “MELOXICAM/IRRITANTS COUNTER-IRRITANTS COMBINATION NO.2”, “CHLORPHENIRAMINE MALEATE/PSEUDOEPHEDRINE HCL/IBUPROFEN”, “DICLOFENAC SUBMICRONIZED”, “IBUPROFEN/OXYCODONE HCL”, “KETOROLAC TROMETHAMINE/PF”, “INDOMETHACIN SODIUM”, “LANSOPRAZOLE/NAPROXEN”, “IBUPROFEN LYSINE/PF”, “NAPROXEN/ESOMEPRAZOLE MAGNESIUM”, “IBUPROFEN/PHENYLEPHRINE HCL”, “IBUPROFEN/DIPHENHYDRAMINE HCL”, “SUMATRIPTAN SUCCINATE/NAPROXEN SODIUM”, “FLURBIPROFEN SODIUM”, “NAPROXEN SODIUM/PSEUDOEPHEDRINE HCL”, “DICLOFENAC EPOLAMINE”, “IBUPROFEN/DIPHENHYDRAMINE CITRATE”, “DICLOFENAC SODIUM/MISOPROSTOL”, “IBUPROFEN/PSEUDOEPHEDRINE HCL”, “DICLOFENAC POTASSIUM”, “HYDROCODONE/IBUPROFEN”, “FLURBIPROFEN”, “SULINDAC”, “KETOROLAC TROMETHAMINE”, “MELOXICAM”, “PIROXICAM”, “ETODOLAC”, “DICLOFENAC SODIUM”, “INDOMETHACIN”, “NAPROXEN SODIUM”, “NAPROXEN”, “IBUPROFEN”, “IBUPROFEN/IRRITANTS COUNTER-IRRITANTS COMBINATION NO.2”, “NAPROXEN/IRRITANT COUNTER-IRRITANT COMBINATION NO.2” }</p> |
| Benzodiazepines      | <p>{“ALPRAZOLAM”, “CHLORDIAZEPOXIDE”, “CLONAZEPAM”, “CLORAZEPATE DIPOTASSIUM”, “DIAZEPAM”, “ESTAZOLAM”, “FLURAZEPAM HCL”, “HALAZEPAM”, “LORAZEPAM”, “MIDAZOLAM”, “OXAZEPAM”, “QUAZEPAM”, “TEMAZEPAM”, “TRIAZOLAM”}</p>   |
| Migraine products    | <p>{ “DIHYDROERGOTAMINE MESYLATE”, “ERGOTAMINE TARTRATE”, “ERGOTAMINE TARTRATE/BELLADONNA ALKALOIDS/PHENOBARBITAL”, “ERGOTAMINE TARTRATE/CAFFEINE”, “ERGOTAMINE TARTRATE/CAFFEINE/BELLADONNA ALKALOIDS/PENTOBARB”, “5-HYDROXY-L-TRYPTOPHAN (OXITRIPTAN)”, “ALMOTRIPTAN MALATE”, “ELETRIPTAN HYDROBROMIDE”, “FROVATRIPTAN SUCCINATE”, “NARATRIPTAN HCL”, “RIZATRIPTAN BENZOATE”, “SUMATRIPTAN”, “SUMATRIPTAN SUCCINATE”, “SUMATRIPTAN SUCCINATE/MENTHOL/CAMPHOR”, “SUMATRIPTAN SUCCINATE/NAPROXEN SODIUM”, “ZOLMITRIPTAN” }</p>   |
| Antiparkinson agents | <p>{“AMANTADINE HCL”, “BENZTROPINE MESYLATE”, “BIPERIDEN HCL”, “CARBIDOPA”, “CARBIDOPA/LEVODOPA”, “CARBIDOPA/LEVODOPA/ENTACAPONE”, “LEVODOPA”, “PERGOLIDE MESYLATE”, “PROCYCLIDINE HCL”, “RASAGILINE MESYLATE”, “ROPINIROLE HCL”, “ROTIGOTINE”, “SELEGILINE”, “SELEGILINE HCL”, “TOLCAPONE”, “TRIHEXYPHENIDYL HCL” }</p>   |
| Dementia medication  | <p>{ “DONEPEZIL HCL”, “ERGOLOID MESYLATES”, “GALANTAMINE HBR”, “MEMANTINE HCL”, “MEMANTINE HCL/DONEPEZIL HCL”, “RIVASTIGMINE”, “RIVASTIGMINE TARTRATE”, “TACRINE HCL” }</p>  |
| Muscle relaxants     | <p>{ “BACLOFEN”, “CARISOPRODOL”, “CARISOPRODOL/ASPIRIN”, “CARISOPRODOL/ASPIRIN/CODEINE PHOSPHATE”, “CARISOPRODOL/DIETARY SUPPLEMENT,MISC. CB.11”, “CHLORZOXAZONE”, “CYCLOBENZAPRINE HCL”, “CYCLOBENZAPRINE HCL/CAPSAICIN/MENTHOL”, “CYCLOBENZAPRINE HCL/DIETARY SUPPLEMENT, MISC. CB.11”, “CYCLOBENZAPRINE HCL/IRRITANTS COUNTER-IRRITANTS COMBO NO.2”, “CYCLOBENZAPRINE HCL/TENS UNIT ELECTRODES”, “CYCLOBENZAPRINE HCL/TENS UNIT/TENS UNIT ELECTRODES”, “METAXALONE”, “METHOCARBAMOL”, “METHOCARBAMOL/ASPIRIN”, “ORPHENADRINE CITRATE”, “ORPHENADRINE CITRATE/ACETAMINOPHEN”, “ORPHENADRINE CITRATE/ASPIRIN/CAFFEINE”, “TIZANIDINE HCL”, “TIZANIDINE HCL/IRRITANT COUNTER-IRRITANTS COMBINATION NO.2”, “DANTROLENE SODIUM” }</p>   |
| Anticonvulsants      | <p>{ “AMINOPHYLLINE/EPHEDRINE/POTASSIUM IODIDE/PHENOBARBITAL”, “BELLADONNA ALKALOIDS/PHENOBARBITAL”, “CARBAMAZEPINE”, “DIVALPROEX SODIUM”, “ERGOTAMINE TARTRATE/BELLADONNA ALKALOIDS/PHENOBARBITAL”, “ESLICARBAZEPINE ACETATE”, “ETHOSUXIMIDE”, “ETHOTOIN”, “EZOGABINE”, “FELBAMATE”, “FOSPHENYTOIN SODIUM”, “GABAPENTIN”, “GABAPENTIN ENACARBIL”, “GABAPENTIN/DIETARY SUPPLEMENT, MISC COMBO NO.11”, “GUAIFENESIN/DYPHYLLINE/EPHEDRINE/PHENOBARBITAL”, “HYOSCYAMINE SULFATE/PHENOBARBITAL”, “LACOSAMIDE”, “LAMOTRIGINE”, “LEVETIRACETAM”, “LEVETIRACETAM IN SODIUM CHLORIDE, ISO-OSMOTIC”, “MEPHENYTOIN”, “MEPHOBARBITAL”, “METHSUXIMIDE”, “OXCARBAZEPINE”, “PERAMPANEL”, “PHENOBARBITAL”, “PHENOBARBITAL SODIUM”, “PHENOBARBITAL SODIUM IN 0.9 % SODIUM CHLORIDE”, “PHENOBARBITAL/HYOSCYAMINE SULF/ATROPINE SULF/SCOPOLAMINE HB”, “PHENTERMINE HCL/TOPIRAMATE”, “PHENYTOIN”, “PHENYTOIN SODIUM”, “PHENYTOIN SODIUM EXTENDED”, “PREGABALIN”, “PRIMIDONE”, “PROPANTHELINE BROMIDE/PHENOBARBITAL”, “RUFINAMIDE”, “THEOPHYLLINE/EPHEDRINE HCL/PHENOBARBITAL”,</p>  |

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|                              | <p>“THEOPHYLLINE/EPHEDRINE/POTASSIUM IODIDE/PHENOBARBITAL”, “TIAGABINE HCL”, “TOPIRAMATE”, “VALPROIC ACID”, “VALPROIC ACID (AS SODIUM SALT) (VALPROATE SODIUM)”, “VIGABATRIN”, “ZONISAMIDE” }</p>   |
| CNS Stimulants               | <p>{ “ACETAMINOPHEN/CAFFEINE”, “ACETAMINOPHEN/CAFFEINE/DIHYDROCODEINE BITARTRATE”, “ACETAMINOPHEN/CALCIUM CARBONATE/CAFFEINE/GLYCINE”, “ACETAMINOPHEN/CALCIUM CARBONATE/MAGNESIUM/CAFFEINE/CALCIUM”, “ACETAMINOPHEN/PHENYLTOLOXAMINE CITRATE/CAFFEINE”, “ACETAMINOPHEN/PYRILAMINE MALEATE/CAFFEINE”, “ASPIRIN/ACETAMINOPHEN/CAFFEINE”, “ASPIRIN/ACETAMINOPHEN/CAFFEINE/CALCIUM”, “ASPIRIN/ACETAMINOPHEN/CAFFEINE/POTASSIUM”, “ASPIRIN/ACETAMINOPHEN/MAGNESIUM/ALUMINUM HYDROXIDE/CAFFEINE”, “ASPIRIN/CAFFEINE”, “ASPIRIN/CAFFEINE/DIHYDROCODEINE”, “ASPIRIN/CAFFEINE/DIHYDROCODEINE BITARTRATE”, “ASPIRIN/MAGNESIUM HYDROXIDE/ALUMINUM HYDROXIDE/CAFFEINE”, “ASPIRIN/SALICYLAMIDE/ACETAMINOPHEN/CAFFEINE”, “ASPIRIN/SALICYLAMIDE/CAFFEINE”, “BUTALBITAL/ACETAMINOPHEN/CAFFEINE”, “BUTALBITAL/ACETAMINOPHEN/CAFFEINE/CODEINE PHOSPHATE”, “BUTALBITAL/ASPIRIN/CAFFEINE”, “CA/SOY ISOFLA/BLK COHOSH RT/MAGNOLIA/GREEN TEA LEAF/CAFFEINE”, “CAFFEINE”, “CAFFEINE CITRATE”, “CAFFEINE/AMINO ACIDS COMBINATION NO.13/CINNAMON/HERBAL 135”, “CAFFEINE/CHOLINE BITARTRATE/AA NO.11/HERBAL COMPLEX NO. 130”, “CAFFEINE/CHOLINE BITARTRATE/AMINO ACID NO.7/HERBAL NO.125”, “CAFFEINE/CHOLINE/AMINO ACIDS NO.12/HERBAL NO.131”, “CAFFEINE/DEXTROSE”, “CAFFEINE/ETHYL ALCOHOL”, “CAFFEINE/NIACIN/PYRIDOXINE/HERBAL COMPLEX NO. 133”, “CAFFEINE/PRASTERONE (DHEA)/PYRIDOXINE/HERBAL COMPLEX NO. 132”, “CAFFEINE/SODIUM BENZOATE”, “CINNAMEDRINE HCL/ASPIRIN/CAFFEINE”, “CODEINE PHOSPHATE/BUTALBITAL/ASPIRIN/CAFFEINE”, “CODEINE/ASPIRIN/SALICYLAMIDE/ACETAMINOPHEN/CAFFEINE”, “DEXTROMETHORPHAN HBR/SALICYLAMIDE/CHLORPHENIRAMINE/CAFFEINE”, “EPHEDRINE/ASPIRIN/ACETANILIDE/CAFFEINE”, “ERGOTAMINE TARTRATE/CAFFEINE”, “ERGOTAMINE TARTRATE/CAFFEINE/BELLADONNA ALKALOIDS/PENTOBARB”, “GUAIFENESIN/PHENYLEPHRINE HCL/ACETAMINOPHEN/CAFFEINE”, “GUAIFENESIN/PHENYLPROPANOLAMINE HCL/ACETAMINOPHEN/CAFFEINE”, “IBUPROFEN/CAFFEINE/VITAMINS B1, B2, B6, &amp; B12”, “ISOMETHEPTENE MUCATE/CAFFEINE/ACETAMINOPHEN”, “MAGNESIUM SALICYLATE/ACETAMINOPHEN/CAFFEINE”, “MAGNESIUM SALICYLATE/ACETAMINOPHEN/PHENYLTOLOXAMINE/CAFFEINE”, “MAGNESIUM SALICYLATE/CAFFEINE”, “METFORMIN/CAFFEINE/AMINO ACIDS 7/HERBAL COMB 125/CHOLINE BIT”, “MULTIVIT WITH MINERALS/FOLIC ACID/GUARANA/CAFFEINE”, “MULTIVIT,CALCIUM,IRON,MINERALS/FOLIC ACID/GUARANA, CAFFEINE”, “MULTIVIT,CALCIUM,IRON,MINS/FOLIC ACID/GUARANA SEED/CAFFEINE”, “MULTIVIT,CALCIUM,MIN/FERROUS FUM/FOLIC ACID/GUARANA/CAFFEINE”, “MULTIVITAMIN WITH MINERALS/FOLIC ACID/CAFFEINE”, “ORPHENADRINE CITRATE/ASPIRIN/CAFFEINE”, “PHENYLEPHRINE HCL/ACETAMINOPHEN/CAFFEINE”, “PHENYLEPHRINE HCL/SODIUM SALICYLATE/PHENIRAMINE/CAFFEINE”, “PHENYLPROPANOLAMINE HCL/ASPIRIN/CHLORPHENIRAMINE/CAFFEINE”, “PHENYLPROPANOLAMINE HCL/CAFFEINE”, “PHENYLPROPANOLAMINE/ACETAMINOPHEN/CHLORPHENIRAMINE/CAFFEINE”, “POTASSIUM SALICYLATE/SALICYLAMIDE/CAFFEINE”, “PROPOXYPHENE HCL/ASPIRIN/CAFFEINE”, “RESVERATROL/CHROMIUM PICO/GREEN TEA/EGCG/CAFFEINE/DIGESTIVE3”, “SALICYLAMIDE/ACETAMINOPHEN/CAFFEINE”, “SALICYLAMIDE/ACETAMINOPHEN/PHENYLTOLOXAMINE/CAFFEINE”, “SALICYLAMIDE/POTASSIUM NIT/CAFFEINE/BUCHU/JUNIPR/POTASS ACET”, “THEOPHYLLINE/CAFFEINE/AA NO.13/CINNAMON/HERBAL 135”, “WEIGHT LOSS KIT/CAFFEINE/CHOLINE BITARTRAT/AMINO AC7/HERB125” }</p> |
| Other anxiolytics/ hypnotics | <p>{ “ACETAMINOPHEN/DIPHENHYDRAMINE CITRATE”, “ACETAMINOPHEN/DIPHENHYDRAMINE HCL”, “AMINOGLUTETHIMIDE”, “ASPIRIN/DIPHENHYDRAMINE CITRATE”, “ASPIRIN/DIPHENHYDRAMINE HCL”, “ASPIRIN/DIPHENHYDRAMINE/SODIUM BICARBONATE/CITRIC ACID”, “ASPIRIN/MEPROBAMATE”, “BROMPHENIRAMINE MAL/DIPHENHYDRAMINE HCL/PHENYLEPHRINE HCL”, “BROMPHENIRAMINE MALEATE/DIPHENHYDRAMINE HCL”, “BUSPIRONE HCL”, “CARBETAPENTANE TANNATE/DIPHENHYDRAMINE TANNATE”, “CARBETAPENTANE TANNATE/PHENYLEPHRINE TANNATE/DIPHENHYDRAMINE”, “CHLORAL HYDRATE”, “CODEINE PHOSPHATE/BROMODIPHENHYDRAMINE HCL”, “DEXTROMETHORPHAN HBR/ACETAMINOPHEN/DIPHENHYDRAMINE HCL”, “DEXTROMETHORPHAN HBR/ACETAMINOPHEN/DOXYLAMINE”, “DEXTROMETHORPHAN HBR/DOXYLAMINE SUCCINATE”, “DEXTROMETHORPHAN HBR/PHENYLEPHRINE/ACETAMINOPHEN/DOXYLAMINE”, “DEXTROMETHORPHAN/PHENYLEPHRINE/DIPHENHYDRAMINE TANNATES”,</p>  |

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|  | <p> “DXTROMETHORPHAN/PSEUDOEPHRINE HCL/ACETAMINOPHEN/DOXYLAMINE”,<br/> “DIPHENHYDRAMINE CITRATE”, “DIPHENHYDRAMINE HCL”, “DIPHENHYDRAMINE HCL IN<br/> 0.9 % SODIUM CHLORIDE”, “DIPHENHYDRAMINE HCL/ALLANTOIN”, “DIPHENHYDRAMINE<br/> HCL/BENZETHONIUM CHLORIDE/ZINC ACETATE”, “DIPHENHYDRAMINE HCL/CALAMINE”,<br/> “DIPHENHYDRAMINE HCL/CAMPHOR/CALAMINE”, “DIPHENHYDRAMINE<br/> HCL/HYDROCORTISONE”, “DIPHENHYDRAMINE HCL/MENTHOL”, “DIPHENHYDRAMINE<br/> HCL/PHENYLEPHRINE HCL/ACETAMINOPHEN”, “DIPHENHYDRAMINE<br/> HCL/PHENYLEPHRINE HCL/ACETAMINOPHEN/GUAIFEN”, “DIPHENHYDRAMINE<br/> HCL/PHENYLEPHRINE HCL/CODEINE PHOSPHATE”, “DIPHENHYDRAMINE<br/> HCL/PHENYLEPHRINE HCL/DEXTROMETHORPHAN HBR”, “DIPHENHYDRAMINE<br/> HCL/TRIPELENNAMINE HCL/MENTHOL”, “DIPHENHYDRAMINE HCL/ZINC ACETATE”,<br/> “DIPHENHYDRAMINE TANNATE”,<br/> “DIPHENHYDRAMINE/PHENYLEPHRIN/DEXTROMETHORPH/ACETAMINOPHEN/GG”,<br/> “DOXYLAMINE SUCC/PSEUDOEPHEDRINE HCL/DEXTROMETHORPHAN HBR”,<br/> “DOXYLAMINE SUCCINATE”, “DOXYLAMINE SUCCINATE/PHENYLEPHRINE HCL”,<br/> “DOXYLAMINE SUCCINATE/PHENYLEPHRINE/DEXTROMETHORPHAN HBR/ASA”,<br/> “DOXYLAMINE SUCCINATE/PSEUDOEPHEDRINE HCL”, “DOXYLAMINE<br/> SUCCINATE/PYRIDOXINE HCL”,<br/> “DOXYLAMINE/PHENYLEPHRINE/DEXTROMETHORPHAN/ACETAMINOPHEN/GG”,<br/> “ESTROGENS, CONJUGATED/MEPROBAMATE”, “ESZOPICLONE”, “HYDROXYZINE HCL”,<br/> “HYDROXYZINE PAMOATE”, “IBUPROFEN/DIPHENHYDRAMINE CITRATE”,<br/> “IBUPROFEN/DIPHENHYDRAMINE HCL”, “MAGNESIUM SALICYLATE/DIPHENHYDRAMINE<br/> HCL”, “MEPROBAMATE”, “NAPROXEN SODIUM/DIPHENHYDRAMINE HCL”,<br/> “PHENYLEPHRINE HCL/ACETAMINOPHEN/DOXYLAMINE SUCCINATE”, “PHENYLEPHRINE<br/> HCL/DIPHENHYDRAMINE HCL”, “PHENYLEPHRINE HCL/HYDROCODONE<br/> BITARTRATE/DIPHENHYDRAMINE”, “PHENYLEPHRINE TANNATE/DIPHENHYDRAMINE<br/> TANNATE”, “PHENYLEPHRINE TANNATE/HYDROCODONE<br/> TANNATE/DIPHENHYDRAMINE”,<br/> “PHENYLEPHRINE/ACETAMINOPHEN/DIPHENHYDRAMINE/CHLORPHENIRAMINE”,<br/> “PHENYLPROPANOLAMINE HCL/ASPIRIN/DIPHENHYDRAMINE”, “PRAMOXINE<br/> HCL/DIPHENHYDRAMINE HCL”, “PSEUDOEPHEDRINE<br/> HCL/ACETAMINOPHEN/DIPHENHYDRAMINE”, “PSEUDOEPHEDRINE<br/> HCL/ACETAMINOPHEN/DOXYLAMINE SUCCINATE”, “PSEUDOEPHEDRINE<br/> HCL/DIPHENHYDRAMINE CITRATE”, “PSEUDOEPHEDRINE HCL/DIPHENHYDRAMINE HCL”,<br/> “RAMELTEON”, “SUVOREXANT”, “THEOPHYLLINE/EPHEDRINE/HYDROXYZINE”,<br/> “ZALEPLON”, “ZOLPIDEM TARTRATE”, “MECLIZINE HCL” } </p> |
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Abbreviations: HIV, human immunodeficiency virus. COPD, chronic obstructive pulmonary disease. NASIDs, non-steroidal anti-inflammatory drugs. CNS, central nervous system.

**Table 4. Baseline Characteristics Before and After Propensity Score Matching in the Pneumonia Cohort <sup>a</sup>**

| Variable  | Before matching  |                | Standardized difference | After matching   |                | Standardized difference |
|---|------------------|----------------|-------------------------|------------------|----------------|-------------------------|
|   | Fluoroquinolones | Azithromycin   |                         | Fluoroquinolones | Azithromycin   |                         |
| No. of patients   | 493 988          | 331 432        |                         | 275 521          | 275 521        |                         |
| <b>Demographic characteristic</b>                               |                  |                |                         |                  |                |                         |
| Age, mean (SD), y   | 56.23 (17.32)    | 48.55 (17.76)  | -0.44                   | 51.44 (16.93)    | 51.69 (17.00)  | 0.01                    |
| Age categories, No. (%), y                                      |                  |                |                         |                  |                |                         |
| 18-24   | 16 710 (3.4)     | 33 863 (10.2)  | 0.27                    | 15 748 (5.7)     | 14 228 (5.2)   | -0.02                   |
| 25-44   | 111 117 (22.5)   | 108 340 (32.7) | 0.23                    | 83 467 (30.3)    | 82 206 (29.8)  | -0.01                   |
| 45-64   | 222 424 (45.0)   | 132 957 (40.1) | -0.10                   | 120 455 (43.7)   | 123 594 (44.9) | 0.02                    |
| ≥ 65  | 143 737 (29.1)   | 56 272 (17.0)  | -0.29                   | 55 851 (20.3)    | 55 493 (20.1)  | 0.00                    |
| Men, No. (%)  | 249 236 (50.5)   | 157 558 (47.5) | -0.06                   | 133 903 (48.6)   | 134 269 (48.7) | 0.00                    |
| Region, No. (%)   |                  |                |                         |                  |                |                         |
| Northeast   | 68 208 (13.8)    | 57 926 (17.5)  | 0.10                    | 47 093 (17.1)    | 46 563 (16.9)  | -0.01                   |
| North Central   | 137 393 (27.8)   | 95 265 (28.7)  | 0.02                    | 81 971 (29.8)    | 82 053 (29.8)  | 0.00                    |
| South   | 199 324 (40.3)   | 86 025 (26.0)  | -0.31                   | 81 046 (29.4)    | 83 161 (30.2)  | 0.02                    |
| West  | 82 497 (16.7)    | 87 638 (26.4)  | 0.24                    | 61 396 (22.3)    | 59 662 (21.7)  | -0.01                   |
| Unknown   | 6 566 (1.3)      | 4 578 (1.4)    | 0.01                    | 4 015 (1.5)      | 4 082 (1.5)    | 0.00                    |
| <b>Psychiatric comorbidities, No. (%)</b>                       |                  |                |                         |                  |                |                         |
| Anxiety disorder  | 22 560 (4.6)     | 14 802 (4.5)   | 0.00                    | 12 103 (4.4)     | 11 872 (4.3)   | 0.00                    |
| Depression  | 37 254 (7.5)     | 23 440 (7.1)   | -0.02                   | 19 531 (7.1)     | 19 034 (6.9)   | -0.01                   |
| Sleep disorder  | 20 787 (4.2)     | 10 899 (3.3)   | -0.05                   | 9 703 (3.5)      | 9 676 (3.5)    | 0.00                    |
| Psychotic disorder  | 5 576 (1.1)      | 1 866 (0.6)    | -0.05                   | 1 806 (0.7)      | 1 682 (0.6)    | -0.01                   |
| Mania   | 5 246 (1.1)      | 3 089 (0.9)    | -0.02                   | 2 657 (1.0)      | 2 564 (0.9)    | -0.01                   |
| Attention-deficit/hyperactivity disorder                        | 3 274 (0.7)      | 3 344 (1.0)    | 0.03                    | 2 284 (0.8)      | 2 194 (0.8)    | 0.00                    |
| Delirium  | 7 995 (1.6)      | 1 801 (0.5)    | -0.11                   | 2 096 (0.8)      | 1 736 (0.6)    | -0.02                   |
| Dementia  | 14 648 (3.0)     | 4 204 (1.3)    | -0.12                   | 4 492 (1.6)      | 4 130 (1.5)    | -0.01                   |
| Substance abuse   | 36 662 (7.4)     | 18 815 (5.7)   | -0.07                   | 16 530 (6.0)     | 16 186 (5.9)   | 0.00                    |
| Personality disorder  | 552 (0.1)        | 333 (0.1)      | 0.00                    | 266 (0.1)        | 260 (0.1)      | 0.00                    |
| Adjustment reaction with disturbance other than depression mood | 5 661 (1.1)      | 5 000 (1.5)    | 0.04                    | 3 656 (1.3)      | 3 590 (1.3)    | 0.00                    |
| Other mental disorder   | 5 899 (1.2)      | 3 725 (1.1)    | -0.01                   | 3 028 (1.1)      | 2 977 (1.1)    | 0.00                    |
| <b>Neurological comorbidities, No. (%)</b>                      |                  |                |                         |                  |                |                         |
| Seizure/epilepsy  | 7 036 (1.4)      | 2 965 (0.9)    | -0.05                   | 2 697 (1.0)      | 2 594 (0.9)    | -0.01                   |
| Neuropathy/neuropathic pain                                     | 25 552 (5.2)     | 12 140 (3.7)   | -0.07                   | 11 348 (4.1)     | 11 104 (4.0)   | -0.01                   |
| Migraine  | 8 421 (1.7)      | 6 245 (1.9)    | 0.02                    | 5 063 (1.8)      | 4 964 (1.8)    | 0.00                    |
| Parkinson disease   | 2 927 (0.6)      | 873 (0.3)      | -0.04                   | 906 (0.3)        | 867 (0.3)      | 0.00                    |
| Multiple sclerosis  | 1 646 (0.3)      | 803 (0.2)      | -0.02                   | 736 (0.3)        | 741 (0.3)      | 0.00                    |
| <b>Other comorbidities, No. (%)</b>                             |                  |                |                         |                  |                |                         |
| Congestive heart failure  | 43 284 (8.8)     | 11 585 (3.5)   | -0.22                   | 12 552 (4.6)     | 11 453 (4.2)   | -0.02                   |
| Ischemic heart disease  | 62 636 (12.7)    | 20 818 (6.3)   | -0.22                   | 21 533 (7.8)     | 20 463 (7.4)   | -0.02                   |
| Any stroke  | 19 571 (4.0)     | 6 025 (1.8)    | -0.13                   | 6 332 (2.3)      | 5 916 (2.1)    | -0.01                   |
| Atrial fibrillation   | 31 454 (6.4)     | 10 391 (3.1)   | -0.16                   | 10 624 (3.9)     | 10 182 (3.7)   | -0.01                   |
| Autoimmune disorder   | 25 021 (5.1)     | 11 926 (3.6)   | -0.07                   | 10 973 (4.0)     | 10 927 (4.0)   | 0.00                    |
| Diabetes  | 81 957 (16.6)    | 34 195 (10.3)  | -0.19                   | 33 149 (12.0)    | 32 909 (11.9)  | 0.00                    |
| Skin disorder   | 74 291 (15.0)    | 43 983 (13.3)  | -0.05                   | 37 778 (13.7)    | 37 218 (13.5)  | -0.01                   |
| Renal dysfunction   | 40 950 (8.3)     | 11 292 (3.4)   | -0.21                   | 12 016 (4.4)     | 11 079 (4.0)   | -0.02                   |
| Liver disease   | 15 956 (3.2)     | 5 624 (1.7)    | -0.10                   | 5 631 (2.0)      | 5 343 (1.9)    | -0.01                   |
| Asthma/COPD   | 177 184 (35.9)   | 91 446 (27.6)  | -0.18                   | 81 428 (29.6)    | 80 907 (29.4)  | 0.00                    |
| CCI, mean (SD)  | 0.68 (1.51)      | 0.31 (1.05)    | -0.28                   | 0.38 (1.14)      | 0.34 (1.13)    | -0.04                   |
| Frailty index, mean (SD)  | 0.15 (0.05)      | 0.14 (0.04)    | -0.22                   | 0.14 (0.04)      | 0.14 (0.04)    | 0.00                    |
| <b>Medication use</b>   |                  |                |                         |                  |                |                         |
| Opioid  | 171 900 (34.8)   | 89 637 (27.0)  | -0.17                   | 80 621 (29.3)    | 80 738 (29.3)  | 0.00                    |
| Lithium   | 1 268 (0.3)      | 746 (0.2)      | -0.02                   | 648 (0.2)        | 641 (0.2)      | 0.00                    |
| Antipsychotics  | 14 335 (2.9)     | 6 083 (1.8)    | -0.07                   | 5 603 (2.0)      | 5 432 (2.0)    | 0.00                    |
| Antidepressant  | 114 522 (23.2)   | 62 769 (18.9)  | -0.11                   | 55 432 (20.1)    | 55 238 (20.0)  | 0.00                    |
| NSAID   | 71 621 (14.5)    | 45 961 (13.9)  | -0.02                   | 39 201 (14.2)    | 39 355 (14.3)  | 0.00                    |
| Benzodiazepine  | 67 612 (13.7)    | 33 103 (10.0)  | -0.11                   | 30 314 (11.0)    | 29 932 (10.9)  | 0.00                    |
| Migraine product  | 7 065 (1.4)      | 5 491 (1.7)    | 0.02                    | 4 401 (1.6)      | 4 466 (1.6)    | 0.00                    |
| Antiparkinson agent   | 8 277 (1.7)      | 3 220 (1.0)    | -0.06                   | 3 141 (1.1)      | 3 093 (1.1)    | 0.00                    |
| Dementia medication   | 11 366 (2.3)     | 3 413 (1.0)    | -0.10                   | 3 526 (1.3)      | 3 396 (1.2)    | -0.01                   |
| Muscle relaxant   | 40 868 (8.3)     | 22 246 (6.7)   | -0.06                   | 19 897 (7.2)     | 19 856 (7.2)   | 0.00                    |
| Anticonvulsant  | 46 081 (9.3)     | 20 862 (6.3)   | -0.11                   | 19 354 (7.0)     | 19 004 (6.9)   | 0.00                    |
| CNS Stimulant   | 4 612 (0.9)      | 2 713 (0.8)    | -0.01                   | 2 396 (0.9)      | 2 390 (0.9)    | 0.00                    |
| Other anxiolytic/hypnotic                                       | 42 750 (8.7)     | 20 856 (6.3)   | -0.09                   | 19 113 (6.9)     | 18 894 (6.9)   | 0.00                    |
| <b>Health services utilization, mean (SD)</b>                   |                  |                |                         |                  |                |                         |
| No. office visits   | 4.67 (4.98)      | 3.92 (4.10)    | -0.16                   | 4.11 (4.37)      | 4.05 (4.18)    | -0.01                   |
| No. psychotropic medications                                    | 3.13 (5.91)      | 2.23 (4.82)    | -0.17                   | 2.46 (5.11)      | 2.44 (5.06)    | 0.00                    |

|   |               |               |       |               |               |       |
|---|---------------|---------------|-------|---------------|---------------|-------|
| No. unique psychotropic medications                           | 1.20 (1.68)   | 0.90 (1.43)   | -0.19 | 0.98 (1.49)   | 0.97 (1.48)   | -0.01 |
| No. total medications   | 15.37 (14.93) | 11.09 (11.97) | -0.32 | 12.19 (12.62) | 12.10 (12.55) | -0.01 |
| No. unique medications  | 7.45 (4.99)   | 5.79 (4.22)   | -0.36 | 6.22 (4.34)   | 6.18 (4.37)   | -0.01 |
| No. hospitalizations  | 0.38 (0.63)   | 0.13 (0.40)   | -0.47 | 0.17 (0.44)   | 0.16 (0.44)   | -0.02 |
| No. psychiatric hospitalizations                              | 0.01 (0.27)   | 0.00 (0.20)   | -0.04 | 0.00 (0.23)   | 0.00 (0.22)   | 0.00  |
| No. ED visit  | 0.72 (1.18)   | 0.52 (0.98)   | -0.18 | 0.56 (1.08)   | 0.54 (0.98)   | -0.02 |
| No. psychiatrists and psychologists' visits                   | 0.19 (1.41)   | 0.18 (1.42)   | -0.01 | 0.18 (1.40)   | 0.17 (1.38)   | -0.01 |
| Any psychotherapy visits <30 d, n (%)                         | 11 796 (2.4)  | 9 009 (2.7)   | 0.02  | 7 107 (2.6)   | 7 003 (2.5)   | -0.01 |
| No. unique ICD-9 diagnoses at the 3 <sup>rd</sup> digit level | 4.52 (5.96)   | 2.62 (3.53)   | -0.39 | 2.96 (3.93)   | 2.80 (3.79)   | -0.04 |

Abbreviations: CCI, combined comorbidity index; COPD: chronic obstructive pulmonary disease; NSAID: nonsteroidal anti-inflammatory drug; CNS central nervous system.

a. Propensity score model also included year of cohort entry for adjustment

**Table 5. Baseline Characteristics Before and After Propensity Score Matching in the Urinary Tract Infection Cohort <sup>a</sup>**

| Variable  | Before matching  |                | Standardized difference | After matching   |                | Standardized difference |
|---|------------------|----------------|-------------------------|------------------|----------------|-------------------------|
|   | Fluoroquinolones | TMP-SMX        |                         | Fluoroquinolones | TMP-SMX        |                         |
| No. of patients   | 2 357 232        | 1 106 268      |                         | 1 102 613        | 1 102 613      |                         |
| <b>Demographic characteristic</b>                               |                  |                |                         |                  |                |                         |
| Age, mean (SD), y   | 48.08 (17.55)    | 43.70 (17.51)  | -0.25                   | 43.66 (17.41)    | 43.76 (17.49)  | 0.01                    |
| Age categories, No. (%), y                                      |                  |                |                         |                  |                |                         |
| 18-24   | 251 784 (10.7)   | 192 533 (17.4) | 0.19                    | 195 010 (17.7)   | 189 810 (17.2) | -0.01                   |
| 25-44   | 760 523 (32.3)   | 397 414 (35.9) | 0.08                    | 395 123 (35.8)   | 396 915 (36.0) | 0.00                    |
| 45-64   | 976 993 (41.4)   | 392 718 (35.5) | -0.12                   | 388 695 (35.3)   | 392 357 (35.6) | 0.01                    |
| ≥ 65  | 367 932 (15.6)   | 123 603 (11.2) | -0.13                   | 123 785 (11.2)   | 123 531 (11.2) | 0.00                    |
| Men, No. (%)  | 362 442 (15.4)   | 89 333 (8.1)   | -0.23                   | 92 621 (8.4)     | 89 254 (8.1)   | -0.01                   |
| Region, No. (%)   |                  |                |                         |                  |                |                         |
| Northeast   | 331 853 (14.1)   | 146 188 (13.2) | -0.03                   | 144 891 (13.1)   | 145 986 (13.2) | 0.00                    |
| North Central   | 539 377 (22.9)   | 305 485 (27.6) | 0.11                    | 302 845 (27.5)   | 302 771 (27.5) | 0.00                    |
| South   | 988 921 (42.0)   | 434 877 (39.3) | -0.05                   | 434 978 (39.4)   | 434 385 (39.4) | 0.00                    |
| West  | 460 817 (19.5)   | 201 469 (18.2) | -0.03                   | 201 642 (18.3)   | 201 256 (18.3) | 0.00                    |
| Unknown   | 36 264 (1.5)     | 18 249 (1.6)   | 0.01                    | 18 257 (1.7)     | 18 215 (1.7)   | 0.00                    |
| <b>Psychiatric comorbidities, No. (%)</b>                       |                  |                |                         |                  |                |                         |
| Anxiety disorder  | 123 108 (5.2)    | 58 446 (5.3)   | 0.00                    | 57 931 (5.3)     | 58 236 (5.3)   | 0.00                    |
| Depression  | 190 307 (8.1)    | 89 200 (8.1)   | 0.00                    | 88 256 (8.0)     | 88 806 (8.1)   | 0.00                    |
| Sleep disorder  | 76 354 (3.2)     | 30 986 (2.8)   | -0.02                   | 30 924 (2.8)     | 30 920 (2.8)   | 0.00                    |
| Psychotic disorder  | 14 638 (0.6)     | 5 186 (0.5)    | -0.01                   | 5 314 (0.5)      | 5 161 (0.5)    | 0.00                    |
| Mania   | 23 061 (1.0)     | 11 121 (1.0)   | 0.00                    | 11 079 (1.0)     | 11 072 (1.0)   | 0.00                    |
| Attention-deficit/hyperactivity disorder                        | 24 197 (1.0)     | 12 879 (1.2)   | 0.02                    | 12 802 (1.2)     | 12 845 (1.2)   | 0.00                    |
| Delirium  | 15 282 (0.6)     | 4 350 (0.4)    | -0.03                   | 4 554 (0.4)      | 4 344 (0.4)    | 0.00                    |
| Dementia  | 36 271 (1.5)     | 10 600 (1.0)   | -0.05                   | 10 892 (1.0)     | 10 583 (1.0)   | 0.00                    |
| Substance abuse   | 68 320 (2.9)     | 30 178 (2.7)   | -0.01                   | 30 116 (2.7)     | 30 050 (2.7)   | 0.00                    |
| Personality disorder  | 2 733 (0.1)      | 1 338 (0.1)    | 0.00                    | 1 363 (0.1)      | 1 328 (0.1)    | 0.00                    |
| Adjustment reaction with disturbance other than depression mood | 38 479 (1.6)     | 18 838 (1.7)   | 0.01                    | 18 664 (1.7)     | 18 763 (1.7)   | 0.00                    |
| Other mental disorder   | 29 781 (1.3)     | 14 147 (1.3)   | 0.00                    | 14 027 (1.3)     | 14 066 (1.3)   | 0.00                    |
| <b>Neurological comorbidities, No. (%)</b>                      |                  |                |                         |                  |                |                         |
| Seizure/epilepsy  | 19 965 (0.8)     | 8 439 (0.8)    | 0.00                    | 8 423 (0.8)      | 8 383 (0.8)    | 0.00                    |
| Neuropathy/neuropathic pain                                     | 91 540 (3.9)     | 34 943 (3.2)   | -0.04                   | 34 793 (3.2)     | 34 891 (3.2)   | 0.00                    |
| Migraine  | 64 276 (2.7)     | 30 559 (2.8)   | 0.01                    | 30 016 (2.7)     | 30 486 (2.8)   | 0.01                    |
| Parkinson disease   | 7 674 (0.3)      | 2 269 (0.2)    | -0.02                   | 2 348 (0.2)      | 2 267 (0.2)    | 0.00                    |
| Multiple sclerosis  | 12 173 (0.5)     | 4 595 (0.4)    | -0.01                   | 4 569 (0.4)      | 4 587 (0.4)    | 0.00                    |
| <b>Other comorbidities, No. (%)</b>                             |                  |                |                         |                  |                |                         |
| Congestive heart failure  | 40 418 (1.7)     | 10 931 (1.0)   | -0.06                   | 11 554 (1.0)     | 10 921 (1.0)   | 0.00                    |
| Ischemic heart disease  | 106 752 (4.5)    | 31 508 (2.8)   | -0.09                   | 32 282 (2.9)     | 31 478 (2.9)   | 0.00                    |
| Any stroke  | 44 968 (1.9)     | 13 117 (1.2)   | -0.06                   | 13 534 (1.2)     | 13 104 (1.2)   | 0.00                    |
| Atrial fibrillation   | 46 953 (2.0)     | 14 437 (1.3)   | -0.05                   | 14 788 (1.3)     | 14 423 (1.3)   | 0.00                    |
| Autoimmune disorder   | 96 293 (4.1)     | 34 251 (3.1)   | -0.05                   | 33 987 (3.1)     | 34 204 (3.1)   | 0.00                    |
| Diabetes  | 242 549 (10.3)   | 84 116 (7.6)   | -0.09                   | 83 932 (7.6)     | 84 031 (7.6)   | 0.00                    |
| Skin disorder   | 341 541 (14.5)   | 148 678 (13.4) | -0.03                   | 147 370 (13.4)   | 148 296 (13.4) | 0.00                    |
| Renal dysfunction   | 91 175 (3.9)     | 21 482 (1.9)   | -0.12                   | 22 927 (2.1)     | 21 465 (1.9)   | -0.01                   |
| Liver disease   | 46 264 (2.0)     | 14 276 (1.3)   | -0.05                   | 14 419 (1.3)     | 14 253 (1.3)   | 0.00                    |
| Asthma/COPD   | 339 791 (14.4)   | 140 847 (12.7) | -0.05                   | 139 285 (12.6)   | 140 578 (12.7) | 0.00                    |
| CCI, mean (SD)  | 0.15 (0.90)      | 0.09 (0.73)    | -0.07                   | 0.10 (0.73)      | 0.09 (0.73)    | -0.01                   |
| Frailty index, mean (SD)  | 0.13 (0.04)      | 0.12 (0.03)    | -0.28                   | 0.12 (0.03)      | 0.12 (0.03)    | 0.00                    |
| <b>Medication use</b>   |                  |                |                         |                  |                |                         |
| Opioid  | 615 817 (26.1)   | 244 779 (22.1) | -0.09                   | 243 198 (22.1)   | 244 455 (22.2) | 0.00                    |
| Lithium   | 5 588 (0.2)      | 2 678 (0.2)    | 0.00                    | 2 649 (0.2)      | 2 666 (0.2)    | 0.00                    |
| Antipsychotics  | 45 648 (1.9)     | 18 854 (1.7)   | -0.02                   | 18 838 (1.7)     | 18 792 (1.7)   | 0.00                    |
| Antidepressant  | 518 166 (22.0)   | 231 052 (20.9) | -0.03                   | 228 466 (20.7)   | 230 432 (20.9) | 0.00                    |
| NSAID   | 368 134 (15.6)   | 165 009 (14.9) | -0.02                   | 163 022 (14.8)   | 164 539 (14.9) | 0.00                    |
| Benzodiazepine  | 284 039 (12.0)   | 116 980 (10.6) | -0.04                   | 116 039 (10.5)   | 116 818 (10.6) | 0.00                    |
| Migraine product  | 62 795 (2.7)     | 29 311 (2.6)   | -0.01                   | 28 652 (2.6)     | 29 254 (2.7)   | 0.01                    |
| Antiparkinson agent   | 23 305 (1.0)     | 8 767 (0.8)    | -0.02                   | 8 628 (0.8)      | 8 748 (0.8)    | 0.00                    |
| Dementia medication   | 28 357 (1.2)     | 8 340 (0.8)    | -0.04                   | 8 418 (0.8)      | 8 332 (0.8)    | 0.00                    |
| Muscle relaxant   | 195 738 (8.3)    | 85 939 (7.8)   | -0.02                   | 84 960 (7.7)     | 85 729 (7.8)   | 0.00                    |
| Anticonvulsant  | 165 562 (7.0)    | 67 168 (6.1)   | -0.04                   | 66 726 (6.1)     | 66 997 (6.1)   | 0.00                    |
| CNS Stimulant   | 29 576 (1.3)     | 13 287 (1.2)   | -0.01                   | 13 105 (1.2)     | 13 272 (1.2)   | 0.00                    |
| Other anxiolytic/hypnotic                                       | 185 435 (7.9)    | 74 700 (6.8)   | -0.04                   | 73 809 (6.7)     | 74 585 (6.8)   | 0.00                    |
| <b>Health services utilization, mean (SD)</b>                   |                  |                |                         |                  |                |                         |
| No. office visits   | 4.18 (4.17)      | 3.83 (3.80)    | -0.09                   | 3.83 (3.78)      | 3.83 (3.80)    | 0.00                    |
| No. psychotropic medications                                    | 2.46 (4.93)      | 2.17 (4.62)    | -0.06                   | 2.16 (4.61)      | 2.17 (4.62)    | 0.00                    |
| No. unique psychotropic medications                             | 0.99 (1.50)      | 0.88 (1.43)    | -0.08                   | 0.88 (1.42)      | 0.88 (1.43)    | 0.00                    |
| No. total medications   | 11.35 (11.75)    | 9.92 (10.57)   | -0.13                   | 9.90 (10.58)     | 9.93 (10.57)   | 0.00                    |

|  |              |              |       |              |              |       |
|--|--------------|--------------|-------|--------------|--------------|-------|
| No. unique medications   | 5.68 (4.10)  | 5.10 (3.76)  | -0.15 | 5.09 (3.73)  | 5.11 (3.76)  | 0.01  |
| No. hospitalizations   | 0.10 (0.37)  | 0.06 (0.29)  | -0.12 | 0.07 (0.28)  | 0.06 (0.29)  | -0.04 |
| No. psychiatric hospitalizations                                 | 0.00 (0.23)  | 0.00 (0.26)  | 0.00  | 0.00 (0.27)  | 0.00 (0.24)  | 0.00  |
| No. ED visit   | 0.39 (0.90)  | 0.32 (0.83)  | -0.08 | 0.33 (0.78)  | 0.32 (0.83)  | -0.01 |
| No. psychiatrists and<br>psychologists' visits                   | 0.20 (1.49)  | 0.19 (1.43)  | -0.01 | 0.18 (1.38)  | 0.19 (1.43)  | 0.01  |
| Any psychotherapy visits <30 d                                   | 73 524 (3.1) | 34 052 (3.1) | 0.00  | 33 725 (3.1) | 33 957 (3.1) | 0.00  |
| No. unique ICD-9 diagnoses at<br>the 3 <sup>rd</sup> digit level | 0.64 (2.66)  | 0.47 (2.04)  | -0.07 | 0.48 (2.05)  | 0.47 (2.04)  | 0.00  |

Abbreviations: TMP-SMX, trimethoprim and sulfamethoxazole; CCI, combined comorbidity index; COPD: chronic obstructive pulmonary disease; NSAID: nonsteroidal anti-inflammatory drug; CNS central nervous system.

a. Propensity score model also included year of cohort entry for adjustment

**Table 6. Duration and Generic Distribution of Index Drug dispensing in PS-matched Population**

| Variable   | Pneumonia cohort |                 | Urinary tract infection cohort |                   |
|--|------------------|-----------------|--------------------------------|-------------------|
|  | Fluoroquinolone  | Azithromycin    | Fluoroquinolone                | TMP-SMX           |
| <b>Days' supply of index dispensing, median (Days) [IQR]</b> | 10 [7, 10]       | 5 [5, 5]        | 7 [5, 8]                       | 7 [3, 10]         |
| <b>Generic names, n (%)</b>                                  |                  |                 |                                |                   |
| Azithromycin   | 0 (0.0)          | 275 513 (100.0) | 3 (0.0)                        | 3 (0.0)           |
| Ciprofloxacin  | 13 333 (4.8)     | 0 (0.0)         | 951 830 (86.3)                 | 0 (0.0)           |
| Levofloxacin   | 201 284 (73.1)   | 0 (0.0)         | 142 624 (12.9)                 | 0 (0.0)           |
| Moxifloxacin   | 56 977 (20.7)    | 0 (0.0)         | 3 659 (0.3)                    | 0 (0.0)           |
| Other fluoroquinolones*                                      | 3 912 (1.4)      | 0 (0.0)         | 4 408 (0.4)                    | 0 (0.0)           |
| TMP-SMX  | 0 (0.0)          | 0 (0.0)         | 0 (0.0)                        | 1 102 569 (100.0) |

Abbreviations: IQR, interquartile range (25<sup>th</sup> – 75<sup>th</sup> percentile), TMP-SMX, trimethoprim and sulfamethoxazole.

\* Other fluoroquinolones included: gatifloxacin, gemifloxacin, moxifloxacin, norfloxacin, ofloxacin, besifloxacin.



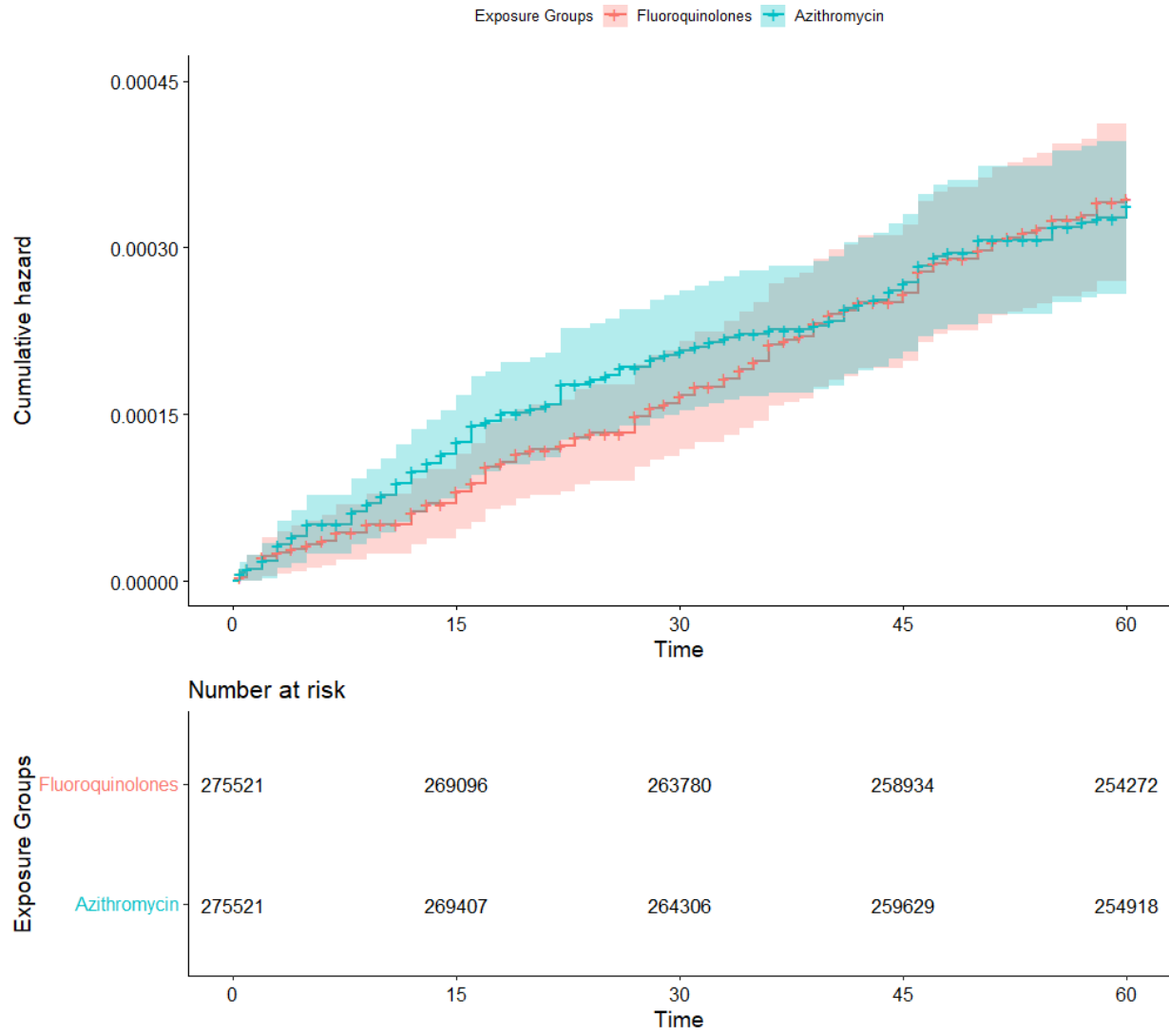
**Table 7. Censoring Reasons in PS-matched Population, main analysis, 60-day follow-up**

|   | Pneumonia cohort |                | Urinary tract infection cohort |                  |
|---|------------------|----------------|--------------------------------|------------------|
|   | Fluoroquinolone  | Azithromycin   | Fluoroquinolone                | TMP-SMX          |
| No. of patients                             | 275 521          | 275 521        | 1 102 613                      | 1 102 613        |
| Follow-up time (days), median [IQR]         | 60 [60, 60]      | 60 [60, 60]    | 60 [60, 60]                    | 60 [60, 60]      |
| Reasons, No. (%)                            |                  |                |                                |                  |
| Outcome                                     | 91 (0.0)         | 90 (0.0)       | 491 (0.0)                      | 475 (0.0)        |
| Death                                       | 347 (0.1)        | 255 (0.1)      | 244 (0.0)                      | 278 (0.0)        |
| Maximum follow-up time (60 days)            | 254 270 (92.3)   | 254 914 (92.5) | 1 025 405 (93.0)               | 1 025 242 (93.0) |
| Specified date reached (September 30, 2015) | 2 726 (1.0)      | 2 609 (0.9)    | 13 817 (1.3)                   | 13 562 (1.2)     |
| End of patient enrollment                   | 15 351 (5.6)     | 15 440 (5.6)   | 57 557 (5.2)                   | 57 493 (5.2)     |
| Nursing home admission                      | 2 736 (1.0)      | 2 213 (0.8)    | 5 099 (0.5)                    | 5 563 (0.5)      |

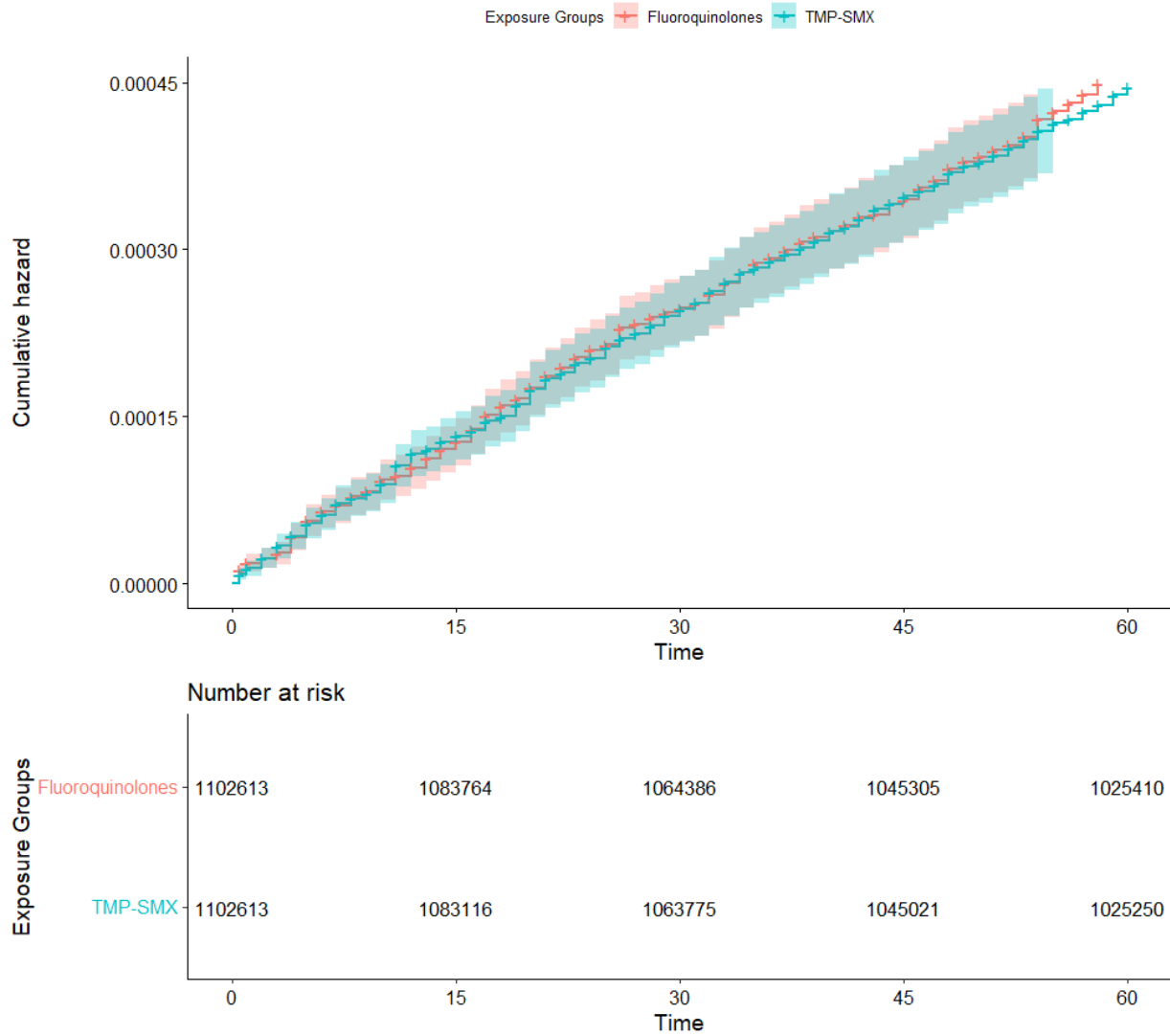
Abbreviations: IQR, interquartile range (25<sup>th</sup> – 75<sup>th</sup> percentile), TMP-SMX, trimethoprim and sulfamethoxazole.

**Figure. Cumulative Incidence for Suicidality – Primary Analysis**

**Panel A: Fluoroquinolones vs Azithromycin**



## Panel B: Fluoroquinolones vs Azithromycin



Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole.

**Table 8. Risk of Hospitalizations for Suicidal Ideation or Intentional Self-Harm Before Propensity Score Matching following 60 Days after Antibiotic Initiation**

| Analyses  | Pneumonia cohort    |                   | Urinary tract infection cohort |                   |
|---|---------------------|-------------------|--------------------------------|-------------------|
|   | Fluoroquinolone     | Azithromycin      | Fluoroquinolone                | TMP-SMX           |
| No. of patients   | 493 392             | 330 998           | 2 354 835                      | 1 105 164         |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 175 (0.04) (0.35)   | 111 (0.03) (0.34) | 992 (0.04) (0.42)              | 475 (0.04) (0.43) |
| Hazard ratio (95% CI)   | 1.06 (0.84 to 1.35) | Reference         | 0.98 (0.88 to 1.09)            | Reference         |

Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole.

**Table 9. Risk of Hospitalizations for Suicidal Ideation or Intentional Self-Harm Before and After Propensity Score Matching following 14 Days after Antibiotic Initiation**

| Analyses   | Before PS-matching   |                      | After PS-matching    |                      |
|--|----------------------|----------------------|----------------------|----------------------|
|  | Fluoroquinolone      | Azithromycin         | Fluoroquinolone      | Azithromycin         |
| <b>Pneumonia cohort</b>                                |                      |                      |                      |                      |
| Antibiotic   | Fluoroquinolone      | Azithromycin         | Fluoroquinolone      | Azithromycin         |
| No. of patients  | 493 392              | 330 998              | 275 521              | 275 521              |
| Intentional self-harm                                  |                      |                      |                      |                      |
| hospitalization events, N (%)<br>(Risk/1 000 patients) | 50 (0.01)<br>(0.10)  | 38 (0.01)<br>(0.11)  | 19 (0.01)<br>(0.07)  | 31 (0.01)<br>(0.11)  |
| Hazard ratio (95% CI)                                  | 0.89 (0.58 to 1.35)  | 1 [Reference]        | 0.61 (0.35 to 1.09)  | 1 [Reference]        |
| <b>Urinary tract infection cohort</b>                  |                      |                      |                      |                      |
| Antibiotic   | Fluoroquinolone      | TMP-SMX              | Fluoroquinolone      | TMP-SMX              |
| No. of patients  | 2 354 835            | 1 105 164            | 1 102 613            | 1 102 613            |
| Intentional self-harm                                  |                      |                      |                      |                      |
| hospitalization events, N (%)<br>(Risk/1 000 patients) | 298 (0.01)<br>(0.13) | 139 (0.01)<br>(0.13) | 132 (0.01)<br>(0.12) | 139 (0.01)<br>(0.13) |
| Hazard ratio (95% CI)                                  | 1.01 (0.82 to 1.23)  | 1 [Reference]        | 0.95 (0.75 to 1.20)  | 1 [Reference]        |

Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole.

**Table 10. Risk of Hospitalizations for Suicidal Ideation or Intentional Self-Harm Before and After Propensity Score Matching following 30 Days after Antibiotic Initiation**

| Analyses  | Before PS-matching  |                   | After PS-matching   |                   |
|---|---------------------|-------------------|---------------------|-------------------|
|   | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| <b>Pneumonia cohort</b>   |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| No. of patients   | 493 392             | 330 998           | 275 521             | 275 521           |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 92 (0.02) (0.19)    | 68 (0.0) (0.21)   | 45 (0.02) (0.16)    | 56 (0.02) (0.20)  |
| Hazard ratio (95% CI)   | 0.91 (0.67 to 1.25) | 1 [Reference]     | 0.80 (0.54 to 1.19) | 1 [Reference]     |
| <b>Urinary tract infection cohort</b>                                     |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | TMP-SMX           | Fluoroquinolone     | TMP-SMX           |
| No. of patients   | 2 354 835           | 1 105 164         | 1 102 613           | 102 613           |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 577 (0.03) (0.25)   | 267 (0.02) (0.24) | 268 (0.02) (0.24)   | 267 (0.02) (0.24) |
| Hazard ratio (95% CI)   | 1.01 (0.88 to 1.17) | 1 [Reference]     | 1.00 (0.85 to 1.19) | 1 [Reference]     |

Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole.

**Table 11. Risk of Hospitalizations for Suicidal Ideation or Intentional Self-Harm Before and After Propensity Score Matching following 90 Days after Antibiotic Initiation**

| Analyses  | Before PS-matching  |                   | After PS-matching   |                   |
|---|---------------------|-------------------|---------------------|-------------------|
|   | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| <b>Pneumonia cohort</b>   |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| No. of patients   | 493 392             | 330 998           | 275 521             | 275 521           |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 250 (0.05) (0.51)   | 162 (0.05) (0.49) | 135 (0.05) (0.49)   | 126 (0.05) (0.46) |
| Hazard ratio (95% CI)   | 1.04 (0.86 to 1.27) | 1 [Reference]     | 1.07 (0.84 to 1.37) | 1 [Reference]     |
| <b>Urinary tract infection cohort</b>                                     |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | TMP-SMX           | Fluoroquinolone     | TMP-SMX           |
| No. of patients   | 2 354 835           | 1 105 164         | 1 102 613           | 1 102 613         |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 1 347 (0.06) (0.57) | 669 (0.06) (0.61) | 671 (0.06) (0.61)   | 668 (0.06) (0.61) |
| Hazard ratio (95% CI)   | 0.95 (0.86 to 1.04) | 1 [Reference]     | 1.00 (0.90 to 1.12) | 1 [Reference]     |

Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole.

**Table 12. Risk of Hospitalizations for Suicidal Ideation or Intentional Self-Harm Before and After Propensity Score Matching following 60 Days after Antibiotic Initiation, including Patients with Cancer, HIV, or History of suicidality**

| Analyses  | Before PS-matching  |                   | After PS-matching*  |                   |
|---|---------------------|-------------------|---------------------|-------------------|
| <b>Pneumonia cohort</b>   |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| No. of patients   | 568 846             | 358 318           | 301 897             | 301 897           |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 205 (0.04) (0.36)   | 117 (0.03) (0.33) | 95 (0.03) (0.31)    | 92 (0.03) (0.30)  |
| Hazard ratio (95% CI)   | 1.11 (0.89 to 1.39) | 1 [Reference]     | 1.03 (0.78 to 1.38) | 1 [Reference]     |
| <b>Urinary tract infection cohort</b>                                     |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | TMP-SMX           | Fluoroquinolone     | TMP-SMX           |
| No. of patients   | 2 809 564           | 1 282 097         | 1 279 894           | 1 279 894         |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 1 219 (0.04) (0.43) | 590 (0.05) (0.46) | 569 (0.04) (0.44)   | 589 (0.05) (0.46) |
| Hazard ratio (95% CI)   | 0.94 (0.85 to 1.04) | 1 [Reference]     | 0.97 (0.86 to 1.08) | 1 [Reference]     |

Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole. HIV, human immunodeficiency virus.

\*Adjustment included cancer, HIV, and history of suicidality, in addition to all covariates listed in Table 3



**Table 13. Risk of Hospitalizations for Suicidal Ideation or Intentional Self-Harm Before and After Propensity Score Matching following 60 Days after Antibiotic Initiation with Restricted Outcome Definition\***

| Analyses  | Before PS-matching  |                   | After PS-matching   |                   |
|---|---------------------|-------------------|---------------------|-------------------|
|   | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| <b>Pneumonia cohort</b>   |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | Azithromycin      | Fluoroquinolone     | Azithromycin      |
| No. of patients   | 493 392             | 330 998           | 275 521             | 275 521           |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 98 (0.02) (0.20)    | 71 (0.02) (0.21)  | 56 (0.02) (0.20)    | 52 (0.02) (0.19)  |
| Hazard ratio (95% CI)   | 0.93 (0.69 to 1.26) | 1 [Reference]     | 1.08 (0.74 to 1.57) | 1 [Reference]     |
| <b>Urinary tract infection cohort</b>                                     |                     |                   |                     |                   |
| Antibiotic  | Fluoroquinolone     | TMP-SMX           | Fluoroquinolone     | TMP-SMX           |
| No. of patients   | 2 354 835           | 1 105 164         | 1 102 613           | 1 102 613         |
| Intentional self-harm hospitalization events, N (%) (Risk/1 000 patients) | 632 (0.03) (0.27)   | 314 (0.03) (0.28) | 307 (0.03) (0.28)   | 314 (0.03) (0.28) |
| Hazard ratio (95% CI)   | 0.94 (0.83 to 1.08) | 1 [Reference]     | 0.98 (0.84 to 1.14) | 1 [Reference]     |

Abbreviations: PS, propensity score; TMP-SMX, trimethoprim and sulfamethoxazole. HIV, human immunodeficiency virus.

\*Restricted outcome definition: primary discharge diagnosis for hospitalizations and emergency room visit diagnosis in any position

**Table 14. Incidence Rates and Hazard Ratios of Subgroup Analyses after Propensity Score Matching following 60 Days after Antibiotic Initiation**

| Subgroup Analyses   | Pneumonia cohort    |              | UTI cohort          |               |
|---|---------------------|--------------|---------------------|---------------|
|   | Fluoroquinolone     | Azithromycin | Fluoroquinolone     | TMP-SMX       |
| <b>by gender, male</b>                                    |                     |              |                     |               |
| No. of patients   | 133 748             | 133 748      | 89 251              | 89 251        |
| Hospitalized self-harm events,<br>N (%)                   | 41<br>(0.03)        | 44<br>(0.03) | 28 (0.03)           | 40 (0.04)     |
| Hazard ratio (95% CI)                                     | 0.93 (0.61 to 1.43) | Ref.         | 0.70 (0.43 to 1.13) | Ref.          |
| <b>by gender, female</b>                                  |                     |              |                     |               |
| No. of patients   | 141 662             | 141 662      | 1 013 274           | 1 013 274     |
| Hospitalized self-harm events,<br>N (%)                   | 49<br>(0.03)        | 43<br>(0.03) | 451<br>(0.04)       | 431<br>(0.04) |
| Hazard ratio (95% CI)                                     | 1.14 (0.76 to 1.72) | Ref.         | 1.05 (0.92 to 1.19) | Ref.          |
| <b>by age, 18-24 y</b>                                    |                     |              |                     |               |
| No. of patients   | 14 932              | 14 932       | 189 300             | 189 300       |
| Hospitalized self-harm events,<br>N (%)                   | 14<br>(0.09)        | 15<br>(0.10) | 162<br>(0.09)       | 171<br>(0.09) |
| Hazard ratio (95% CI)                                     | 0.94 (0.45 to 1.94) | Ref.         | 0.95 (0.76 to 1.17) | Ref.          |
| <b>by age, 25-44 y</b>                                    |                     |              |                     |               |
| No. of patients   | 82 876              | 82 876       | 396 966             | 396 966       |
| Hospitalized self-harm events,<br>N (%)                   | 29<br>(0.03)        | 36<br>(0.04) | 170<br>(0.04)       | 171<br>(0.04) |
| Hazard ratio (95% CI)                                     | 0.80 (0.49 to 1.31) | Ref.         | 0.99 (0.80 to 1.23) | Ref.          |
| <b>by age, 45-64 y</b>                                    |                     |              |                     |               |
| No. of patients   | 121 551             | 121 551      | 392 358             | 392 358       |
| Hospitalized self-harm events,<br>N (%)                   | 32<br>(0.03)        | 31<br>(0.03) | 108<br>(0.03)       | 115<br>(0.03) |
| Hazard ratio (95% CI)                                     | 1.03 (0.63 to 1.69) | Ref.         | 0.94 (0.72 to 1.22) | Ref.          |
| <b>by age, ≥ 65 y</b>                                     |                     |              |                     |               |
| No. of patients   | 56 014              | 56 014       | 123 532             | 123 532       |
| Hospitalized self-harm events,<br>N (%)                   | 8<br>(0.01)         | 6<br>(0.01)  | 28<br>(0.02)        | 18<br>(0.01)  |
| Hazard ratio (95% CI)                                     | 1.35 (0.47 to 3.88) | Ref.         | 1.55 (0.86 to 2.81) | Ref.          |
| <b>by baseline history of mental illness, has history</b> |                     |              |                     |               |
| No. of patients   | 113 110             | 113 110      | 433 477             | 433 477       |
| Hospitalized self-harm events,<br>N (%)                   | 75<br>(0.07)        | 85<br>(0.08) | 381<br>(0.09)       | 406<br>(0.09) |
| Hazard ratio (95% CI)                                     | 0.89 (0.65 to 1.21) | Ref.         | 0.94 (0.82 to 1.08) | Ref.          |
| <b>by baseline history of mental illness, no history</b>  |                     |              |                     |               |
| No. of patients   | 162 536             | 162 536      | 668 537             | 668 537       |
| Hospitalized self-harm events,<br>N (%)                   | 9<br>(0.00)         | 10<br>(0.00) | 73<br>(0.01)        | 67<br>(0.01)  |
| Hazard ratio (95% CI)                                     | 0.90 (0.37 to 2.22) | Ref.         | 1.09 (0.78 to 1.52) | Ref.          |

Abbreviations: TMP-SMX, trimethoprim and sulfamethoxazole