

# Outpatient Antibiotic Prescriptions

United States, 2014

## 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<sup>®</sup> database.<sup>1</sup> IQVIA captured an estimated 86% 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<sup>®</sup> 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 2014

266.1 million total oral antibiotic prescriptions, at a rate of 835 prescriptions per 1,000 persons



**Table 1. Oral antibiotic prescriptions by age, sex, and region – United States, 2014**

Characteristics	Number of Antibiotic Prescriptions (Millions) <sup>a</sup>	Antibiotic Prescriptions Per 1,000 Persons, Rate <sup>b</sup>
<b>Age Group</b>		
<20 years	63.9	778
≥20 years	198.3	838
<b>Sex</b>		
Female	161.7	999
Male	103.4	659
<b>Region</b>		
Northeast	48.6	866
Midwest	60.8	897
South	110.5	923
West	46.3	615

a. Totals may not add to all oral prescriptions (266.1 million) due to missing data.

b. Rates were calculated using population data obtained from the 2014 U.S. Census.

**Table 2. Top oral antibiotic classes and agents – United States, 2014**

Characteristics	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per 1,000 Persons, Rate <sup>a</sup>
<b>Antibiotic Class</b>		
Penicillins	60.7	191
Macrolides	49.0	154
Cephalosporins	35.7	112
Fluoroquinolones	32.8	103
B-lactams, increased activity	23.5	74
<b>Antibiotic Agent</b>		
Amoxicillin	53.6	168
Azithromycin	45.7	143
Amoxicillin-clavulanic acid	23.5	74
Cephalexin	21.3	67
Ciprofloxacin	20.8	65

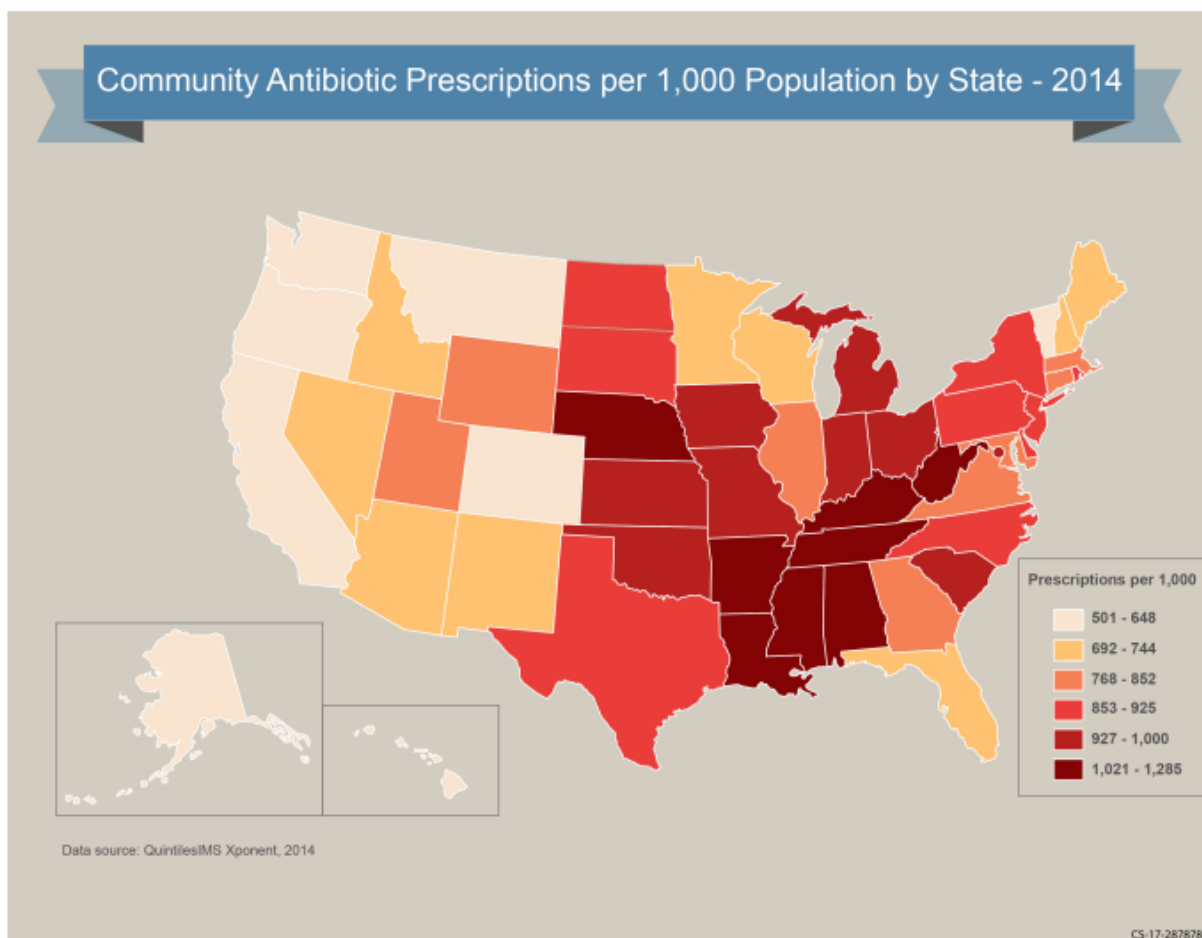
a. Rates were calculated using population data obtained from the 2014 U.S. Census.

**Table 3. Oral antibiotic prescribing by specialty – United States, 2014**

Specialty	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per Provider, Rate <sup>a</sup>
Primary Care Physicians	114.7	483
Physician Assistants & Nurse Practitioners	54.4	314
Surgical Specialties	19.9	223
Dentistry	24.9	203
Emergency Medicine	14.2	440
Dermatology	7.6	669
Obstetrics/Gynecology	6.6	175
Other	23.8	114
All Healthcare Professionals	266.1	292

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, 2014**



**Table 4. Oral antibiotic prescribing by state – United States, 2014**

State	Antibiotic Prescriptions Per 1,000 Persons, Rate <sup>a</sup>
Alabama	1123
Alaska	501
Arizona	740
Arkansas	1155
California	570
Colorado	624
Connecticut	847
Delaware	938
District of Columbia	1021
Florida	728
Georgia	840
Hawaii	643
Idaho	692
Illinois	852
Indiana	950
Iowa	1000
Kansas	992
Kentucky	1262
Louisiana	1177

Maine	720
Maryland	796
Massachusetts	768
Michigan	925
Minnesota	710
Mississippi	1222
Missouri	936
Montana	648
Nebraska	1045
Nevada	709
New Hampshire	701
New Jersey	902
New Mexico	714
New York	899
North Carolina	861
North Dakota	853
Ohio	964
Oklahoma	965
Oregon	570
Pennsylvania	885
Rhode Island	892
South Carolina	927
South Dakota	901
Tennessee	1162
Texas	899
Utah	783
Vermont	638
Virginia	799
Washington	600
West Virginia	1285
Wisconsin	744
Wyoming	777

a. Rates were calculated using population data obtained from the 2014 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.