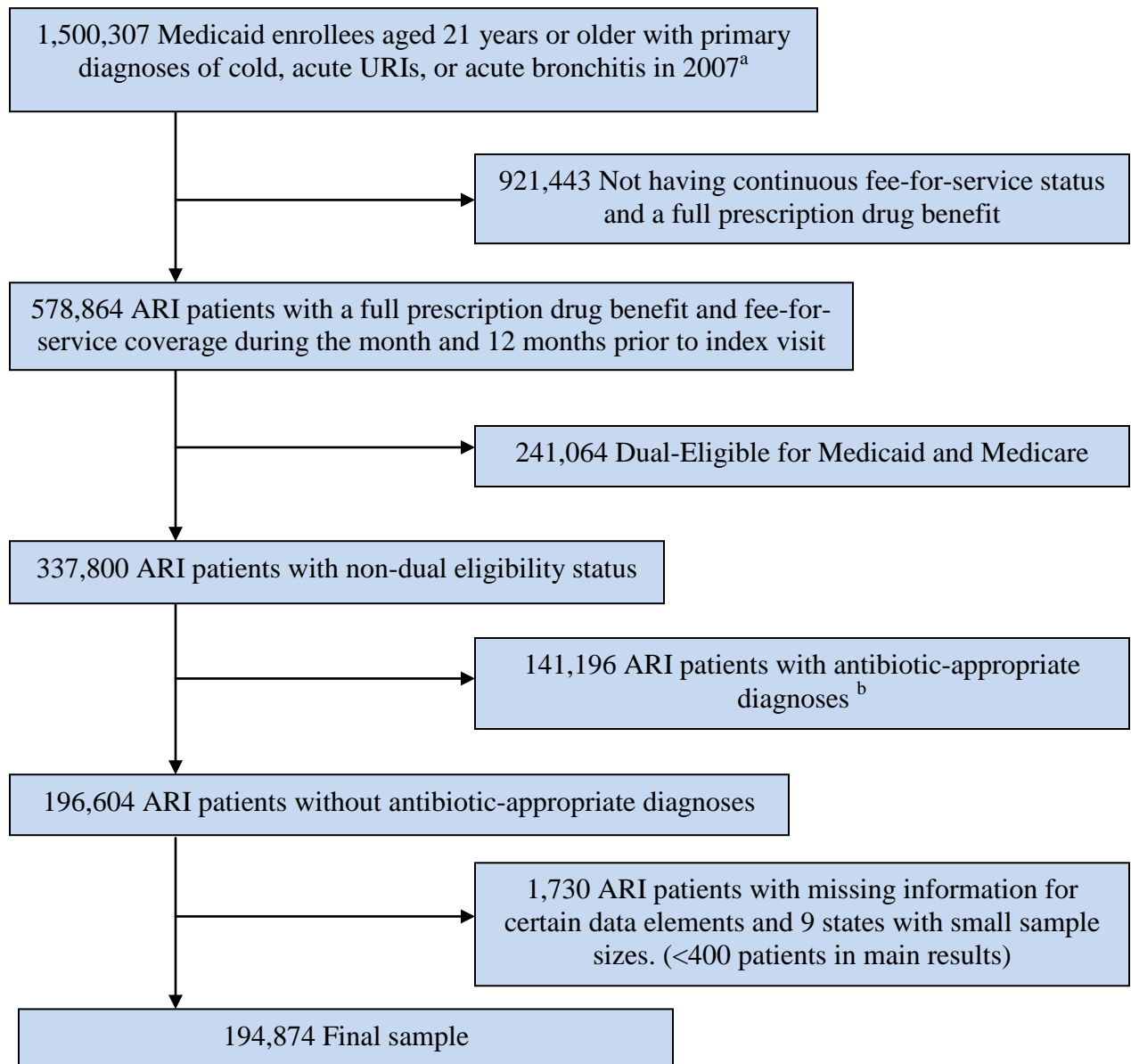


# Unnecessary Use of Antimicrobial Drugs by Medicaid Programs

## Technical Appendix

Technical Appendix Figure (next page). Sample selection diagram. Notes: a: Index visits were identified as the first office visit during the study period with a primary diagnosis of cold (International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM], code 460); acute URIs of multiple, unspecified sites (ICD-9-CM code 465); or acute bronchitis (ICD-9-CM code 466), which we collectively refer to as ARIs (1-9). The identification period for the index visit was January 1, 2007, to December 24, 2007. b: Any visits with the relevant primary diagnosis code that occurred within 30 days of a prior visit for any acute respiratory infections (ICD-9-CM codes 460–466) were excluded.(5) Any visits with antibiotic-appropriate secondary diagnoses were also excluded. These codes included suppurative otitis media (ICD-9-CM code 382), nonsuppurative otitis media (ICD-9-CM code 381–381.4), chronic sinusitis (ICD-9-CM code 473), acute sinusitis (ICD-9-CM code 461), acute tonsillitis (ICD-9-CM code 463), acute pharyngitis (ICD-9-CM code 462), pneumonia (ICD-9-CM codes 481–486), streptococcal sore throat (ICD-9-CM code 034.0), urinary tract infections (ICD-9-CM codes 590, 595, 597, and 599.0), bacterial infections (ICD-9-CM code 041), emphysema (ICD-9-CM code 492), and chronic bronchitis (ICD-9-CM code 491).(10) Patients with diagnosis claims for chronic obstructive pulmonary disease (ICD-9-CM codes 491.20–491.21, 492.0–492.8, 494, 495.0–495.9, and 496) or asthma (ICD-9-CM code 493) within 1 year before and 7 days after the index visit were also excluded.(1) Finally, we also excluded index visits that were followed within 7 days by a visit for any of the listed antibiotic-appropriate diagnoses to further avoid misclassification of simple ARIs.



Technical Appendix Table. Sensitivity and Subgroup Analyses: Odds Ratios for PCP Density and CDC Get Smart Campaign

| Variable  | Odds Ratio (95% Confidence Interval)                  |                     |                     |                     |                     |  |                     |
|---|---|---------------------|---------------------|---------------------|---------------------|--|---------------------|
|   | No. of PCP Physicians per 10,000 Persons <sup>a</sup> |                     |                     |                     |                     | Residence in State Participating in CDC Get Smart Campaign |                     |
|   | <2.2  | 2.2–3.4             | 3.5–4.7             | 4.8–6.5             | >6.5                | No   | Yes                 |
| Main model  | Referent  | 0.96<br>(0.87–1.07) | 0.91<br>(0.80–1.04) | 0.84<br>(0.73–0.96) | 0.76<br>(0.66–0.88) | Referent   | 0.74<br>(0.62–0.88) |
| Varying on covariates                                     |   |                     |                     |                     |                     |  |                     |
| Unadjusted odds ratio                                     | Referent  | 0.98<br>(0.86–1.11) | 0.95<br>(0.81–1.11) | 0.81<br>(0.65–1.00) | 0.71<br>(0.59–0.86) | Referent   | 0.75<br>(0.56–1.02) |
| Only control for patient characteristics <sup>b</sup>     | Referent  | 0.99<br>(0.90–1.09) | 0.92<br>(0.81–1.05) | 0.82<br>(0.70–0.97) | 0.79<br>(0.67–0.93) | Referent   | 0.76<br>(0.61–0.95) |
| Varying on dependent variable measure                     |   |                     |                     |                     |                     |  |                     |
| Link to the visit if antibiotic prescribed ≤3 days        | Referent  | 0.96<br>(0.87–1.07) | 0.91<br>(0.80–1.04) | 0.83<br>(0.73–0.96) | 0.76<br>(0.65–0.88) | Referent   | 0.73<br>(0.61–0.88) |
| Link to the visit if antibiotic prescribed ≤7 days        | Referent  | 0.97<br>(0.87–1.08) | 0.92<br>(0.81–1.04) | 0.84<br>(0.74–0.97) | 0.77<br>(0.67–0.89) | Referent   | 0.74<br>(0.62–0.89) |
| Subgroup analyses   |   |                     |                     |                     |                     |  |                     |
| Age < 65 y  | Referent  | 0.96<br>(0.87–1.07) | 0.91<br>(0.80–1.03) | 0.83<br>(0.72–0.95) | 0.76<br>(0.65–0.88) | Referent   | 0.74<br>(0.61–0.89) |
| Without diabetes or congestive heart failure <sup>c</sup> | Referent  | 0.97<br>(0.87–1.09) | 0.91<br>(0.80–1.03) | 0.82<br>(0.72–0.94) | 0.74<br>(0.64–0.86) | Referent   | 0.75<br>(0.62–0.90) |

\*Data are from the 2007 Medicaid Analytic Extract (MAX) files linked with the area resource file (ARF). Abbreviations: CDC, Centers for Disease Control and Prevention; CI, confidence interval.

<sup>a</sup>The OR is 0.98 (95% CI: 0.96–0.99; P-value < 0.001) if number of PCP Physicians per 10,000 Persons was coded as a continuous variable in the main model.

<sup>b</sup>Regressions were adjusted for age, sex, race, RxHCC, index diagnosis and quarter of index visit date.

<sup>c</sup>Visits with diagnoses of other comorbid conditions, such as diabetes (International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM], codes 250, 357.2, 362.01, 362.02, 366.41) and congestive heart failure (ICD-9-CM code, 428.0) during the 1 year before the index visit date were also excluded.

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