

Outpatient Antibiotic Prescriptions

United States, 2011

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 74% 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 2011

273.3 million total oral antibiotic prescriptions, at a rate of 877 prescriptions per 1,000 persons



Table 1. Oral antibiotic prescriptions by age, sex, and region – United States, 2011

Characteristics	Number of Antibiotic Prescriptions (Millions) ^a	Antibiotic Prescriptions Per 1,000 Persons, Rate ^b
Age Group		
<20 years	75.2	908
≥20 years	191.9	839
Sex		
Female	164.2	1,037
Male	106.5	695
Region		
Northeast	49.6	894
Midwest	63.4	944
South	111.4	960
West	48.9	671

a. Totals may not add to all oral prescriptions (273.3 million) due to missing data.

b. Rates were calculated using population data obtained from the 2011 U.S. Census.

Table 2. Top oral antibiotic classes and agents – United States, 2011

Characteristics	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per 1,000 Persons, Rate ^a
Antibiotic Class		
Penicillins	61.1	196
Macrolides	59.2	190
Cephalosporins	36.6	117
Fluoroquinolones	31.6	101
B-lactams, increased activity	22.1	71
Antibiotic Agent		
Azithromycin	54.3	174
Amoxicillin	52.9	170
Amoxicillin-clavulanic acid	22.1	71
Ciprofloxacin	21.0	67
Trimethoprim-sulfamethoxazole	20.4	66

a. Rates were calculated using population data obtained from the 2011 U.S. Census.

Table 3. Oral antibiotic prescribing by specialty – United States, 2011

Specialty	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per Provider, Rate ^a
Primary Care Physicians	134.9	568
Physician Assistants & Nurse Practitioners	38.5	222
Surgical Specialties	20.8	233
Dentistry	23.0	187
Emergency Medicine	14.7	454
Dermatology	8.5	746
Obstetrics/Gynecology	7.2	191
Other	25.7	124
All Healthcare Professionals	273.3	300

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, 2011

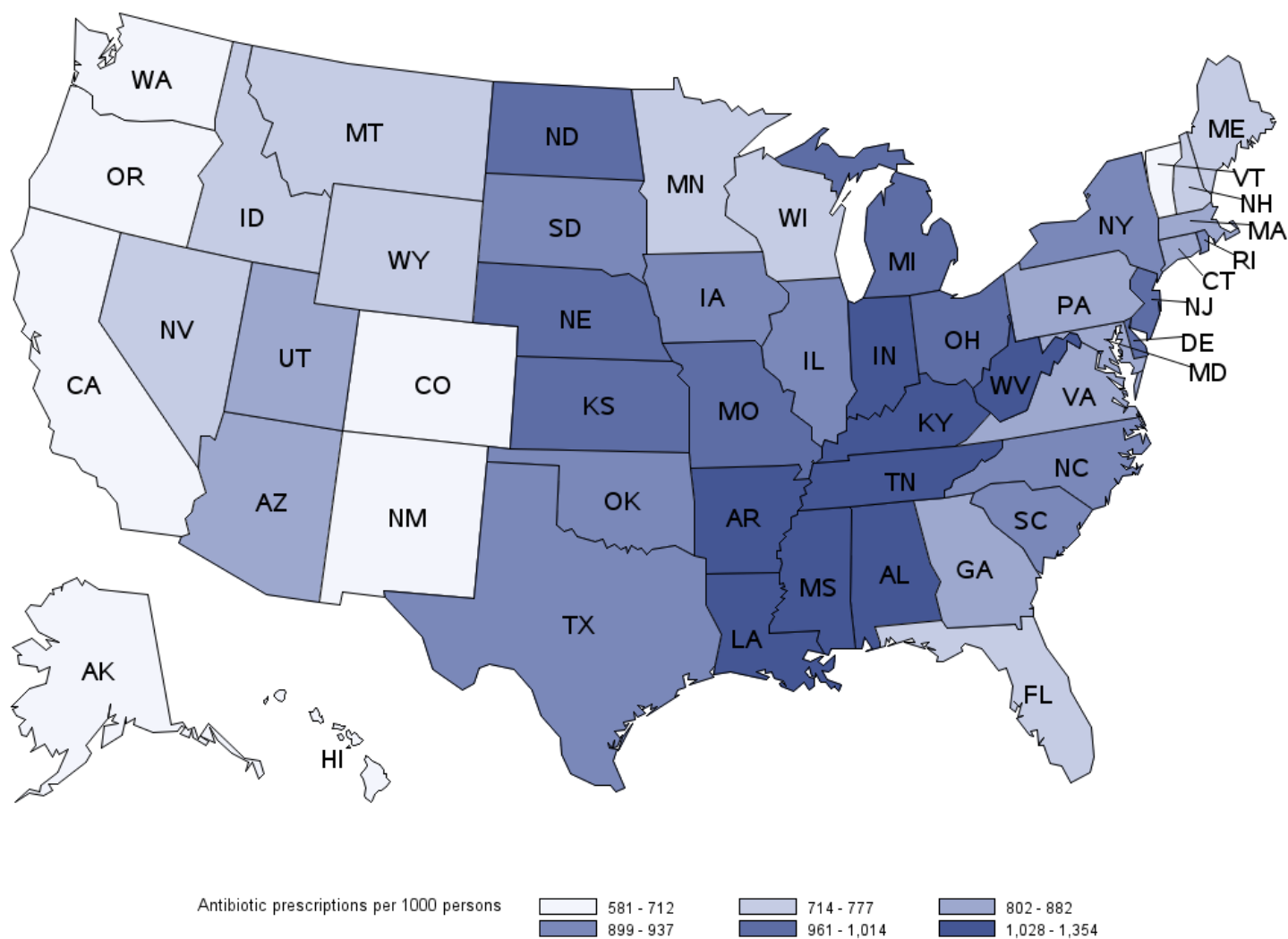


Table 4. Oral antibiotic prescribing by state – United States, 2011

State	Antibiotic Prescriptions Per 1,000 Persons, Rate ^a
Alabama	1153
Alaska	588
Arizona	811
Arkansas	1032
California	629
Colorado	663
Connecticut	885
Delaware	1025
District of Columbia	1065
Florida	780
Georgia	874
Hawaii	681

Idaho	739
Illinois	907
Indiana	1059
Iowa	937
Kansas	1018
Kentucky	1321
Louisiana	1194
Maine	769
Maryland	862
Massachusetts	845
Michigan	1006
Minnesota	746
Mississippi	1186
Missouri	975
Montana	724
Nebraska	1009
Nevada	724
New Hampshire	724
New Jersey	965
New Mexico	714
New York	915
North Carolina	908
North Dakota	1003
Ohio	993
Oklahoma	911
Oregon	635
Pennsylvania	876
Rhode Island	936
South Carolina	940
South Dakota	924
Tennessee	1246
Texas	931
Utah	846
Vermont	697
Virginia	868
Washington	662
West Virginia	1354
Wisconsin	779
Wyoming	773

a. Rates were calculated using population data obtained from the 2011 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.