

Center for Medicare and Medicaid Services Prescriber Data Project

Healthcare Safety Unit
Antimicrobial Stewardship Team
Data Team

Disease Surveillance and Epidemiology Section
Office of the Chief State Epidemiologist



TEXAS
Health and Human
Services

Texas Department of
State Health Services

Department of State Health Services
2024

Table of Contents

| | |
|---|---|
| Antimicrobial Stewardship in Texas..... | 3 |
| Background..... | 3 |
| Methods and Analyses..... | 3 |
| Data Considerations and Limitations..... | 3 |
| Results..... | 4 |
| Medicare Part D Antibiotic Claims in Texas..... | 4 |
| Medicare Part D Antibiotic Claims by Public Health Region..... | 5 |
| Provider Types with the Most Medicare Part D Antibiotic Claims..... | 8 |
| Summary | 9 |
| References | 9 |

Antimicrobial Stewardship in Texas

Background

Antimicrobial resistance (AR) occurs when germs develop the ability to defeat the medicines designed to kill them. These medicines, referred as antimicrobials, include antibiotics, antivirals, antifungals, and antiparasitic. While these medicines have the potential to save lives, overuse or misuse can make infections difficult to treat.¹

In the United States, over 2.8 million AR infections occur annually and over 35,000 of those infections result in death.² Outpatient antimicrobial prescriptions are highest in the Southern United States and continue rising.³ In 2021, Texas had the 15th highest number of antibiotic prescriptions dispensed in the United States (708 prescriptions per 1,000 people).³

To reduce AR, healthcare facilities engage in antimicrobial stewardship (AS), a set of commitments and activities to improve the treatment of infections while reducing adverse events of antimicrobial use. The Department of State Health Services (DSHS) Healthcare Safety Unit (HSU), within the Office of Chief State Epidemiologist, the AS team collaborates with Texas healthcare facilities to improve AR and AS by promoting interventions to measure and improve antimicrobial use through the [Centers for Disease Control and Prevention \(CDC\) “5 D's”](#) and [Core Elements of AS](#).

The AS Team, in collaboration with HSU's Data Team, created this report to summarize Texas antibiotic prescribing trends using Center for Medicare and Medicaid Services (CMS) data. The data in this report only represent claims for people receiving Medicare Part D in 2022, thus the data may not generalize to older adults not receiving Medicare Part D or to data from other years. However, the analyses allowed the DSHS AS Team to better understand the prescribing trends for the most frequently prescribed antibiotics in Texas. The AS Team will use these data to guide collaborative Texas AS outreach, allowing individualized AS support across [Texas Public Health Regions \(PHR\)](#), and/or Provider Type (e.g., Family practice, Dentistry). This AS outreach, combined with the Centers for Disease Control and Prevention (CDC) [educational materials](#) and regional and local health department collaborations, will increase data-driven AS activities in Texas, potentially decreasing AR in Texas and improving health outcomes.

Methods and Analyses

The analysis presented in this report used the CMS Medicare Part D Prescribers 2022 public datasets: the [Medicare Part D Prescribers - by Geography and Drug](#) and [Medicare Part D Prescribers - by Provider and Drug](#). The datasets were filtered to include only providers from Texas and drugs classified as antibiotics (see the [“by Geography and Drug”](#) and [“by Provider and Drug”](#) data dictionaries for variable definitions). The analysis included total antibiotic drug claims submitted to Medicare Part D and does not include claims submitted to Medicare Part A for antibiotics prescribed during inpatient stays. The top ten antibiotics with the most claims were identified. For each of the top ten antibiotics with the most claims, Excel data analyses included the rate of claims per: 100 prescribers; 100 Medicare Part D beneficiaries by PHR; and 100 Medicare provider types with the most Medicare Part D claims.

Data Considerations and Limitations

Since Table 1 and Table 2 data are aggregated, the claim rate per 100 prescribers is approximate; individual prescribers claims vary. Additionally, aggregated records based on total claims fewer than 11 are not included, thus these data do not represent all Texas antibiotic claims. CMS uses this reporting cut-off value of 11 to protect the privacy of Medicare beneficiaries. The “Medicare Part D Prescribers - by Provider and Drug” dataset conveys a more accurate representation of claims per prescriber; however, this dataset also excludes total

claims fewer than 11. The published [Medicare Part D Prescribers Methodology](#) explains the total claim data redaction and suppression process.

The CMS Medicare Part D report summarizes Medicare Part D antibiotic prescribing trends in Texas. These data only represent claims for people receiving Medicare Part D in 2022, thus the data may not generalize to older adults not receiving Medicare Part D or to data from other years. These data may overrepresent prescribers with a larger share of Medicare beneficiaries and/or patients with complex medical conditions. These data also do not permit analysis of specific prescriber characteristics (e.g., age, specialty) between or among prescribers, so prescriber-specific causes of these data trends cannot be assessed. Patient diagnoses and indications for prescriptions are not available, disallowing evaluation of the antibiotic appropriateness.

Results

Medicare Part D Antibiotic Claims in Texas

In 2022, 10 antibiotics made up 78% of all Texas Medicare Part D antibiotic claims (N = 4,940,313). Azithromycin had the most claims (n = 695,212, 14%) followed by Amoxicillin (n = 548,941, 11%), and Amoxicillin/Potassium Clavulanate (n = 462,792, 9%). Antibiotics with the most claims per 100 prescribers were Azithromycin (n = 1,530), Amoxicillin (n = 1,265), and Ciprofloxacin Hydrochloride (n = 976) (Table 1), indicating that for every one prescriber, there were around 15 Azithromycin claims, 13 Amoxicillin claims, and 10 Ciprofloxacin claims.

Table 1. Top 10 Antibiotics with the most Medicare Part D Claims in Texas, 2022

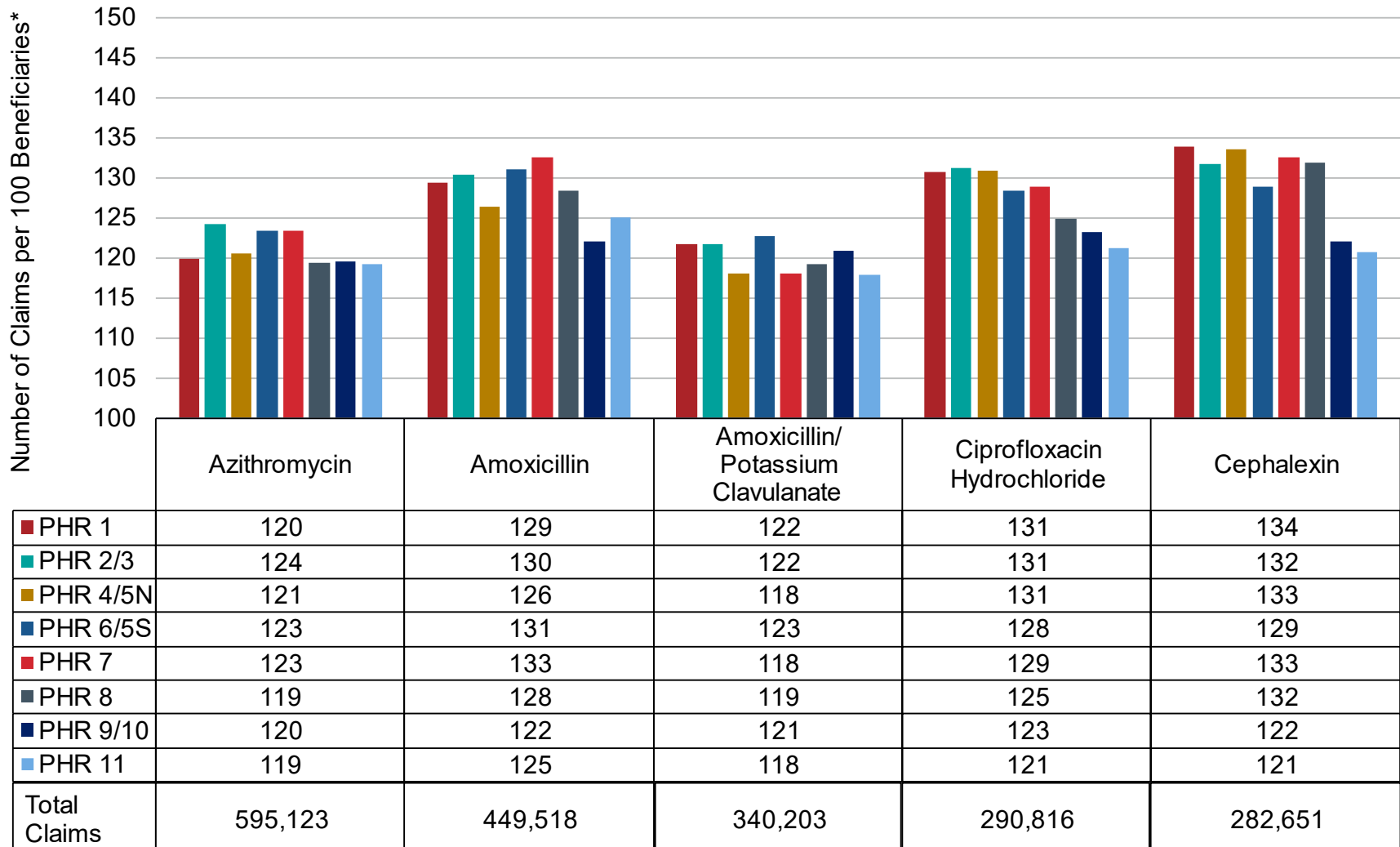
| Antibiotic Name | Prescribers* | Claims** | Claims per 100 Prescribers |
|--|----------------|------------------|----------------------------|
| Azithromycin | 45,436 | 695,212 | 1,530 |
| Amoxicillin | 43,411 | 548,941 | 1,265 |
| Amoxicillin/Potassium Clavulanate | 48,466 | 462,792 | 955 |
| Ciprofloxacin Hydrochloride | 39,992 | 390,521 | 976 |
| Cephalexin | 42,682 | 388,358 | 910 |
| Doxycycline Hyclate | 35,221 | 341,418 | 969 |
| Sulfamethoxazole/Trimethoprim | 40,605 | 328,678 | 809 |
| Nitrofurantoin Monohydrate/Macrocrystals | 30,594 | 277,616 | 907 |
| Levofloxacin | 31,086 | 226,879 | 730 |
| Cefdinir | 21,261 | 189,938 | 893 |
| Total | 378,754 | 3,850,353 | 10,166 |

* Number of Medicare Part D claim unique prescribers; ** Medicare Part D claims (original prescriptions and refills). Aggregate records based on total claims less than 11 are not included.

Medicare Part D Antibiotic Claims by Public Health Region

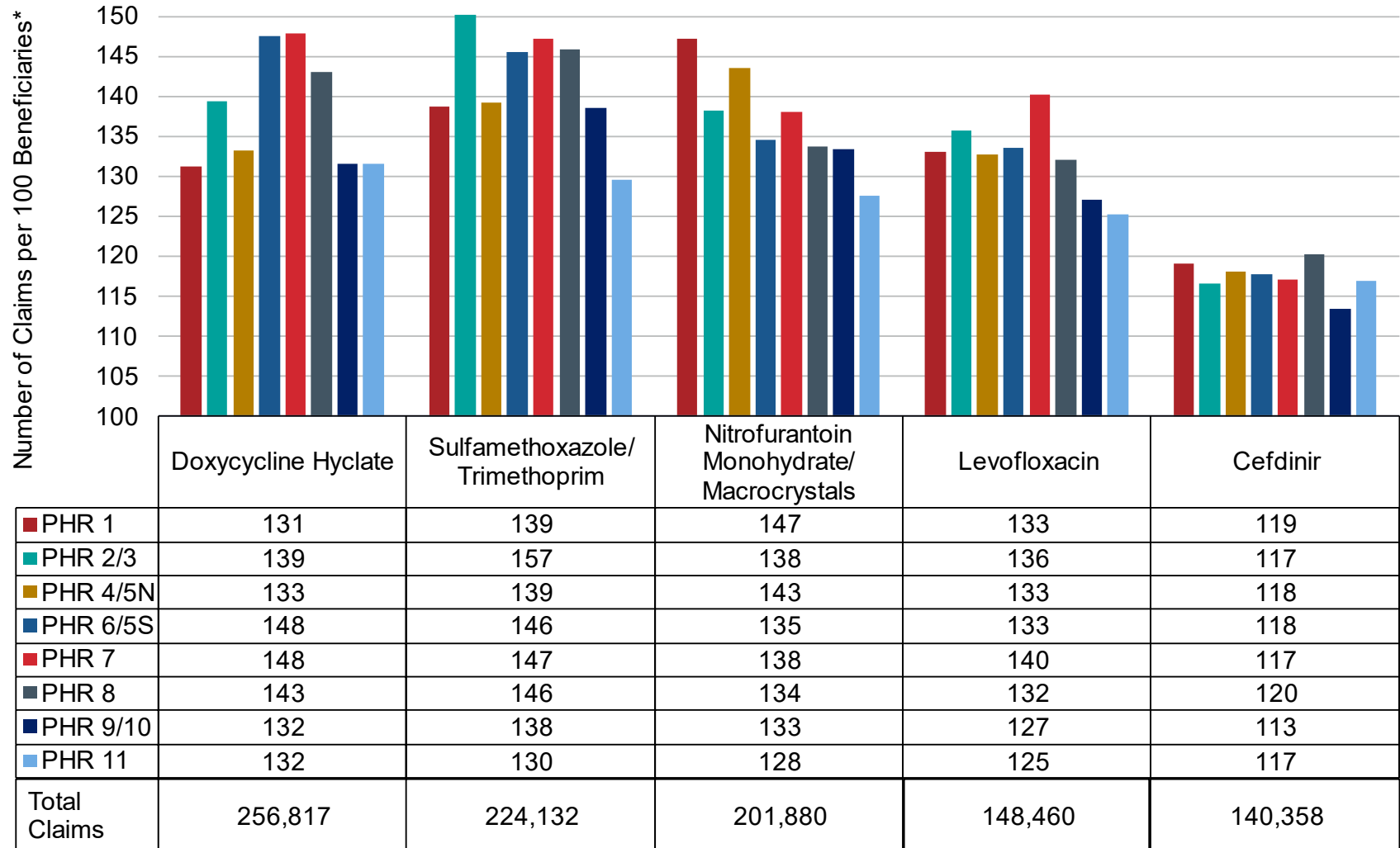
Figures 1a and 1b show the top 10 antibiotic claims by PHR, per 100 Medicare Part D beneficiaries (divided into two separate figures for top 1-5, and 6-10 claims, due to data size). The highest number of claims per 100 beneficiaries were in PHR 2/3 (Sulfamethoxazole/Trimethoprim; n = 157).

Figure 1a. Top 10 Medicare Part D Antibiotics (1-5) Claims per 100 Beneficiaries by Public Health Region, 2022.



* Medicare Part D claims (includes original prescriptions and refills). Aggregated records based on total claims fewer than 11 are not included.

Figure 1b. Top 10 Medicare Part D Antibiotic (6-10) Claims per 100 Beneficiaries by Public Health Region, 2022.



* Medicare Part D claims (includes original prescriptions and refills). Aggregated records based on total claims fewer than 11 are not included.

Provider Types with the Most Medicare Part D Antibiotic Claims

Family Practice had the most Medicare Part D claims for eight of the 10 top antibiotics (Table 2). Dentist Amoxicillin claims were highest for any antibiotic (52% of the 548,941 Amoxicillin claims). Oral Surgery (dentist only) had the most claims, with 8,646 claims per 100 Medicare prescribers.

Table 2. Provider Types with the Most Medicare Part D Antibiotic Claims by Antibiotic, 2022.

| Antibiotic Name by Provider Type | Prescribers* | Claims** | Claims per 100 Prescribers |
|---|--------------|----------|----------------------------|
| Azithromycin | | | |
| Family Practice | 3,701 | 174,043 | 4,703 |
| Nurse Practitioner | 2,326 | 149,531 | 5,378 |
| Internal Medicine | 3,970 | 125,095 | 3,767 |
| Amoxicillin | | | |
| Dentist*** | 7,231 | 287,336 | 3,974 |
| Family Practice | 1,379 | 38,570 | 2,797 |
| Oral Surgery (Dentist only)**** | 321 | 27,753 | 8,646 |
| Amoxicillin/Potassium Clavulanate | | | |
| Family Practice | 2,735 | 77,091 | 2,819 |
| Nurse Practitioner | 2,230 | 80,222 | 3,002 |
| Internal Medicine | 3,090 | 66,944 | 2,596 |
| Ciprofloxacin Hydrochloride | | | |
| Family Practice | 2,445 | 74,857 | 3,062 |
| Internal Medicine | 1,736 | 57,635 | 3,320 |
| Nurse Practitioner | 1,934 | 46,811 | 2,420 |
| Cephalexin | | | |
| Family Practice | 1,734 | 49,760 | 2,870 |
| Nurse Practitioner | 1,060 | 41,278 | 2,878 |
| Internal Medicine | 1,734 | 30,509 | 2,381 |
| Doxycycline Hyclate | | | |
| Family Practice | 1,708 | 51,559 | 3,019 |
| Nurse Practitioner | 1,268 | 47,392 | 2,944 |
| Internal Medicine | 1,759 | 37,335 | 2,694 |
| Sulfamethoxazole/Trimethoprim | | | |
| Family Practice | 2,142 | 57,153 | 2,668 |
| Nurse Practitioner | 1,232 | 33,871 | 2,665 |
| Internal Medicine | 1,582 | 32,834 | 2,141 |
| Nitrofurantoin Monohydrate/Macrocrystals | | | |
| Family Practice | 2,059 | 52,549 | 2,552 |
| Nurse Practitioner | 1,278 | 48,807 | 2,992 |
| Internal Medicine | 1,998 | 38,237 | 2,443 |
| Levofloxacin | | | |
| Internal Medicine | 1,209 | 38,706 | 2,937 |
| Family Practice | 1,334 | 35,503 | 2,901 |
| Nurse Practitioner | 852 | 18,785 | 2,205 |
| Cefdinir | | | |
| Family Practice | 1,171 | 37,639 | 3,214 |
| Internal Medicine | 881 | 26,502 | 3,008 |
| Nurse Practitioner | 995 | 25,432 | 2,556 |

*Unique Medicare Part D claim prescribers; ** Medicare Part D claims (original prescriptions and refills). Aggregated records based on total claims fewer than 11 are not included; ***Dental specialties under Dentist are listed here: [CMS Dental Specialty Codes](#); ****Dentists practicing general or specialized dentistry are enrolled in Medicare as “Oral Surgery” (Dentist only).”

Summary

This report provided a descriptive summary of publicly available, 2022 CMS Medicare Part D antibiotic claims in Texas. In 2022, 10 antibiotics made up 78% of the total Medicare Part D antibiotic claims in Texas, with Azithromycin having the most claims. Of the PHRs, the highest number of claims per 100 Medicare Part D beneficiaries was in PHR 2/3 (Sulfamethoxazole/Trimethoprim, n = 157). Family Practice and Dentistry had the highest numbers of Medicare Part D claims for the identified antibiotics (Azithromycin, Amoxicillin, Amoxicillin/Potassium Clavulanate, Ciprofloxacin Hydrochloride, Cephalexin, Doxycycline Hyclate, Sulfamethoxazole/Trimethoprim, Nitrofurantoin Monohydrate/Macrocrystals, Levofloxacin, and Cefdinir) and Oral Surgery (Dentist only) had the highest Medicare Part D claims per 100 Medicare prescribers for Amoxicillin.

This report’s findings are consistent with a study by Gouin et al., 2022⁴, which found that the most common specialties of higher-volume prescribers were Family Practice and Internal Medicine, with 21% (19,213 of 89,759) and 20% (17,185 of 85,442) of prescribers, respectively. Additionally, the Gouin study determined that Dentists had the highest antibiotic prescribing rates of all specialties (median =1,071 prescriptions per 1,000 beneficiaries)⁴.

References

1. <https://www.cdc.gov/antibiotic-use/data-research/facts-stats/index.html>
2. <https://www.cdc.gov/antimicrobial-resistance/data-research/facts-stats/index.html>
3. <https://arpsp.cdc.gov/profile/antibiotic-use/all-classes?year-select-rate-map=year2022>
4. https://www.cdc.gov/mmwr/volumes/71/wr/mm7106a3.htm#T1_down