

Recent Trends in Gabapentin Usage Among Medicaid Patients

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Abstract

Background: Gabapentin is a drug that was originally designed as an anti-epileptic medication in the early 1990s. It was hailed as a sort of “miracle drug” due to its seemingly absent abuse potential and rapidly expanding list of uses including prescriptions for neuropathic pain and migraine treatment. These factors led to a prescription boom, propelling the drug to being one of the most prescribed in the country. However, recent evidence indicates a possibility of gabapentin misuse, particularly in high-risk populations, and subsequent control measures including drug scheduling have been enacted by several states. This study sought to examine current trends in gabapentin prescriptions among Medicaid patients.

Methods: We utilized Medicaid state drug utilization data for years ranging from 2014 to 2020. These data sets encompassed units prescribed, reimbursed and amount reimbursed as a total from all 50 states. We isolated data only for gabapentin from the data set and subsequently quantified the trends as percentages of national totals.

Results: The analysis of gabapentin prescription trends provided valuable insight to the national sense around gabapentin use. It was shown that gabapentin prescriptions increased each year from 2014 to 2017. From 2017 through 2020, however, there has been a plateau in the number of gabapentin prescriptions and units reimbursed. Lastly, the data analysis showed a decline in reimbursement for gabapentin through Medicaid every year since 2015 continuing through 2020.

Conclusion: The results of this analysis indicate that while gabapentin was an extremely popular drug and being prescribed at a high rate, recent control measures and awareness may have led to a slowing or buffering of this trend. The results show that in recent years gabapentin prescription rate has plateaued, pointing to a hesitancy of providers to prescribe the drug. Further investigation is necessary to explain the reduced reimbursement of gabapentin as it could be the result of a combination of forces such as changing Medicaid policy, reduced prescriptions, and other factors. Gabapentin continues to be a popular medication and future examination and review are necessary to assess its abuse potential and usage.

Introduction

Gabapentin was originally approved by the FDA in 1993 to treat epilepsy. Its approval for use was expanded to include post-herpetic neuralgia in 2004 (1). Since that point, prescribing and use has exploded, with steadily increasing prescriptions beginning in the 1990s and continuing through the early 2010s (2, 3). This large increase in use can be attributed to its tendency to be prescribed for off-label use. In fact, some studies estimate up to 95% of gabapentin prescriptions are for off-label uses (1).

There are several possible reasons for this usage trend. One explanation points to predatory, and illegal, marketing of the drug under the trade name Neurontin by Warner-Lambert (2). Warner-Lambert, who was later acquired by Pfizer Inc., was found to use marketing strategies including continuing medical education presentations and peer-to-peer selling by physicians. These marketing practices led to a boom in gabapentin use, particularly since it was marketed under the guise of research activities and education. These practices were so dominant and widespread that it eventually resulted in litigation, with the ultimate outcome of Warner-Lambert, being found guilty and requiring the payment of a \$430 million fine (2). However, illegal marketing does not solely inform physician prescribing decisions or explain the widespread use of gabapentin.

To this day, the specific mechanism of action of gabapentin remains unknown (3). Due to the mystery surrounding its mechanism of action, and the fact that the drug is widely considered to have no misuse potential, off-label prescriptions continued to increase. Other common uses include insomnia, other types of neuropathic pain, alcohol addiction and withdrawal and migraines (3). However, in recent years, the excessive prescribing of gabapentin has become cause for concern amongst some health care providers. This is compounded with increasing evidence that gabapentin does indeed have abuse potential, especially in certain populations, and the drug can have dire side effects (4). Gabapentin was the 10th most prescribed drug in the United States in 2016, a figure which suggests its increased usage is not due to a rise in patients with conditions approved for treatment with gabapentin (4). One possible explanation for this rise in gabapentin prescriptions for a host of issues is the patient expectation to have their pain treated pharmacologically. The pressure on providers from patients to send them home with a prescription may lead them to increase off-label use due to its presumed safety. In addition, writing a prescription tends to be faster and easier than continued follow-ups and patient education (4). Recent literature has raised concerns about indiscriminate prescribing practices (4, 5, 6). First, many of the off label uses of gabapentin have not been rigorously tested in controlled experiments. As a result, the efficacy of gabapentin, and particularly the long-term effectiveness in chronic conditions, is unknown at best (4). Furthermore, gabapentin use can come with serious side effects. One reason for this is the nature of the disorders for which it is being prescribed. Since gabapentin can be effective in treating neurologic disorders, it may be used in conjunction with other drugs which have effects on the central nervous system (4). Patients can also experience withdrawal symptoms when gabapentin therapy is stopped abruptly (4).

The widespread use of gabapentin for a variety of disorders has prompted reviews of the original claims that it has little to

no abuse potential. Current evidence suggests that patients with a history of substance abuse disorders or psychiatric disorders are at a higher risk to misuse gabapentin (5). There exists emerging evidence that gabapentin can produce euphoric effects and that continued use can lead to dependence (3, 5). These trends have been described in countries around the world (5, 6). In the United States, recent evidence shows that prescriptions are being filled at three times the recommended dosage (1). In addition, there have been increasing reports of intoxications, suicides and accidents associated with gabapentinoid use (5). Some studies suggest gabapentin abuse and misuse to be as high as 65% among individuals with a prescription (5) — a cause for concern, giving the ever-rising numbers of prescriptions. The potentially dangerous effects of rampant gabapentin use have forced some states to act. In 2017, the Kentucky Board of Pharmacy resolved to make gabapentin a Schedule V drug (7). As of 2020, Kentucky, West Virginia, Tennessee, Michigan, North Dakota, and Virginia classified gabapentin as a Schedule V drug. Several other states now require gabapentin monitoring statewide (8). Although once described as a sort of miracle, cure-all drug, emerging evidence suggests danger associated with indiscriminate gabapentin use. As a result, we seek to determine if these trends have been acted upon by prescribers in the Medicaid program and postulate that gabapentin usage has declined as a result.

Methods

Procedures

The data used for this analysis was obtained from the Medicaid State Drug Utilization Data (SDUD) set maintained by the Centers for Medicaid and Medicare Services (9). This data represents drug prescriptions and reimbursement in all states from 2014 through 2020. To isolate gabapentin data from the data set specifically, several of its aliases were identified, as follows: Gabapentin, Neurontin, and Gralise. Upon isolation of these specific drugs, quarterly prescriptions, reimbursement, and units prescribed were quantified for each year examined. Subsequently, each of these parameters were normalized against national Medicaid enrollment, total yearly prescriptions, and total reimbursement, respectively. The Geisinger IRB approved this study.

Data analysis

The data are presented as gabapentin units prescribed as a percent of total units per year, gabapentin prescriptions per 100,000 Medicaid members nationally per year, gabapentin reimbursement amounts as a percent of total prescription reimbursement per year, and gabapentin prescriptions as a percent of total prescriptions per year. To visualize the data, we utilized the GraphPad Prism 9 data analysis tool.

Results

After analyzing the number of gabapentin units, which includes pills and patches, as a percentage of the total units of all drugs prescribed to Medicaid members each year, an increase over time has been seen until approximately 2018, when the usage begins to plateau (Figure 1). This trend is concurrent with data shown in Figure 2, which displays gabapentin prescriptions as a function of total prescriptions per year. These data are displayed

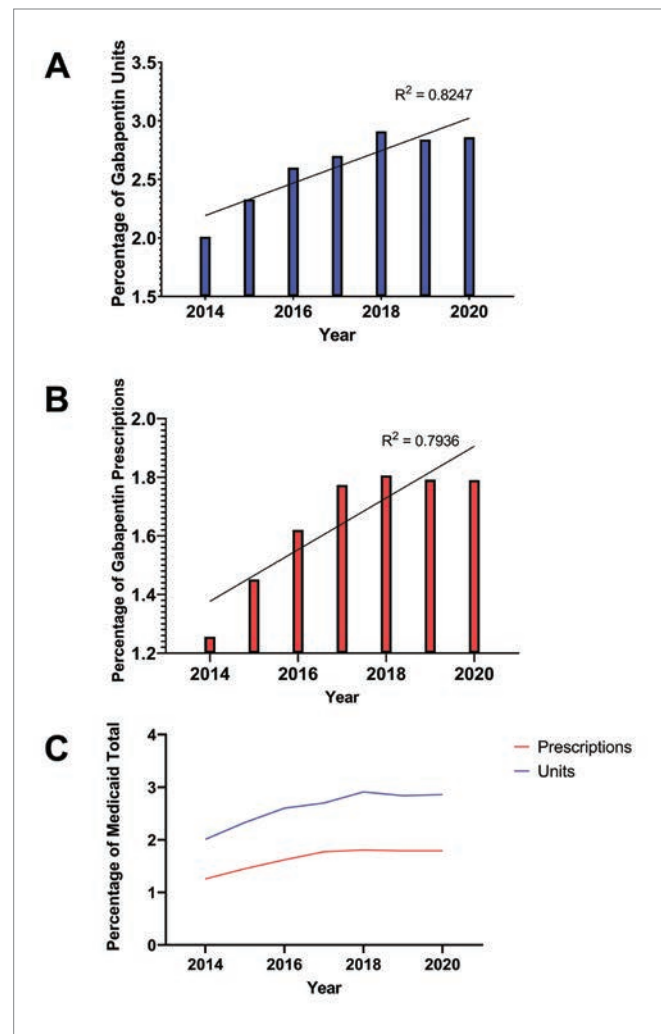


Figure 1. (A) Gabapentin units prescribed to Medicaid patients as a percent of all medication units prescribed that year. (B) Gabapentin prescriptions as a percentage of all prescriptions to Medicaid patients. (C) Comparison of units prescribed with prescriptions as a percentage of total units prescribed and total prescriptions each year, respectively.

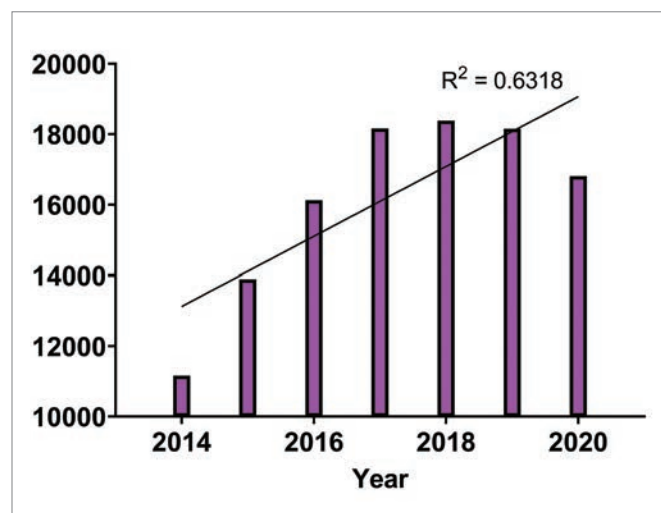


Figure 2. Gabapentin prescriptions per 100,000 Medicaid enrollees

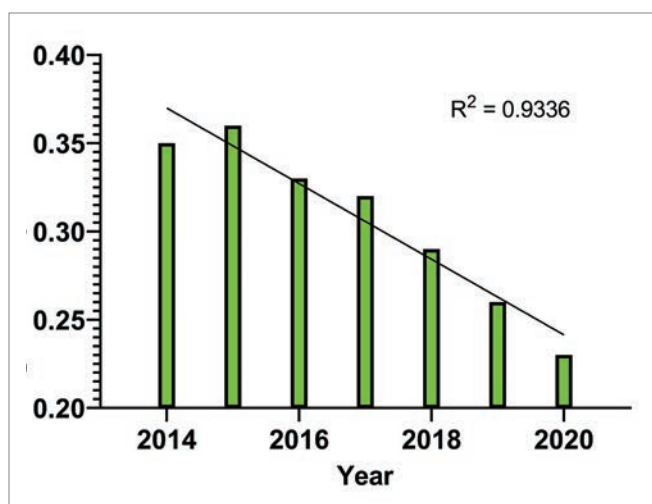


Figure 3. Gabapentin reimbursement as a percentage of total Medicaid drug reimbursement.

together in Figure 3.

To better emphasize the data, gabapentin prescriptions were analyzed per 100,000 Medicaid members, ensuring that the data was normalized for changes in membership year over year. This data provides the same trend of a plateau in use, as seen below in Figure 4.

As a part of the analysis, reimbursement values for gabapentin were calculated as a percentage of total reimbursement of all drugs. Accordingly, it was observed that reimbursement decreased over time. From its peak during the examined period in 2015 at 0.36% of all reimbursement to its most recent value of 0.23% in 2020, gabapentin reimbursement has declined by 63.8% (Figure 5).

Discussion

The objective of this study was to better understand trends in gabapentin usage among Medicaid patients during the 2010s, its potential for abuse, and explanations for those trends. While usage was on the rise for many years, whether due to on-label or off-label prescription, the usage has since begun to plateau, beginning approximately in 2018. There are several potential explanations for a plateau in usage: increases in regulation on the prescription of gabapentin, increased awareness of off-label inefficacy, and increased awareness for potential for misuse.

As mentioned in the introduction, beginning in 2017, several states which make up a substantial population of Medicaid enrollees have restricted gabapentin as a Schedule V drug. The criteria for reaching this scheduling under the Controlled Substances Act, most importantly, is that the drug in question has a potential for abuse and physical dependence with long term usage (10). Moving this drug to a scheduled classification will require that the prescribers of gabapentin attend training on opiates and controlled substances, with the intent of improving integration of treatments and exploring alternatives with drugs which have a lower abuse potential (11). This push for regulation in the wake of the opioid crisis

may have contributed to the decrease in gabapentin usage, and subsequently, a substantial decrease in the reimbursement for this drug by Medicaid.

The boom in gabapentin prescriptions in the early 2000s can be attributed in part to providers' willingness to prescribe gabapentin for a myriad of conditions, particularly those outside the scope of its FDA approved use. More recently however, the leveling off in prescriptions can be attributed to a reluctance to prescribe gabapentin for off-label uses, especially considering the possibility for misuse. Furthermore, the emphasis on following evidence-based care does not fall in line with this indiscriminate prescribing. The literature is lacking in clinical trials examining the efficacy of gabapentin for these off-label uses (4). Absence of scientific evidence makes it difficult for providers to assess the benefit of prescribing gabapentin versus the risk of abuse or adverse side effects. The data reflects a decreased tendency to use gabapentin off label as evidence by the stalled rise in prescriptions.

Gabapentin's potential for abuse is well documented, as evidenced by its scheduling in several states and studies indicating its ability to form physical dependence and produce a psychotic effect (5, 7). This is in stark contrast to the original belief that gabapentin had little to no abuse potential and was marketed as such. Our results indicate an increased awareness of the possible negative outcomes that can be associated with indiscriminate gabapentin prescribing. The plateau in gabapentin usage could point to physician's increased education and perception around the possible results of general overuse of gabapentin.

Conclusion

In conclusion, Medicaid State Drug Utilization Data shows that gabapentin was and remains an extremely popular prescription medication. However, we found that the prescription rate and amount of gabapentin units as functions of the totals for all Medicaid patients has remained stagnant since 2017. We also found that the total dollar amount reimbursed for gabapentin in comparison to the total amount reimbursed for prescription drugs through all of Medicaid has steadily declined since 2015. These findings indicate a rising awareness that gabapentin may not have zero misuse potential and may not be a cure-all, especially in treating various types of pain. Further investigation into the trends regarding gabapentin prescriptions, with a special focus on off-label use, is necessary to determine the prevalence and possible risks associated with these practices. Furthermore, increasing control by governmental agencies, namely at the state level will provide opportunity for further investigation and study of gabapentin.

Acknowledgments

We would like to thank Brian Piper, PhD, for his continuous invaluable help and guidance during this project. We would additionally like to acknowledge Emily Pocius (MD Class of 2023) and Dhvani Patel (MBS Class of 2021) for their efforts in the analysis during the initial stages of this project.

Disclosures

We have no financial conflicts of interest to disclose for this research.

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