Outpatient Antibiotic Prescriptions

United States, 2022

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 93% 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 2022 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: 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. The previous methodology did not account for the return or restocking of these prescriptions filled, but not picked up by patients. Accounting for these situations, which can lead to overstated prescriptions, likely makes the revised methodology data more accurate.

TOTAL OUTPATIENT ORAL ANTIBIOTIC PRESCRIPTIONS IN 2022

236.4 million total oral antibiotic prescriptions, at a rate of 709 prescriptions per 1,000 persons

Table 1. Oral antibiotic prescriptions by age, sex, and region – United States, 2022

Characteristics	Number of Antibiotic Prescriptions (Millions)[a]	Antibiotic Prescriptions Per 1,000 Persons, Rate[b]
Age Group		
<20 years	48.5	598
≥20 years	187.6	744
Sex		
Female	144.9	862
Male	91.3	552
Region		
Northeast	41.1	721
Midwest	49.5	719
South	106.2	825
West	39.5	502

a. Totals may not add to all oral prescriptions (236.4 million) due to missing data.
b. Rates were calculated using population data obtained from the 2022 U.S. Census.

Table 2. Top oral antibiotic classes and agents – United States, 2022

Characteristics	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per 1,000 Persons, Rate[a]
Antibiotic Class		
Penicillins	53.2	161
Macrolides	36.1	110
Cephalosporins	36.0	109
B-lactams, increased activity	28.7	87
Tetracyclines	27.1	82
Antibiotic Agent		
Amoxicillin	49.8	151
Azithromycin	34.9	106
Amoxicillin-clavulanic avid	28.7	87
Doxycycline	24.1	73
Cephalexin	21.0	64

a. Rates were calculated using population data obtained from the 2022 U.S. Census.

Table 3. Oral antibiotic prescribing by specialty – United States, 2022

Specialty	Number of Antibiotic Prescriptions (Millions)	Antibiotic Prescriptions Per Provider, Rate[a]
Primary Care Physicians	70.0	179
Physician Assistants & Nurse Practitioners	84.4	165
Surgical Specialties	16.4	115
Dentistry	25.2	127
Emergency Medicine	12.0	182
Dermatology	5.4	299
Obstetrics/Gynecology	4.5	81
Other	18.5	27
All Healthcare Professionals	236.4	114

a. Rates were calculated using provider specialty denominators for 2022 aggregated by IQVIA.

Figure 1. Antibiotic prescriptions per 1,000 persons by state (sextiles) for all ages – United States, 2022

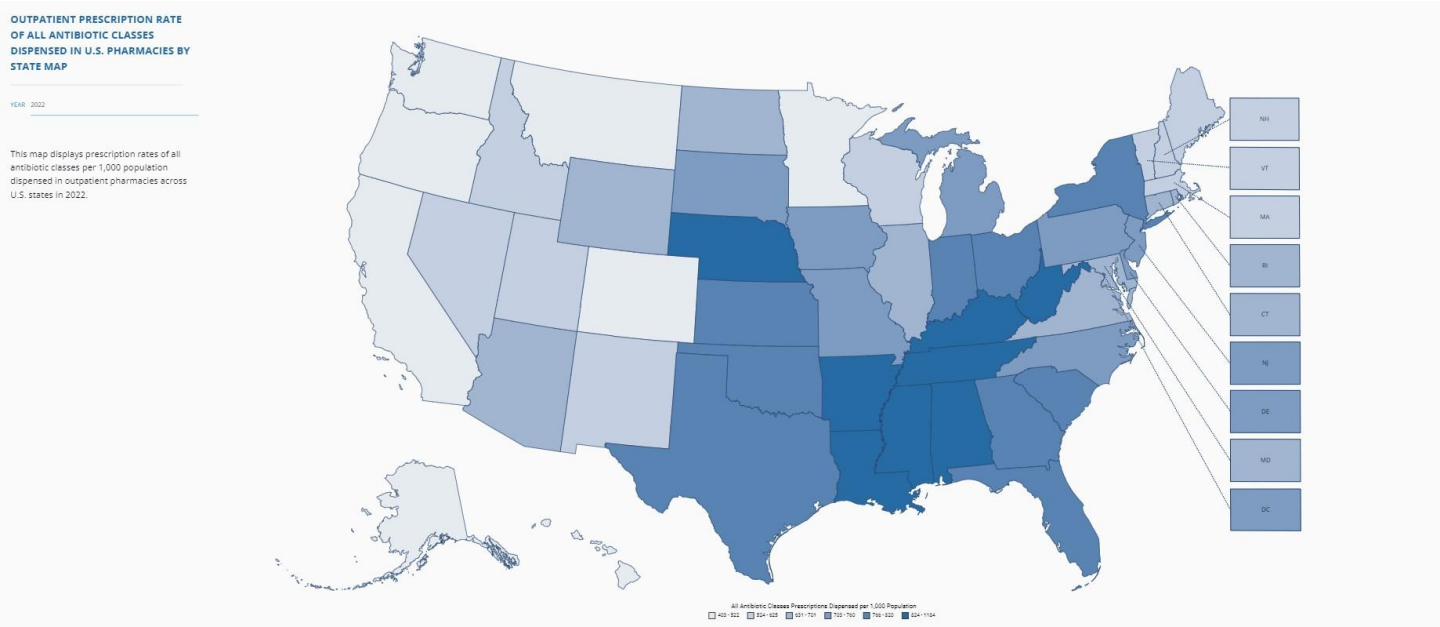

Table 4. Oral antibiotic prescribing by state – United States, 2022

State	Antibiotic Prescriptions Per 1,000 Persons, Rate[a]
Alabama	1030
Alaska	403
Arizona	634
Arkansas	1020
California	470
Colorado	484
Connecticut	694
Delaware	703
District of Columbia	748
Florida	781
Georgia	802
Hawaii	474
Idaho	565
Illinois	701
Indiana	782
Iowa	760
Kansas	803
Kentucky	1053
Louisiana	1066
Maine	571
Maryland	631
Massachusetts	621
Michigan	755
Minnesota	522
Mississippi	1149
Missouri	731
Montana	522
Nebraska	824
Nevada	619
New Hampshire	615
New Jersey	749
New Mexico	617

New York	766
North Carolina	722
North Dakota	649
Ohio	798
Oklahoma	808
Oregon	435
Pennsylvania	732
Rhode Island	697
South Carolina	820
South Dakota	722
Tennessee	967
Texas	780
Utah	625
Vermont	524
Virginia	682
Washington	437
West Virginia	1184
Wisconsin	554
Wyoming	689

a. Rates were calculated using population data obtained from the 2022 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.