# Outpatient Antibiotic Prescriptions

United States, 2013

## Introduction

Tracking national antibiotic use is an essential public health surveillance activity that allows CDC and its partners to identify opportunities to improve prescribing practices. CDC monitors outpatient antibiotic prescription data to inform antibiotic stewardship priorities and measure progress over time to promote equitable access to quality healthcare and optimize patient safety.

## Data Sources

Systemic oral antibiotics were extracted from the IQVIA Xponent® database.[1] IQVIA captured an estimated 78% of outpatient prescriptions dispensed from retail pharmacies for any medication nationally, reconciled them to wholesale deliveries to these pharmacies, and projected to 100% coverage. These data represent all outpatient antibiotic prescriptions from community pharmacies from all payers but exclude federal facilities. Healthcare provider specialties are based on the American Medical Association (AMA) self-designated practice specialties, Drug Enforcement Administration (DEA), and National Provider Identifier (NPI) sources and categorized into one of 17 groups. Provider specialty denominators are estimated by extracting the total number of providers in each provider specialty from the IQVIA Xponent® prescription database. Rates are calculated using provider specialty denominators for 2011 aggregated by IQVIA. Yearly antibiotic prescription rates per 1,000 persons by age, sex, and region are calculated using annual U.S. Census files.

Note: Methodology for estimating prescriptions for years 2011-2016 does not account for the return or restocking of prescriptions filled, but not picked up by patients. These situations can lead to overstated prescriptions. Starting in 2017, enhancements to IQVIA's methodology also take into account that some prescriptions which are ordered may not be picked up by the patient and that patients may not pay for their prescriptions in the way that the pharmacy expects, leading to prescriptions that are ultimately not dispensed.

**TOTAL OUTPATIENT ORAL ANTIBIOTIC PRESCRIPTIONS IN 2013**

**268.6 million total oral antibiotic prescriptions, at a rate of 850 prescriptions per 1,000 persons**

## Table 1. Oral antibiotic prescriptions by age, sex, and region – United States, 2013

| Characteristics | Number of Antibiotic Prescriptions (Millions)[a] | Antibiotic Prescriptions Per 1,000 Persons, Rate[b] |
|---|---|---|
| **Age Group** | | |
| <20 years | 66.8 | 813 |
| ≥20 years | 197.5 | 844 |
| **Sex** | | |
| Female | 162.8 | 1,014 |
| Male | 104.8 | 673 |
| **Region** | | |
| Northeast | 49.0 | 876 |
| Midwest | 61.0 | 903 |
| South | 111.7 | 943 |
| West | 47.0 | 633 |

a. Totals may not add to all oral prescriptions (268.6 million) due to missing data.
b. Rates were calculated using population data obtained from the 2013 U.S. Census.

## Table 2. Top oral antibiotic classes and agents – United States, 2013

| Characteristics | Number of Antibiotic Prescriptions (Millions) | Antibiotic Prescriptions Per 1,000 Persons, Rate[a] |
|---|---|---|
| **Antibiotic Class** | | |
| Penicillins | 60.8 | 192 |
| Macrolides | 51.0 | 161 |
| Cephalosporins | 36.3 | 115 |
| Fluoroquinolones | 33.2 | 105 |
| B-lactams, increased activity | 23.1 | 73 |
| **Antibiotic Agent** | | |
| Amoxicillin | 53.3 | 169 |
| Azithromycin | 47.2 | 149 |
| Amoxicillin-clavulanic avid | 23.1 | 73 |
| Trimethoprim-sulfamethoxazole | 21.3 | 67 |
| Ciprofloxacin | 21.3 | 67 |
| Cephalexin | 21.2 | 67 |

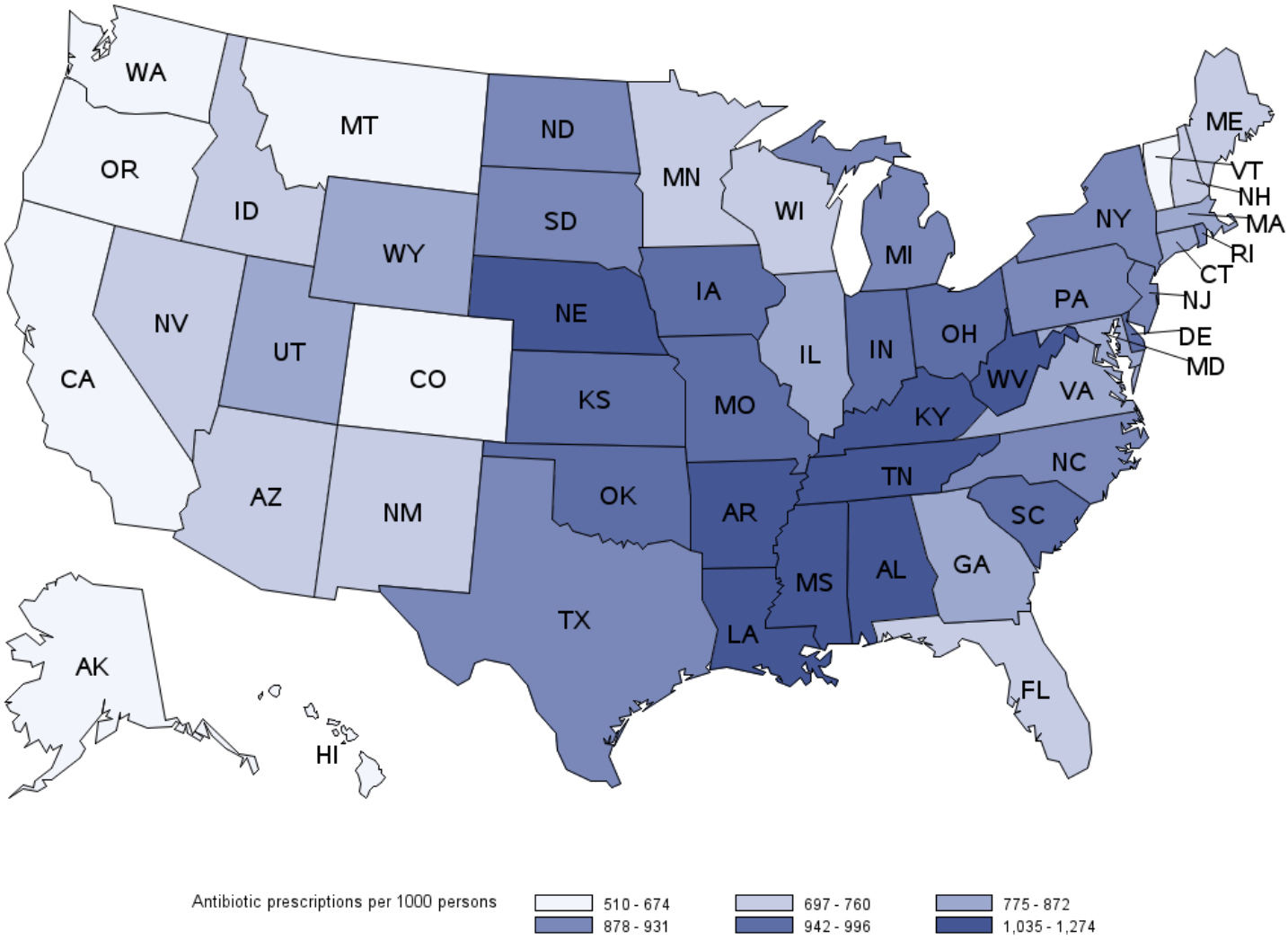
a. Rates were calculated using population data obtained from the 2013 U.S. Census.

## Table 3. Oral antibiotic prescribing by specialty – United States, 2013

| Specialty | Number of Antibiotic Prescriptions (Millions) | Antibiotic Prescriptions Per Provider, Rate[a] |
|---|---|---|
| Primary Care Physicians | 121.7 | 512 |
| Physician Assistants & Nurse Practitioners | 48.4 | 279 |
| Surgical Specialties | 20.3 | 228 |
| Dentistry | 24.5 | 200 |
| Emergency Medicine | 14.3 | 441 |
| Dermatology | 7.9 | 700 |
| Obstetrics/Gynecology | 6.8 | 182 |
| Other | 24.7 | 119 |
| All Healthcare Professionals | 268.6 | 295 |

a. Rates were calculated using provider specialty denominators for 2011 aggregated by IQVIA.

## Figure 1. Antibiotic prescriptions per 1,000 persons by state (sextiles) for all ages – United States, 2013




## Table 4. Oral antibiotic prescribing by state – United States, 2013

| State | Antibiotic Prescriptions Per 1,000 Persons, Rate[a] |
|---|---|
| Alabama | 1167 |
| Alaska | 510 |
| Arizona | 760 |
| Arkansas | 1149 |
| California | 592 |
| Colorado | 633 |
| Connecticut | 846 |
| Delaware | 974 |
| District of Columbia | 1048 |
| Florida | 738 |
| Georgia | 872 |
| Hawaii | 650 |
| Idaho | 705 |

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|---|---|
| Illinois | 859 |
| Indiana | 988 |
| Iowa | 972 |
| Kansas | 996 |
| Kentucky | 1241 |
| Louisiana | 1192 |
| Maine | 726 |
| Maryland | 814 |
| Massachusetts | 775 |
| Michigan | 931 |
| Minnesota | 707 |
| Mississippi | 1225 |
| Missouri | 942 |
| Montana | 674 |
| Nebraska | 1035 |
| Nevada | 717 |
| New Hampshire | 710 |
| New Jersey | 924 |
| New Mexico | 697 |
| New York | 907 |
| North Carolina | 901 |
| North Dakota | 878 |
| Ohio | 966 |
| Oklahoma | 968 |
| Oregon | 578 |
| Pennsylvania | 897 |
| Rhode Island | 901 |
| South Carolina | 964 |
| South Dakota | 894 |
| Tennessee | 1190 |
| Texas | 918 |
| Utah | 813 |
| Vermont | 656 |
| Virginia | 834 |
| Washington | 609 |
| West Virginia | 1274 |
| Wisconsin | 748 |
| Wyoming | 789 |

a. Rates were calculated using population data obtained from the 2013 U.S. Census.

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References

1. Hicks LA, Bartoces MG, Roberts RM, Suda KJ, Hunkler RJ, Taylor TH Jr, Schrag SJ. US outpatient antibiotic prescribing variation according to geography, patient population, and provider specialty in 2011. Clin Infect Dis. 2015 May 1;60(9):1308-16. doi: 10.1093/cid/civ076. Epub 2015 Mar 5. PMID: 25747410.