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# Outpatient Antibiotic Prescribing Varied Across the United States in 2016

This fact sheet was updated in June 2019

## Overview

The prescribing of antibiotics in outpatient health care facilities, such as primary care clinics and emergency rooms, represents a large proportion of antibiotic use in the United States. One study found that these settings accounted for over half of all dollars spent on antibiotics in the U.S. in 2015.<sup>1</sup> Because of this contribution to overall antibiotic prescribing, any efforts to minimize the threat of antibiotic resistance and improve patient safety must focus on improving antibiotic use in outpatient facilities.

One important aspect of outpatient antibiotic stewardship is understanding variations in antibiotic prescribing. For example, are patients in certain states prescribed antibiotics at a higher rate than those in other locations? What types of providers account for the largest amount of antibiotic prescribing among outpatients? This type of evaluation affords a better understanding of how antibiotics are prescribed in the U.S. and also allows for improved targeting of antibiotic stewardship efforts.

The Centers for Disease Control and Prevention examined 2011-16 IQVIA Xponent data on outpatient prescribing of oral antibiotics in the U.S. Presented below are select results from this analysis, focusing on geographic variation in the rate of prescriptions and the types of providers ordering antibiotics in outpatient settings.<sup>2</sup> Additional analysis, supported by The Pew Charitable Trusts, is available on the agency's website.

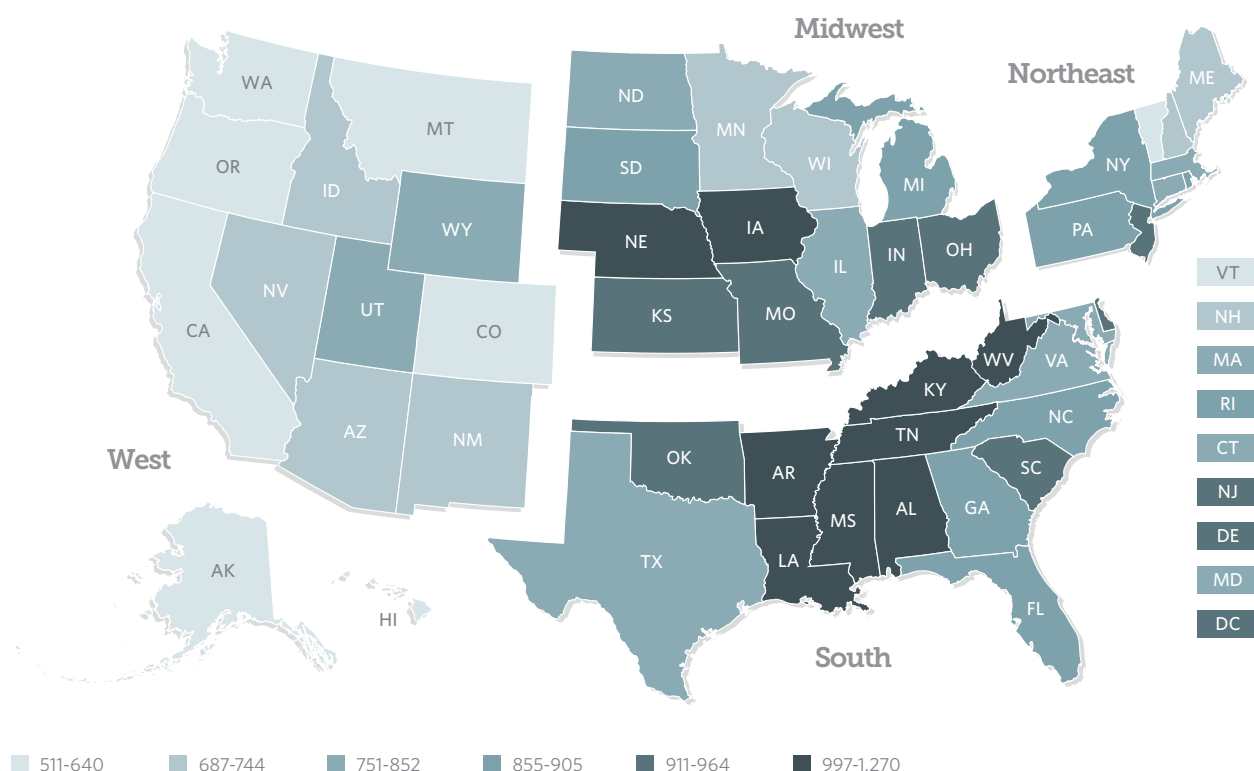
## Geographic variation in outpatient prescribing

Clear geographic variation exists in the prescribing of outpatient antibiotics in the U.S. On average, individuals in Southern states are prescribed more antibiotics than those in any other part of the country.<sup>3</sup> In contrast, Western states had the lowest prescribing rates overall. For example, individuals in Kentucky, the state with the highest antibiotic prescribing rate, received over twice as many antibiotics in 2016 as those in Alaska, the state with the lowest prescribing rate (after adjusting for differences in population size). Eight states—all but one of them in the South—averaged one antibiotic prescription or more per person annually. Data from 2011-15 show a similar pattern.

Figure 1

### Outpatient Antibiotic Prescriptions by State, 2016

Antibiotic prescriptions per 1,000 persons



Source: The Centers for Disease Control and Prevention

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Although geographic variation alone does not indicate how much of these states' antibiotic prescribing is unnecessary or inappropriate, it highlights regions where targeted antibiotic stewardship efforts may prove useful.

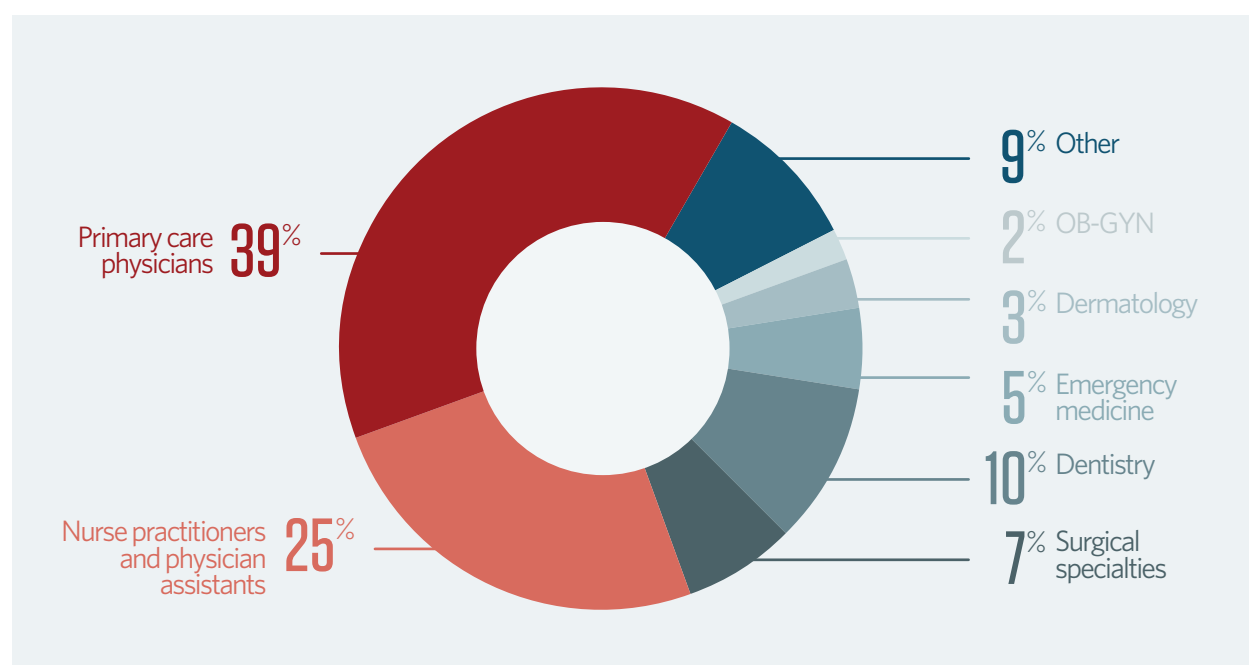
## Outpatient prescribing by provider type

Understanding which types of health care practitioners most frequently prescribe outpatient antibiotics can help prioritize antibiotic stewardship efforts. Primary care physicians—including family practice doctors, pediatricians, and internal medicine physicians—are key providers of outpatient health care services in the U.S. Collectively, they accounted for 39 percent of all outpatient antibiotic prescriptions in 2016. Engaging these practitioners will be essential to improving outpatient antibiotic stewardship.

Figure 2

### Outpatient Oral Antibiotic Prescribing by Provider Specialty, 2016

Percentage of antibiotic prescriptions



Source: The Centers for Disease Control and Prevention

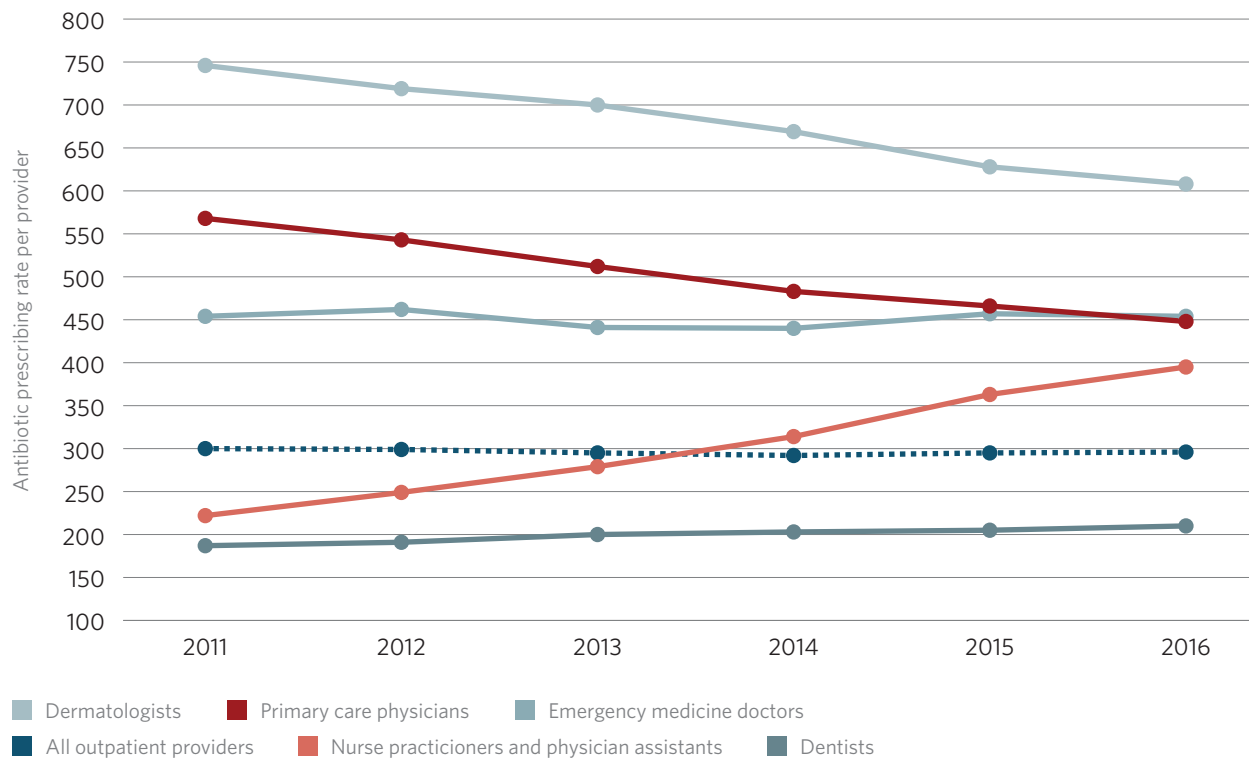
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A wide range of other health care providers also prescribe antibiotics in outpatient settings. In 2016, nurse practitioners and physician assistants accounted for 25 percent of all outpatient antibiotic prescriptions, an increase of 78 percent since 2011. Examples of other specialists who regularly prescribe antibiotics are dentists (10 percent), emergency medicine physicians (5 percent), and dermatologists (3 percent). Although the proportion of total antibiotic prescriptions is not indicative of the appropriateness of prescribing, targeted engagement of these and other outpatient providers in antibiotic stewardship efforts could have a meaningful impact on reducing unnecessary antibiotic use.

Figure 3

## Change in Outpatient Oral Antibiotic Prescribing by Provider Specialty

Rate of antibiotic prescriptions



Source: The Centers for Disease Control and Prevention

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Figure 4

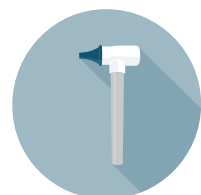
## Outpatient Antibiotic Prescribing Variation, 2016

Examples by provider specialties



### Primary care physicians

- Accounted for 39 percent of all antibiotics prescribed in outpatient settings.
- Prescribed over 106 million courses of antibiotics.
- Wrote an average of 448 antibiotic prescriptions each.



### Physician assistants and nurse practitioners

- Accounted for 25 percent of all antibiotics prescribed in outpatient settings.
- Prescribed over 68 million courses of antibiotics.
- Wrote an average of 395 antibiotic prescriptions each.



### Emergency medicine providers

- Accounted for 5 percent of all antibiotics prescribed in outpatient settings.
- Prescribed nearly 15 million courses of antibiotics.
- Wrote an average of 454 antibiotic prescriptions each.



### Dentists

- Accounted for 10 percent of all antibiotics prescribed in outpatient settings.
- Prescribed over 25 million courses of antibiotics.
- Wrote an average of 210 antibiotic prescriptions each.



### Dermatologists

- Accounted for 3 percent of all antibiotics prescribed in outpatient settings.
- Prescribed nearly 7 million courses of antibiotics.
- Wrote an average of 608 antibiotic prescriptions each.

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## Endnotes

- 1 Katie J. Suda et al., "Antibiotic Expenditures by Medication, Class, and Health Care Setting in the United States, 2010-2015," *Clinical Infectious Diseases* cix773, <https://doi.org/10.1093/cid/cix773>.
- 2 Centers for Disease Control and Prevention, "Measuring Outpatient Antibiotic Prescribing—Outpatient Antibiotic Prescription Report by Year," accessed Feb. 26, 2019, <https://www.cdc.gov/antibiotic-use/community/programs-measurement/measuring-antibiotic-prescribing.html>.
- 3 U.S. Census Bureau, "Census Regions and Divisions of the United States," [https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf). For this analysis, the four U.S. regions—Northeast, South, Midwest, and West—were based on U.S. census regions.

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*This fact sheet was updated in June 2019 with outpatient antibiotic prescribing data from 2016.*

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