

Outpatient Antibiotic Prescriptions

United States, 2015

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 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® 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, which 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 2015

269.4 million total oral antibiotic prescriptions, at a rate of 838 prescriptions per 1,000 persons



Table 1. Oral antibiotic prescriptions by age, sex, and region – United States, 2015

Characteristics	Number of Antibiotic Prescriptions (Millions) ^a	Antibiotic Prescriptions Per 1,000 Persons, Rate ^b
Age Group		
<20 years	64.7	788
≥20 years	203.3	850
Sex		
Female	164.0	1,005
Male	104.9	663
Region		
Northeast	48.8	867
Midwest	61.0	898
South	111.5	920
West	48.1	632

a. Totals may not add to all oral prescriptions (269.4 million) due to missing data.

b. Rates were calculated using population data obtained from the 2015 U.S. Census.

Table 2. Top oral antibiotic classes and agents – United States, 2015

Characteristics	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per 1,000 Persons, Rate ^a
Antibiotic Class		
Penicillins	61.6	192
Macrolides	49.4	154
Cephalosporins	36.3	113
Fluoroquinolones	32.5	101
B-lactams, increased activity	25.3	79
Antibiotic Agent		
Amoxicillin	54.8	171
Azithromycin	46.2	144
Amoxicillin-clavulanic acid	25.3	79
Cephalexin	21.4	67
Ciprofloxacin	20.3	63

a. Rates were calculated using population data obtained from the 2015 U.S. Census.

Table 3. Oral antibiotic prescribing by specialty – United States, 2015

Specialty	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per Provider, Rate ^a
Primary Care Physicians	110.8	466
Physician Assistants & Nurse Practitioners	62.9	363
Surgical Specialties	19.5	219
Dentistry	25.1	205
Emergency Medicine	14.8	457
Dermatology	7.1	628
Obstetrics/Gynecology	6.3	167
Other	22.9	110
All Healthcare Professionals	269.4	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, 2015

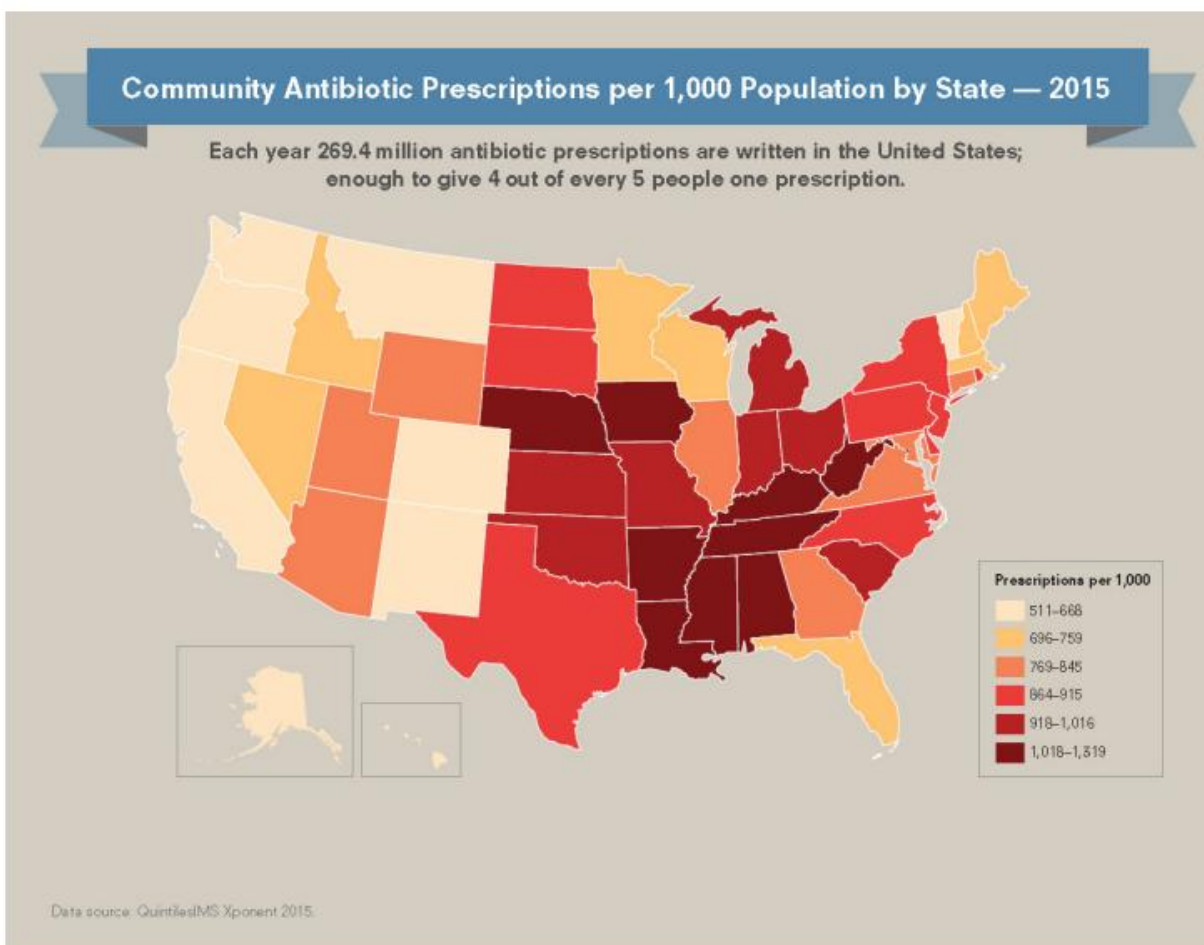


Table 4. Oral antibiotic prescribing by state – United States, 2015

State	Antibiotic Prescriptions Per 1,000 Persons, Rate ^a
Alabama	1149
Alaska	511
Arizona	769
Arkansas	1154
California	590
Colorado	624
Connecticut	843
Delaware	915
District of Columbia	979
Florida	706
Georgia	830
Hawaii	640
Idaho	720
Illinois	845
Indiana	964
Iowa	1018
Kansas	1016
Kentucky	1256

Louisiana	1174
Maine	732
Maryland	794
Massachusetts	759
Michigan	918
Minnesota	696
Mississippi	1254
Missouri	944
Montana	662
Nebraska	1072
Nevada	733
New Hampshire	728
New Jersey	903
New Mexico	724
New York	898
North Carolina	872
North Dakota	864
Ohio	964
Oklahoma	966
Oregon	582
Pennsylvania	895
Rhode Island	888
South Carolina	936
South Dakota	893
Tennessee	1165
Texas	895
Utah	779
Vermont	668
Virginia	804
Washington	610
West Virginia	1319
Wisconsin	745
Wyoming	789

a. Rates were calculated using population data obtained from the 2015 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.