

RESEARCH REPORT

Medicaid Prescriptions for Extended-Release Medications to Treat Opioid Use Disorder

State Trends from 2011 to 2018

Lisa Clemans-Cope

Emma Winiski

Marni Epstein

Luis Basurto

April 2020 (updated April 15, 2020)



ABOUT THE URBAN INSTITUTE

The nonprofit Urban Institute is a leading research organization dedicated to developing evidence-based insights that improve people's lives and strengthen communities. For 50 years, Urban has been the trusted source for rigorous analysis of complex social and economic issues; strategic advice to policymakers, philanthropists, and practitioners; and new, promising ideas that expand opportunities for all. Our work inspires effective decisions that advance fairness and enhance the well-being of people and places.

Contents

| | |
|---|-----------|
| Acknowledgments | iv |
| Errata | v |
| Executive Summary | vi |
| Medicaid Prescriptions for Extended-Release Medications to Treat Opioid Use Disorder: State Trends from 2011 to 2018 | 1 |
| Methods | 5 |
| Key Measures | 6 |
| Findings | 7 |
| Number of Extended-Release MOUD Prescriptions in Medicaid | 8 |
| Medicaid Spending on Extended-Release MOUD Prescriptions | 12 |
| Discussion | 14 |
| Limitations | 16 |
| Appendix A. Medicaid Coverage of Extended-Release MOUDs in All States and DC in Selected Years | 17 |
| Notes | 29 |
| References | 31 |
| About the Authors | 34 |
| Statement of Independence | 36 |

Acknowledgments

This report was funded by Arnold Ventures. We are grateful to them and to all our funders, who make it possible for Urban to advance its mission.

The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute's funding principles is available at urban.org/fundingprinciples.

We are very grateful to Sean Dickson, Andrea Noda, Anna Anderson-Cook, Edwin Park, and Richard Frank for generously sharing their expertise related to the estimation of federal Medicaid rebates. We also thank Genevieve M. Kenney for comments and suggestions in the development of this report and Nitin Srinivasan for his research assistance.

Errata

This report was updated April 15, 2020, to remove "per 1,000 Medicaid enrollees" from the title of figure 3 (page 12); the title now correctly describes the total numbers of Sublocade prescriptions across the US in 2018 by state quartile.

Executive Summary

Extended-release prescription medications to treat opioid use disorder (MOUDs) offer long-acting, first-line treatment options in various clinical settings that can promote long-term engagement in treatment and better outcomes for people with opioid use disorder (OUD). Extended-release MOUDs' effects last either one or six months, whereas short-acting MOUDs' effects usually last 24 hours. Though three extended-release MOUDs—Vivitrol, an extended-release naltrexone medication, and Probuphine and Sublocade, extended-release buprenorphine medications—have entered the market in recent years, little is known about how often Medicaid enrollees are receiving these treatments and how receipt varies across state Medicaid programs. We analyze Medicaid State Drug Utilization Data from 2011 to 2018 to track Medicaid prescriptions, unit prices, and spending after accounting for federal rebates paid by manufacturers to Medicaid programs for extended-release MOUDs. We find the following:

- Medicaid enrollees seldom receive extended-release buprenorphine (Probuphine and Sublocade), but use of extended-release naltrexone (Vivitrol) is extensive:
 - » In 2018, Medicaid programs in 49 states and the District of Columbia covered extended-release naltrexone prescriptions (Vivitrol), and these 216,561 extended-release prescriptions comprised 39.4 percent of all naltrexone prescriptions that year. Between 2011 and 2018, the number of Vivitrol prescriptions (a monthly injection) increased nearly 30-fold, from 7,474 prescriptions in 40 states and DC in 2011 to 216,561 prescriptions in 49 states and DC in 2018. Only Arkansas had no Vivitrol prescriptions in any year.
 - » In 2018, 44 Medicaid programs covered 4,149 extended-release buprenorphine prescriptions for OUD. Extended-release buprenorphine comprised only 0.06 percent of all buprenorphine prescriptions for OUD in 2018. Since the US Food and Drug Administration approved Probuphine (a six-month implant) in 2016, few of these prescriptions have been reimbursed—34 in 2017 and 15 in 2018—in just 14 state Medicaid programs. After the US Food and Drug Administration approved Sublocade (a monthly injection) at the end of 2017, 43 state Medicaid programs covered 4,134 prescriptions in 2018.
- Federal rebates from manufacturers lower states' drug costs substantially. Thus, accounting for those rebates may improve the cost-effectiveness of extended-release MOUDs:

- » In 2018, the rebate-adjusted price per prescription for Vivitrol was \$589, compared with \$1,206 before adjusting for the federal basic and inflation rebates. The rebate-adjusted price per prescription for Sublocade was \$1,147, compared with \$1,522 before adjusting for the federal rebates.¹ Adjusting for only the federal basic rebate (because of data limitations related to computing the inflation rebate), the adjusted price per Probuphine prescription was \$2,038 in 2018, compared with \$2,650 before federal basic rebate adjustment.

These findings raise several important issues for state Medicaid programs, particularly regarding the low use of extended-release buprenorphine, which could help more people in treatment maintain compliance and manage their day-to-day lives successfully—an even more urgent issue in light of the coronavirus pandemic. First, state Medicaid programs will want to reassess the estimates of the cost effectiveness of extended-release MOUDs, because those calculated by the Institute for Clinical and Economic Review do not account for federal rebates to Medicaid, which we find to substantially lower the net costs for state Medicaid programs. Second, state Medicaid policymakers will want to address underlying barriers to accessing extended-release buprenorphine, particularly if the rebate-adjusted costs suggest the long-acting treatments are cost effective. Expanding the provision of extended-release buprenorphine MOUDs (e.g., Probuphine and Sublocade) in state Medicaid programs may be essential to improving receipt of effective OUD treatment and reducing OUD mortality. Third, in light of the spread of coronavirus and related barriers to and risks of face-to-face interaction and daily and frequent office visits, providers and Medicaid patients on short-acting MOUDs could consider whether extended-release treatments provide more stable medication therapy.

Medicaid Prescriptions for Extended-Release Medications to Treat Opioid Use Disorder: State Trends from 2011 to 2018

Expanding access to effective treatment for opioid use disorder (OUD) is key to addressing high mortality and morbidity related to illicit opioid use across the United States. Medicaid coverage of medications to treat opioid use disorder (MOUDs), the first-line treatment for OUD, is critical because Medicaid provides health coverage to a disproportionate share of people with OUD, including 1.2 million people treated for OUD in 2017 (Azar 2019). The US Food and Drug Administration (FDA) has approved three types of MOUD—buprenorphine, methadone, and naltrexone—and a vast amount of research has documented these pharmacotherapies' effectiveness (Comer et al. 2015; Kraus et al. 2011; Schuckit 2016).

Extended-release MOUD formulations (also called long-acting formulations) are a potentially important clinical strategy for increasing adherence with and continuation of MOUD treatment. Retention in all three types of MOUD treatment is associated with substantial reductions in overdose mortality, particularly for buprenorphine and methadone treatment (Laroche et al. 2018; Sordo et al. 2017). Retention is critical for successful treatment because the induction period for MOUD and the period immediately after stopping MOUD are associated with increased mortality risks (Sordo et al. 2017).

Two MOUDs, buprenorphine and naltrexone, have extended-release formulations approved to treat OUD (boxes 1 and 2). The FDA has approved three brand-name formulations: two extended-release buprenorphine formulations, Sublocade and Probuphine, and one extended-release naltrexone formulation, Vivitrol.

BOX 1

Vivitrol

Vivitrol is an extended-release naltrexone medication approved by the FDA to treat “opioid dependence” in October 2010. (Vivitrol was approved to treat “alcohol dependence” in April 2006.) Vivitrol and other naltrexone medications treat OUD by blocking opioid receptors, thereby blocking opioids’ euphoric and sedative effects and helping highly motivated patients stop nonmedical opioid use (Schuckit 2016). Vivitrol is administered as an intramuscular gluteal injection and lasts one month, compared with daily naltrexone tablets with effects lasting 24 to 36 hours. To avoid precipitated withdrawal, patients must abstain from opioids for 7 to 10 days before initiating this treatment. Vivitrol is available in just one dosage.

Though the drop-out rate before initiating Vivitrol treatment is considerably higher than that of buprenorphine treatment, once a patient starts treatment, Vivitrol has been shown to be as safe and effective as the typical buprenorphine treatment, a daily self-administered buprenorphine-naloxone sublingual film (Lee et al. 2018). A recent meta-analysis showed Vivitrol reduces death rates both during and after treatment (Ma et al. 2018), though buprenorphine and methadone maintenance treatment may be associated with larger reductions in mortality (Larochelle et al. 2018). In addition, a recent paper suggests the need to more closely examine patient mortality during and after extended-release naltrexone treatment (Darke et al. 2019). Further study is also needed to determine the safety of more frequent delivery of injectable naltrexone doses (e.g., every three weeks) for patients who may metabolize naltrexone rapidly (Kampman and Jarvis 2015).

Extended-release MOUDs have potential advantages over daily treatment, such as reduced treatment burdens for patients, because of reduced visits to providers; reduced time and transportation costs related to treatment, including reduced time away from employment, home, or school; reduced caregiver and family burden; and ability to retain patients who have not been retained in daily medication treatment (Otuonye et al. 2019). In addition, extended-release MOUDs have no known potential for unintended use or diversion to people for whom they were not prescribed. Thus, though such concerns about unintended use and diversion have not been borne out in research studies (Chilcoat et al. 2019), extended-release MOUDs may represent an opportunity to increase access to MOUDs in cases where treatment had been restricted because of these fears.

However, the cost of extended-release MOUDs is higher than that for daily MOUD formulations. A recent report from the Institute for Clinical and Economic Review (ICER) reported prices for three extended-release MOUDs. ICER uses a net price reported to them by the manufacturer, where the manufacturer’s net price is the amount recovered by the manufacturer after manufacturer rebates and

fees paid to a range of actors, including insurers such as Medicaid, pharmacy benefit managers, hospitals, wholesalers, pharmacies, and patients.² The ICER report shows the following drug costs for October 2018:

- For a monthly dose of Vivitrol, the wholesale acquisition cost (WAC) was \$1,309, the manufacturers' net price was \$759, and the annual (12-month) net price was \$9,870.
- For monthly Sublocade, the WAC was \$1,580, the net price per dose was \$1,207, and the annual net price was \$15,689.
- For the Probuphine six-month implant, the WAC was \$4,950, the net price per dose was \$3,640, and the annual net price was \$7,281 (for two six-month implants; based on authors' calculations).

These prices are all higher than those reported for generic buprenorphine/naloxone (16 mg), which has an \$8 WAC per dose, or \$3,037 for a year of daily doses (ICER 2018). Further, cost-effectiveness estimates based on these prices and considerations including benefits and other costs (such as those for administration and monitoring), indicate that all three extended-release MOUDs represent “low value for the money” (Otuonye et al. 2019).

Extended-release naltrexone treatments have been cited as particularly important for three populations: (1) adolescents, young adults, and others with recent opioid use disorder; (2) people whose employment may prohibit buprenorphine or methadone treatment (e.g., health care providers, pilots, police, firefighters, and military personnel); and (3) people who have completed medically supervised withdrawal from opioids during in-patient or residential treatment or incarceration (Nunes et al. 2018).

Because of the high price of these extended-release MOUDs, patients who would benefit from this type of treatment would likely need to rely on health insurance coverage to obtain them, especially low-income patients covered by Medicaid. However, how often Medicaid patients received extended-release MOUDs and how much those treatments cost are unclear.

This analysis focuses on Medicaid reimbursement of the three extended-release MOUDs between 2011 and 2018. We explore current Medicaid coverage of Vivitrol, Sublocade, and Probuphine as reported in Medicaid State Drug Utilization Data (SDUD) for all states and the District of Columbia. We also report Medicaid program spending, net Medicaid spending adjusted for estimated statutory federal rebates, and per prescription and net spending across all Medicaid programs. In assessing Medicaid costs, we adjust for estimated federal rebates Medicaid programs receive from

manufacturers, which include basic and inflation rebates,³ because these rebates substantially reduce Medicaid spending on outpatient prescription drugs (MACPAC 2019c).

BOX 2

Extended-Release Buprenorphine Formulations

Three extended-release buprenorphine formulations have been approved by the FDA since 2016, though one is not yet marketed:

- **Probuphine** is a six-month subdermal implant of extended-release buprenorphine approved by the FDA in May 2016. It consists of four small subdermal implants with an effective treatment dose slightly lower than that of an 8 mg daily sublingual buprenorphine formulation (Ling et al. 2010). Treatment initiation is recommended for patients stable on low or moderate doses of buprenorphine (i.e., a product delivering the equivalent of 8 mg or less). The implants are inserted through a small incision in the inner side of the upper arm and are removed after six months. Abstinence from illicit opioid use was found to be higher among patients receiving implants than among similar patients receiving the sublingual buprenorphine formulation (Rosenthal et al. 2016).
- **Sublocade** is a monthly extended-release buprenorphine injection approved by the FDA in November 2017. It is administered as a subcutaneous abdominal injection delivering a dose of buprenorphine over one month (Coe, Lowfall, and Walsh 2019; Kampman and Jarvis 2015). Treatment initiation is recommended for patients with moderate to severe OUD who are stable on a product delivering the equivalent of 8 to 24 mg of buprenorphine daily. It must be refrigerated before administration. Sublocade treatment follows at least seven days of treatment initiation with sublingual buprenorphine. Sublocade has two dosage strengths, 100 mg/0.5 mL and 300 mg/1.5 mL.^a
- **Brixadi**, a new extended-release buprenorphine formulation with weekly and monthly injections at six dosing levels appropriate for the treatment of moderate to severe OUD, was approved by the FDA in 2018 and will be marketed in December 2020.^b The FDA blocked the marketing of Brixadi in April 2019 because of an exclusivity period for Sublocade,^c and though the FDA later revoked Sublocade's orphan drug designation, it did not remove the drug's three-year clinical investigation exclusivity period, thus delaying Brixadi's entrance into the market until December 2020.^d

^a The higher Sublocade dosage is indicated for use in the first two months and is followed by maintenance at the lower dosage, or when needed, based on patient-reported illicit opioid use or positive opioid screen; see "Highlights of Prescribing Information: Sublocade," US Food and Drug Administration, accessed April 2, 2020, https://www.accessdata.fda.gov/drugsatfda_docs/label/2017/209819s000lbl.pdf.

^b "FDA Grants Braeburn's Citizen Petition Allowing BRIXADI (Buprenorphine) Extended-Release Injection for Opioid Use Disorder to be Available in December 2020," Braeburn, November 7, 2019, <https://braeburnrx.com/fda-grants-braeburns-citizen-petition-allowing-brixadi-buprenorphine-extended-release-injection-for-opioid-use-disorder-to-be-available-in-december-2020/>; Sharon Hertz (Director, Anesthesia, Analgesia, and

Addiction Products, Center for Drug Evaluation and Research), letter to Susan Franks (Senior Vice President, Braeburn Pharmaceuticals Inc.), tentative approval of new drug application for Brixadi, December 21, 2018, https://www.accessdata.fda.gov/drugsatfda_docs/appletter/2018/210136Orig1s000TALtr.pdf.

c "Braeburn Initiates Court Proceedings to Overturn Exclusivity and Seeks Immediate Market Approval of Brixadi in the US," Camurus, April 9, 2019, <https://www.prnewswire.com/news-releases/braeburn-initiates-court-proceedings-to-overturn-exclusivity-and-seeks-immediate-market-approval-of-brixadi-in-the-us-300827988.html>.

d Kao-Ping Chua and Rena M. Conti, "Revocation of Orphan Drug Designation for Extended-Release Buprenorphine Injection: Implications and Next Steps," *Health Affairs Blog*, March 5, 2020, <https://www.healthaffairs.org/doi/10.1377/hblog20200302.846103/full/>.

Methods

We use quarterly Medicaid SDUD files from the first quarter of 2011 to the fourth quarter of 2018 to assess prescriptions for Vivitrol, Probuphine, and Sublocade, which are FDA approved for treating OUD. Medicaid SDUD historically suppress data for National Drug Code state-quarters with fewer than 11 prescriptions, which complicates studying the adoption of new medications across states. Our colleague, Alex Gertner of the University of North Carolina at Chapel Hill, generously shared unsuppressed data for these medications from the first quarter of 2011 to the second quarter of 2018, which he obtained through a Freedom of Information Act request (Gertner 2019).⁴ We also obtained unsuppressed Medicaid SDUD for 2014 through 2018 by purchasing the data from the Centers for Medicare & Medicaid Services via a data use agreement. OUD-related prescriptions were identified by linking the National Drug Codes in Medicaid SDUD with drug information published by the FDA. However, publicly available Medicaid SDUD downloaded in March 2020 contained data for all observations, including those with prescription counts under 11 that are usually suppressed. We updated this analysis to use those fully unsuppressed data. Medicaid SDUD do not include prescriptions written by prescribers at some safety net providers who participate in the 340B Drug Pricing Program, such as federally funded clinics (MACPAC 2018a; Murrin 2016). Thus, these estimates exclude Medicaid prescriptions and spending under the 340B Drug Pricing Program.

Data about Medicaid drug coverage, inclusion on a state's preferred drug list (PDL), and prior authorization requirements were also collected from state Medicaid websites (tables A.1 and A.2). PDLs are a list of medications that Medicaid or Medicaid plans will cover without requiring prior authorization.⁵ Prior authorization requires a physician to get approval from a patient's health insurance plan before prescribing a specific medication. In most cases, medications included in a PDL did not require prior authorization. Because preferred drugs are not typically subject to prior authorization, market shares shift toward preferred drugs (MACPAC 2018b).

We report Medicaid program spending and net Medicaid spending adjusted for estimated statutory federal rebates Medicaid receives from manufacturers, which include basic and inflation rebates. We developed our methodology of estimating the federally mandated **basic rebate** and the **inflation rebate** in Medicaid programs from previous work by Sean Dickson, who used Medicaid SDUD and other sources to estimate the federal Medicaid rebates and cap (Dickson 2019). We describe our rebate-adjustment methodology in detail in a separate brief (Clemans-Cope, Epstein, and Winiski 2020).

In addition to the mandated federal rebates, supplemental state rebates are negotiated by nearly all state Medicaid programs or multistate coalitions (MACPAC 2019a); however, we do not estimate supplemental rebates in this analysis because of a lack of data.

Medicaid programs' spending on outpatient prescription drugs is substantially reduced by federal and state rebates; in 2017, gross Medicaid drug spending of \$64.0 billion was associated with federal and supplementary rebates of \$34.9 billion (MACPAC 2019c). Researchers estimate that Medicaid receives rebates of about 61 percent of the retail price for brand-name drugs, but Medicare Part D and private insurance plans receive much smaller rebates of about 31 percent and 16 percent of retail prices (Roehrig 2018).

Key Measures

Characteristics of Medicaid coverage of Vivitrol, Probuphine, and Sublocade reflect coverage (defined as the fee-for-service state plan or at least one state-sponsored managed care plan covering the medication through a pharmacy or medical benefit), whether the medication was listed on the PDL, and whether the medication was subject to prior authorization, as reported in published literature in 2018 and in state websites as of September 1, 2019 (table A.1).

Vivitrol, Probuphine, and Sublocade prescriptions show the number of prescriptions filled and dispensed in outpatient settings, such as pharmacies, and processed as Medicaid outpatient drug claims in fee-for-service or managed care plans through the prescription drug or medical benefit.

Vivitrol, Probuphine, and Sublocade reimbursement and the net reimbursement are the reimbursement amounts before and after adjusting for the estimated manufacturer's basic and inflation rebates for prescriptions filled and dispensed in outpatient settings and processed as Medicaid outpatient drug claims in fee-for-service or managed care plans through either the prescription drug or medical benefit.

Prescriptions per 1,000 Medicaid enrollees, also called per enrollee prescriptions in this report, divide prescriptions per state by the estimated number of Medicaid enrollees ages 12 and older from 2011 to 2018. We compute this measure for Vivitrol but not for Probuphine or Sublocade because of low prescription counts.

The number of Medicaid enrollees ages 12 and older, used in the per enrollee measure, is the estimated annual number of full-benefit enrollees in this age range from 2011 to 2018, based on multiple administrative and other data sources described previously (Lynch, Winiski, and Clemans-Cope 2019).

Medicaid expansion states are categorized into four groups by timing and status of their action on Medicaid expansion, either through the Affordable Care Act (ACA) or by waiver (Sommers et al. 2013):⁶

- Early 2014 expansion states are the 25 states and the District of Columbia that expanded Medicaid through the ACA or a waiver on or before April 2014; some states expanded Medicaid under the ACA in early 2014 or had expanded eligibility for adults before the ACA.
- Later 2014–16 expansion states are the six states that expanded Medicaid between April 2014 and August 2016.
- 2019 expansion states are the two states that expanded Medicaid after December 2018.
- Nonexpansion states are the 17 states that had not implemented a Medicaid expansion by January 2019.

Findings

In 2018, overall and including both short-acting and extended-release prescriptions, Medicaid covered 7.07 million prescriptions for MOUDs—6.52 million buprenorphine prescriptions for OUD and 549,000 naltrexone prescriptions. Also in 2018, 44 Medicaid programs covered 4,149 extended-release buprenorphine prescriptions for OUD, and Medicaid programs in 49 states and DC covered 216,561 extended-release naltrexone prescriptions. Below, we present detailed information about Medicaid coverage of extended-release MOUDs and the share of prescriptions and spending for each extended-release MOUD between 2011 and 2018.

In 2019, Vivitrol was covered in every state and DC, appeared on PDLs in 33 states, and did not require prior authorization in 38 states (tables A.1 and A.2). Sublocade was covered in 44 states

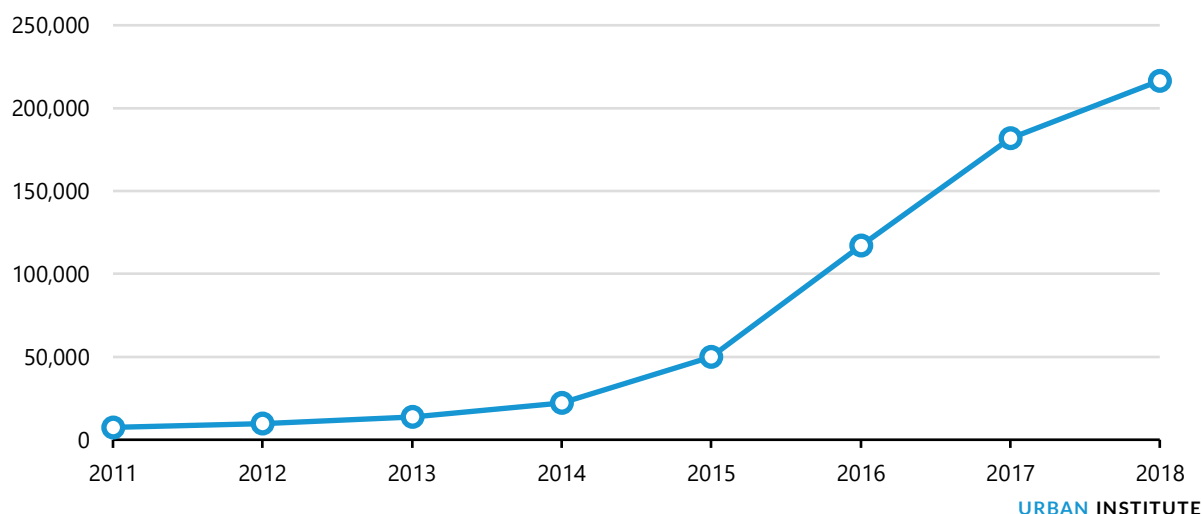
(including DC), appeared on PDLs in 17 states, and did not require prior authorization in 13 states. Probuphine was covered in 39 states (including DC), appeared on PDLs in 6 states, and did not require prior authorization in 10 states. Though descriptions of Medicaid coverage for extended-release MOUDs in 2018 may not be as complete as those for 2019, the two years appear consistent in terms of coverage; all states that covered one of the drugs in 2018 also did so in 2019.

Number of Extended-Release MOUD Prescriptions in Medicaid

After FDA approval in October 2010, the number of Vivitrol prescriptions increased nearly 30-fold between 2011 and 2018, from 7,474 prescriptions in 40 states and DC in 2011 to 216,561 prescriptions in 49 states and DC in 2018 (figure 1). Only Arkansas had no Vivitrol prescriptions in any year (table A.3). The average yearly growth rate of Vivitrol prescriptions was 67 percent over this period but 129 percent in 2014 and 2015, when prescriptions increased most rapidly.

FIGURE 1

Vivitrol Prescriptions in Medicaid in All States and the District of Columbia, 2011–18



Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: The Medicaid State Drug Utilization Data exclude prescriptions written by prescribers at some safety net providers participating in the 340B Drug Pricing Program, such as federally funded clinics. See the methodological appendices for more detail (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

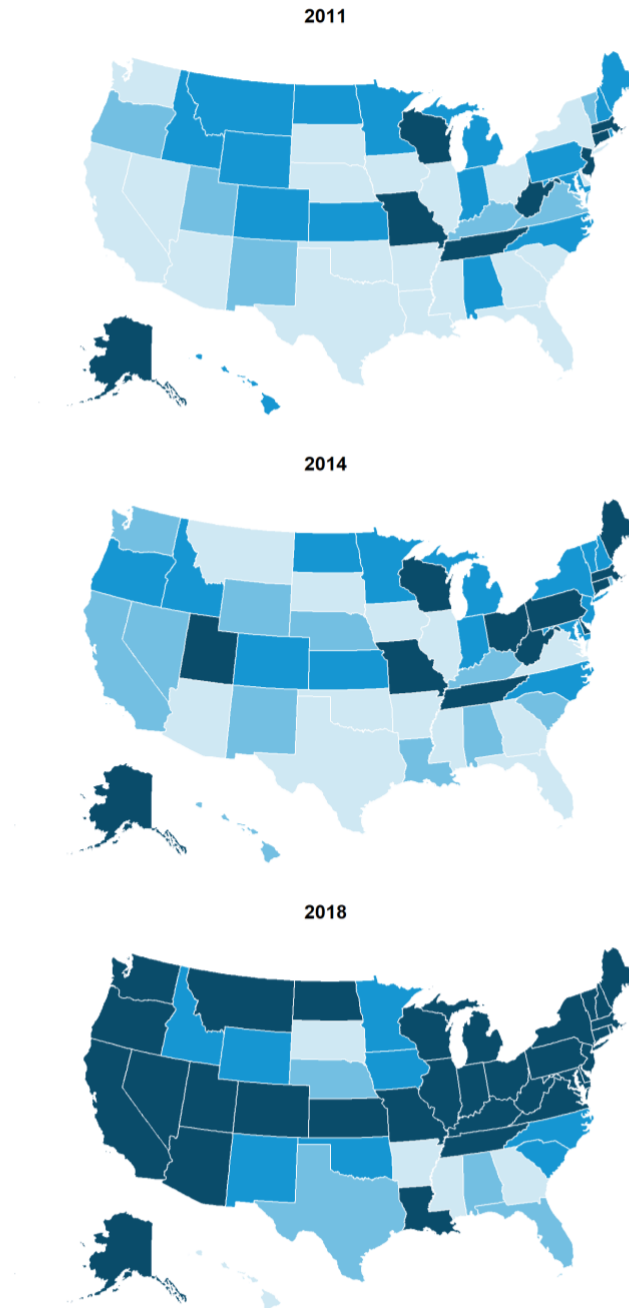
Medicaid prescriptions for Vivitrol per 1,000 enrollees ages 12 and older increased from 0.2 in 2011 to 0.5 in 2014 and to 4.1 in 2018 (table A.3) and varied widely across states (figure 2). This variation was substantial in 2018; the highest rate, 22.2 in Alaska, was more than five times greater

than the national average, and five states' rates were at or near zero (Arkansas, Georgia, Hawaii, Mississippi, and South Dakota). In 2018, the highest rates for Vivitrol prescriptions were in the New England, Mid-Atlantic, East North Central, and Pacific areas. In general, the Vivitrol prescription rate per 1,000 enrollees was far lower in states that did not expand Medicaid than in other states in 2018 (table A.3). However, Wisconsin and Utah had relatively high rates of 8.5 and 6.7 Vivitrol prescriptions per 1,000 enrollees.

FIGURE 2

Number of Vivitrol Prescriptions in Medicaid per 1,000 Enrollees, by 2014 State Quartiles, All States and the District of Columbia, 2011, 2014, and 2018

■ <.05 ■ .05 to < .16 ■ .16 to < .61 ■ >= .61



URBAN INSTITUTE

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: 2014 quartiles were used as the break points for all three maps. The Medicaid State Drug Utilization Data exclude prescriptions written by prescribers at some safety net providers participating in the 340B Drug Pricing Program, such as federally funded clinics. See the methodological appendices for more details (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

The first extended-release buprenorphine formulation approved by the FDA—six-month Probuphine implants for mild to moderate OUD—has been prescribed in very low numbers in just a few Medicaid programs. Between 2016 and 2018 and after FDA approval in May 2016, the number of Probuphine prescriptions increased from 2 in 2016 to 34 in 2017 and to 15 in 2018 (table 1).

TABLE 1
Probuphine Prescriptions, Selected States and United States Total, 2016–18

| | 2016 | 2017 | 2018 |
|--|--------------|---|--|
| Total Probuphine prescriptions | 2 | 34 | 15 |
| States with any Probuphine prescriptions and number of prescriptions | (PA-1, TX-1) | (WI-11, TX-6, NY-4, NJ-3, AK-2, IN-2, PA-2, CA-1, MN-1, NM-1, WA-1) | (MI-3, NY-3, MA-2, MN-2, AZ-1, CA-1, IN-1, NJ-1, WI-1) |

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: Probuphine entered the market in the fourth quarter of 2016. The Medicaid State Drug Utilization Data exclude prescriptions written by prescribers at some safety net providers participating in the 340B Drug Pricing Program, such as federally funded clinics. See the methodological appendices for more details (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

In 2017 and 2018, Medicaid coverage of Probuphine in Medicaid was very low, with just a few prescriptions in states located primarily in the Mid-Atlantic, East North Central, and Pacific areas (tables 1 and A.4). In 2017, 11 state Medicaid programs covered Probuphine, and 9 states did so in 2018.

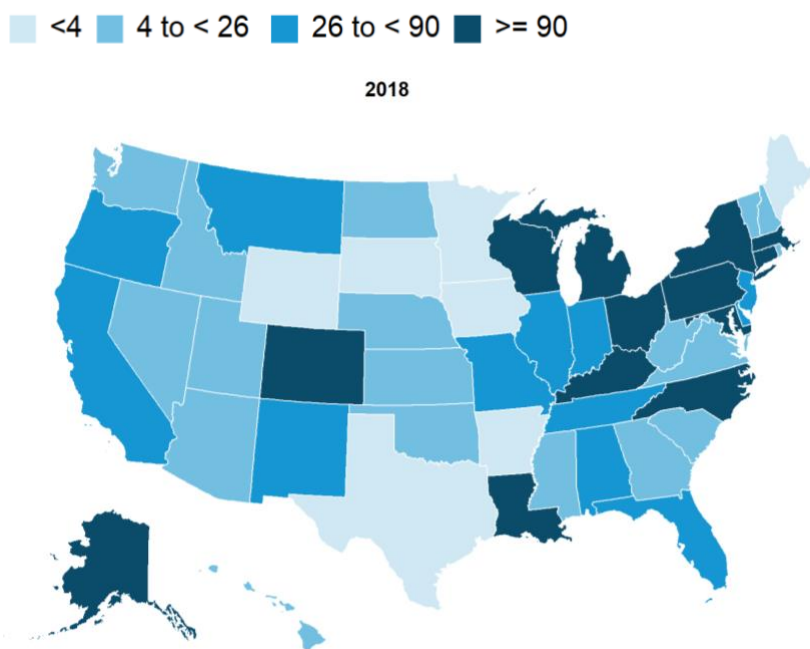
The other extended-release buprenorphine formulation, monthly Sublocade injections for moderate to severe OUD, has been prescribed less frequently in Medicaid programs than Vivitrol but more frequently than Probuphine. After FDA approval in November 2017, the number of Sublocade prescriptions covered in 2018 was low but widespread, with 4,134 prescriptions in the United States across 43 state Medicaid programs (figure 3; table A.4). About half of Sublocade prescriptions were covered in five state Medicaid programs: Wisconsin (540), Ohio (516), Pennsylvania (424), Michigan (367), and Maryland (234).

Even in 2018, extended-release buprenorphine prescriptions for OUD, including both Probuphine and Sublocade, comprised only 0.06 percent of all buprenorphine prescriptions for OUD. An analysis

of the 2018 IBM MarketScan Commercial Database, a national sample of claims from 27 million nonelderly Americans with employer-sponsored health insurance coverage from medium to large firms, also showed a very low share of extended-release buprenorphine prescriptions among all buprenorphine prescriptions: 0.2 percent for Sublocade and 0.01 percent for Probuphine.⁷

FIGURE 3

Number of Sublocade Prescriptions in Medicaid, by State Quartile, All States and the District of Columbia, 2018



URBAN INSTITUTE

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: The prescription values at the upper and lower limits of each color correspond to the cut-off points for the 25th, 50th, and 75th quartiles. The Medicaid State Drug Utilization Data exclude prescriptions written by prescribers at some safety net providers participating in the 340B Drug Pricing Program, such as federally funded clinics. See the methodological appendices for more details (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

Medicaid Spending on Extended-Release MOUD Prescriptions

Before adjusting for federal rebates paid by manufactures to Medicaid programs, spending across all Medicaid programs totaled \$258.7 million for Vivitrol, \$37,000 for Probuphine, and \$6.2 million for Sublocade in 2018 (table 2). Before adjusting for federal rebates, Medicaid spending per prescription was \$1,206 for Vivitrol, \$2,650 for Probuphine, and \$1,522 for Sublocade in 2018.⁸ Analysis of the 2018 IBM MarketScan Commercial Database showed the price per prescription for Sublocade in the

private market, \$1,599, was similar to the average Medicaid price before adjusting for federal rebates. Conversely, the Probuphine price per prescription was estimated to be \$3,145 in the private market, which was much higher than the average Medicaid price before rebate adjustment.⁹

After adjusting for both the federal basic and inflation rebates paid by manufactures to Medicaid programs, Medicaid spending for extended-release MOUDs totaled \$126.3 million for Vivitrol and \$4.7 million for Sublocade in 2018. Because Probuphine sample sizes are not adequate to compute the inflation-related rebate, we adjusted Probuphine spending for the federal basic rebate alone, resulting in an adjusted Medicaid spending estimate of \$29,000. Extended-release formulations constituted the vast majority of Medicaid spending for naltrexone—93.7 percent of rebate-adjusted Medicaid spending for naltrexone—but just 0.6 percent of rebate-adjusted Medicaid spending for buprenorphine for OUD.

In 2018, the rebate-adjusted price per Vivitrol prescription was \$589, compared with \$1,206 before adjusting for the federal basic and inflation rebates. The rebate-adjusted price per Sublocade prescription was \$1,147 in 2018, compared with \$1,522 before adjusting for the federal rebates. Adjusting for only the federal basic rebate because of the small Probuphine sample sizes, as described above, the price of Probuphine per prescription was \$2,038 in 2018, compared with \$2,650 before federal basic rebate adjustment.

TABLE 2

Medicaid Spending, Number of Prescriptions, Spending per Prescription, and Estimated Net Medicaid Spending per Prescription after Federal Rebates for Extended-Release MOUDs, 2018

| Drug | Medicaid amount covered before rebate adjustment | Number of prescriptions (excluding prescriptions with missing spending data ^a) | Medicaid spending per prescription before rebate adjustment | Adjusted Medicaid spending per prescription after estimated federal rebates ^b |
|--------------------------------|--|--|---|--|
| Vivitrol (monthly injection) | \$258,711,960 | 214,608 | \$1,206 | \$589 |
| Probuphine (six-month implant) | \$37,098 | 14 | \$2,650 | \$2,038 (basic rebate adjustment only ^b) |
| Sublocade (monthly injection) | \$6,237,782 | 4,099 | \$1,522 | \$1,147 |

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: MOUDs = medications to treat opioid use disorder. Prescription counts exclude prescriptions likely from capitated payments through managed care organizations, which appear in the State Drug Utilization Data as observations with an unadjusted spending amount of zero and a positive prescription amount. See, “State Drug Utilization Data FAQs,” Medicaid.gov, accessed March 26, 2020, <https://www.medicaid.gov/medicaid/prescription-drugs/state-drug-utilization-data/state-drug-utilization-data-faq/index.html>. Overall spending estimates are likely underreported because they exclude spending amounts included in capitated payments. However, this issue is resolved in our spending per prescription estimates because we exclude

observations we believe are from capitated payments. For these observations, we exclude both spending and prescription counts.

^a Because of missing data, a small number of prescriptions were excluded from the computations of spending per prescription. These prescriptions were all covered in managed care and may lack spending data because of data reporting complications related to inclusion in capitated payments. There were 1,954 excluded Vivitrol prescriptions, 1 excluded Probuphine prescription, and 55 excluded Sublocade prescriptions.

^b For Vivitrol and Sublocade, adjusted spending includes estimates of both the federal basic and inflation rebates. Because Probuphine sample sizes are not adequate to compute the inflation-related rebate, Probuphine spending was adjusted for the federal basic rebate but not the inflation rebate.

Discussion

To inform policymakers and the public on how states are leveraging new treatments in Medicaid to address the opioid crisis, we examined new prescription drug data on Medicaid reimbursement for extended-release prescriptions to treat OUD. Our analysis shows extended-release buprenorphine prescriptions (Probuphine and Sublocade) have yet to be adopted widely, but increases in extended-release naltrexone prescriptions (Vivitrol) show improved access across many state Medicaid programs between 2011 and 2018.

The greater uptake of extended-release naltrexone than extended-release buprenorphine likely owes to several factors. First, Vivitrol has been on the market much longer. Second, naltrexone treatment, including Vivitrol, does not require that prescribers obtain a special waiver from the Drug Enforcement Administration, which is required for buprenorphine treatment. Also, Vivitrol injections do not require providers to complete additional annual certifications related to the drug, which are required for Probuphine, for example.¹⁰ Third, Medicaid coverage and inclusion on a state's Medicaid PDL is more common for Vivitrol than for Sublocade, and much more common than for Probuphine. We find that Vivitrol prescriptions did not require prior authorization in 38 states in 2019, whereas Sublocade did not require prior authorization in 13 states, and Probuphine did not require prior authorization in just 10 states. These barriers to extended-release treatments could be reconsidered. Lastly, manufacturers' marketing of Vivitrol may have increased stigmatization of buprenorphine treatment options.¹¹

Studies of the cost effectiveness of extended-release MOUDs from organizations such as ICER show that the costs of Vivitrol, Probuphine, and Sublocade in the US health care system represent "low value for the money," even when considering the wide-ranging potential benefits associated with these treatments (Banken et al. 2018; Otuonye et al. 2019). However, our estimated adjusted Medicaid prices were lower than the net prices used by ICER. ICER reported a manufacturer's net price per monthly dose of Vivitrol of \$759, compared with our estimated adjusted Medicaid price of

\$587. For the six-month Probuphine implant, ICER reported a net price per dose of \$3,640, compared with our estimated adjusted Medicaid price of \$2,038 (excluding the inflation rebate). For monthly Sublocade, ICER reported a net price per dose of \$1,207, close to our estimated adjusted Medicaid price of \$1,146. Thus, these extended medications may well be cost effective for some Medicaid programs after accounting for federal rebates—and many states get additional state-negotiated rebates. Expanding the provision of extended-release buprenorphine in state Medicaid programs may be essential to improving receipt of effective OUD treatment and reducing OUD mortality.

Recent studies have suggested buprenorphine and extended-release naltrexone are similarly effective for reducing opioid use (after the greater induction hurdle for extended-release naltrexone; Lee et al. 2018; Tanum et al. 2017). However, buprenorphine and methadone maintenance treatment may be associated with larger reductions in mortality than extended-release naltrexone (Larochelle et al. 2018). More study is needed to determine which patients are more likely to be successful on extended-release naltrexone than on buprenorphine, including extended-release buprenorphine. Patients' preferences regarding MOUD treatment options, including naltrexone, buprenorphine, and methadone, and comparisons of long- and short-acting treatments are critical and underresearched.

Overall, low use of extended-release buprenorphine prescriptions across all state Medicaid programs suggests several strategies will be needed to raise treatment rates, including

- reassessing the cost effectiveness of extended-release therapies to identify how they compare with daily therapies and the circumstances under which they may outperform daily therapies;
- educating Medicaid policymakers, Medicaid managed care officials, clinical staff, and patients about the benefits of these pharmacotherapies;
- considering removing prior authorization and other barriers to accessing extended-release therapies; and
- addressing the need for clinician education about extended-release pharmacotherapy, including addressing clinicians' questions and concerns regarding this type of treatment, to increase the number of clinicians who have waivers from the Drug Enforcement Administration to prescribe buprenorphine treatment for OUD and are trained and certified to prescribe and provide extended-release therapies (e.g., health care providers who perform Probuphine insertions must be specially certified by completing a live training and must be recertified annually).¹²

For patients to succeed in extended-release MOUD treatment, additional supports and policies are likely necessary, such as improving infrastructure (e.g., validated screeners for substance use disorders and tools for planning treatment) to support MOUD care. In addition, ensuring adequate reimbursement for clinicians is likely necessary to expand access to MOUD and improve resources and tools to screen for nonmedical needs and refer and link people to supportive services for successful recovery (e.g., housing, legal assistance, food assistance, and other services related to social determinants of health; Crumley et al. 2018). In addition, reforms to the FDA's orphan drug policies could expand and accelerate access to more extended-release medications for OUD (Haffajee and Frank 2020).¹³ Extended-release formulations for OUD treatment, which can decrease the need for face-to-face office visits, will likely become more important in the coming months as the effects of the novel coronavirus increase barriers to accessing short-acting treatments. Thus, examining barriers and facilitators to engaging patients in extended-release MOUD could also prove critical to addressing treatment for and recovery from OUD during the pandemic.

Limitations

Our study has several limitations. First, though we had unsuppressed Medicaid SDUD for our entire study period, some National Drug Code state-quarters had over 11 prescriptions, suggesting data for this entry were unreliable. We used an imputation in this case. Second, the Medicaid SDUD exclude claims representing drugs purchased under the 340B Drug Pricing Program by certain safety net providers, including federally funded clinics, and thus undercount Medicaid-covered outpatient drugs, likely including those analyzed in this report. Third, the per enrollee estimates may not reflect treatment relative to need because (1) need for OUD treatment varies across states and (2) per enrollee estimates are derived from aggregate data, not individual-level data, and thus are a rough measure of prescriptions per person. Fourth, federal Medicaid rebates are estimated based on publicly available data and formulas, and we do not attempt to estimate supplemental state Medicaid rebates, because no information is available to guide such estimates. Thus, net Medicaid spending is estimated. Fifth, this analysis considers medication treatments only, and many people with OUD need more intensive treatment and services, recovery support, and treatment for comorbidities common among people with OUD, such as mental health problems, hepatitis C, and HIV/AIDS. See the separate methodology appendices for a more detailed description of study limitations (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

Appendix A. Medicaid Coverage of Extended-Release MOUDs in All States and DC in Selected Years

TABLE A.1

Medicaid Coverage, Preferred Drug List Status, and Prior Authorization for Extended-Release MOUDs in All States and DC as of September 1, 2019

| | Vivitrol | | | Probuphine | | | Sublocade | | |
|----|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|
| | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? |
| AL | Yes | No | No | Yes | No | Yes | Yes | Yes | No |
| AK | Yes | Yes | No | Yes | No | Yes | No | — | — |
| AZ | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| AR | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| CA | Yes | Yes | No | Yes | Yes | No | Yes | Yes | No |
| CO | Yes | No | Yes | Yes | No | No | Yes | No | Yes |
| CT | Yes | Yes | No | — | No | — | — | No | — |
| DC | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Yes |
| DE | Yes | Yes | No | Yes | Yes | No | Yes | Yes | No |
| FL | Yes | Yes | Yes | No | — | — | Yes | Yes | Yes |
| GA | Yes | Yes | No | No | — | — | No | — | — |
| HI | Yes | No | Yes | No | — | — | Yes | No | Yes |
| ID | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| IL | Yes | Yes | No | Yes | Yes | No | Yes | Yes | No |
| IN | Yes | Yes | No | Yes | Yes | Yes | Yes | No | Yes |
| IA | Yes | No | No | Yes | No | No | Yes | No | No |
| KS | Yes | No | No | Yes | No | Yes | Yes | No | No |
| KY | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| LA | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| ME | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| MD | Yes | Yes | No | No | — | — | Yes | Yes | No |
| MA | Yes | No | No | Yes | No | Yes | Yes | No | Yes |
| MI | Yes | Yes | Yes | Yes | No | — | Yes | Yes | Yes |
| MN | Yes | No | No | Yes | No | Yes | Yes | No | Yes |
| MS | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| MO | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| MT | Yes | No | No | Yes | No | No | Yes | No | Yes |
| NE | Yes | — | No | No | — | — | No | — | — |
| NV | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| NH | Yes | No | Yes | No | — | — | Yes | No | Yes |
| NJ | Yes | Yes | No | No | — | — | Yes | Yes | No |
| NM | Yes | No | Yes | Yes | — | — | Yes | — | — |
| NY | Yes | Yes | No | Yes | No | No | Yes | Yes | No |
| NC | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Yes |
| ND | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |
| OH | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Yes |

| | Vivitrol | | | Probuphine | | | Sublocade | | |
|----|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|
| | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? |
| OK | Yes | No | No | Yes | No | Yes | Yes | No | Yes |
| OR | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| PA | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| RI | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| SC | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Yes |
| SD | Yes | — | — | — | — | — | Yes | No | No |
| TN | Yes | Yes | No | Yes | No | No | Yes | No | No |
| TX | Yes | Yes | No | No | — | — | No | — | — |
| UT | Yes | Yes | No | Yes | No | No | Yes | Yes | No |
| VT | Yes | Yes | No | Yes | No | Yes | No | — | — |
| VA | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Yes |
| WA | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| WV | Yes | Yes | No | Yes | No | No | Yes | No | No |
| WI | Yes | Yes | No | No | — | — | Yes | No | Yes |
| WY | Yes | Yes | No | No | — | — | No | — | — |

Number of states with the following characteristics of Medicaid coverage for selected MOUDs

| | Vivitrol | | | Probuphine | | | Sublocade | | |
|-----|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|
| | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? |
| Yes | 51 | 33 | 12 | 39 | 6 | 27 | 44 | 17 | 30 |
| No | 0 | 16 | 38 | 10 | 33 | 10 | 6 | 27 | 13 |
| — | 0 | 2 | 1 | 2 | 12 | 14 | 1 | 7 | 8 |

Sources: MACPAC (2019c) and all sources listed in table A.5.

Notes: MOUDs = medications to treat opioid use disorder. PDL = preferred drug list. PA = prior authorization. MOUDs = medications to treat opioid use disorder. Dashes indicate no evidence of Medicaid coverage, PDL status, or PA requirements were found. Coverage is as of September 1, 2019. Medication is covered if either the fee-for-service state plan or at least one state-sponsored managed care plan covers the service through either pharmacy or medical benefit.

TABLE A.2

Medicaid Coverage, Preferred Drug List Status, and Prior Authorization for Extended-Release MOUDs in All States and DC as of October 2018

| | Vivitrol | | | Probuphine | | | Sublocade | | |
|----|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|
| | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? |
| AL | Yes | — | — | — | — | — | — | — | — |
| AK | Yes | Yes | — | — | — | — | — | — | — |
| AZ | Yes | Yes | No | — | — | — | — | — | — |
| AR | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| CA | Yes | — | — | — | — | — | — | — | — |
| CO | Yes | No | Yes | — | — | — | Yes | No | Yes |
| CT | Yes | Yes | — | — | — | — | — | — | — |
| DC | Yes | Yes | Yes | — | — | — | Yes | Yes | No |
| DE | Yes | — | — | — | — | — | — | — | — |
| FL | Yes | Yes | Yes | — | — | — | Yes | Yes | Yes |
| GA | Yes | Yes | Yes | — | — | — | — | — | — |
| HI | Yes | No | Yes | — | — | — | — | — | — |
| ID | Yes | Yes | Yes | Yes | No | Yes | Yes | No | Yes |
| IL | Yes | Yes | No | — | — | — | — | — | — |
| IN | Yes | Yes | Yes | — | — | — | — | — | — |
| IA | Yes | No | Yes | — | — | — | — | — | — |
| KS | Yes | No | Yes | Yes | No | Yes | — | — | — |
| KY | Yes | Yes | No | — | — | — | — | — | — |
| LA | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| ME | Yes | Yes | — | Yes | No | Yes | Yes | No | Yes |
| MD | Yes | No | Yes | — | — | — | — | — | — |
| MA | Yes | Yes | No | Yes | No | Yes | — | — | — |
| MI | Yes | Yes | No | — | — | — | Yes | No | Yes |
| MN | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| MS | Yes | No | — | — | — | — | — | — | — |
| MO | Yes | Yes | No | Yes | No | Yes | — | — | — |
| MT | Yes | No | Yes | — | — | — | — | — | — |
| NE | Yes | No | Yes | — | — | — | — | — | — |
| NV | Yes | Yes | Yes | Yes | No | Yes | — | — | — |
| NH | Yes | No | Yes | — | — | — | — | — | — |
| NJ | Yes | — | — | — | — | — | — | — | — |
| NM | Yes | No | Yes | — | — | — | — | — | — |
| NY | Yes | Yes | Yes | — | — | — | — | — | — |
| NC | Yes | Yes | No | — | — | — | Yes | Yes | Yes |
| ND | Yes | Yes | No | — | — | — | — | — | — |
| OH | Yes | Yes | No | — | — | — | — | — | — |
| OK | — | — | — | Yes | No | — | — | — | — |
| OR | Yes | Yes | No | Yes | — | Yes | — | — | — |
| PA | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| RI | Yes | No | Yes | Yes | No | Yes | Yes | No | Yes |
| SC | Yes | Yes | No | — | — | — | Yes | Yes | — |
| SD | — | — | — | — | — | — | — | — | — |
| TN | — | — | — | — | — | — | — | — | — |
| TX | — | — | — | — | — | — | — | — | — |
| UT | Yes | Yes | Yes | — | — | — | Yes | — | — |
| VT | Yes | — | — | Yes | No | — | Yes | No | — |
| VA | Yes | No | No | — | — | — | — | — | — |

| | Vivitrol | | | Probuphine | | | Sublocade | | |
|----|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|
| | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? |
| WA | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes |
| WV | Yes | Yes | No | — | — | — | Yes | No | Yes |
| WI | Yes | Yes | Yes | — | — | — | — | — | — |
| WY | Yes | Yes | No | — | — | — | — | — | — |

Number of states with the following characteristics of Medicaid coverage for selected MOUDs

| | Vivitrol | | | Probuphine | | | Sublocade | | |
|-----|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|----------------------|--------------------|-----------------|
| | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? | Covered by Medicaid? | Listed on the PDL? | Is PA required? |
| Yes | 47 | 28 | 21 | 15 | 0 | 13 | 17 | 4 | 13 |
| No | 0 | 14 | 17 | 0 | 14 | 0 | 0 | 12 | 1 |
| NA | 4 | 9 | 13 | 36 | 37 | 38 | 34 | 35 | 37 |

Source: Miller (2018).

Notes: MOUDs = medications to treat opioid use disorder. PDL = preferred drug list. PA = prior authorization. Dashes indicate no evidence of coverage, PDL status, or PA requirement was found. NA = not available, meaning Medicaid coverage, listing on preferred drug lists, and prior authorization requirements are unknown in the corresponding number of states. Coverage is as of October 2018. Medication is covered if either the fee-for-service state plan or at least one state-sponsored managed care plan covers the service through either pharmacy or medical benefit.

TABLE A.3

**Total Vivitrol Prescriptions and Vivitrol Prescriptions per 1,000 Medicaid Enrollees
in All States and DC, 2011, 2014, and 2018**

| | Total Vivitrol Prescriptions | | | Vivitrol Prescriptions Per 1,000 Medicaid Enrollees Ages 12 and Older | | | Medicaid Expansion Status ^a |
|----|------------------------------|-------|--------|---|------|------|--|
| | 2011 | 2014 | 2018 | 2011 | 2014 | 2018 | |
| AK | 108 | 146 | 3063 | 1.3 | 1.9 | 22.2 | Late 2014–16 expansion state |
| OH | — | 2,006 | 36,166 | 0.0 | 0.9 | 16.8 | Early 2014 expansion state |
| MA | 1,373 | 6,687 | 19,302 | 1.6 | 4.5 | 16.2 | Early 2014 expansion state |
| WV | 193 | 719 | 5,987 | 0.8 | 1.6 | 15.1 | Early 2014 expansion state |
| PA | 593 | 1,492 | 30,395 | 0.4 | 0.9 | 12.2 | Late 2014–16 expansion state |
| NH | 36 | 15 | 1,254 | 0.4 | 0.1 | 9.6 | Late 2014–16 expansion state |
| DE | 1 | 110 | 1,935 | 0.0 | 0.7 | 9.6 | Early 2014 expansion state |
| CO | 75 | 362 | 7,603 | 0.2 | 0.6 | 8.8 | Early 2014 expansion state |
| WI | 555 | 1,346 | 6,705 | 0.7 | 1.5 | 8.5 | Nonexpansion state |
| MI | 245 | 537 | 14,249 | 0.2 | 0.3 | 8.3 | Early 2014 expansion state |
| KY | 95 | 311 | 7,677 | 0.2 | 0.4 | 7.7 | Early 2014 expansion state |
| MD | 135 | 211 | 7,004 | 0.2 | 0.3 | 7.6 | Early 2014 expansion state |
| UT | 33 | 131 | 1,190 | 0.2 | 0.6 | 6.7 | Nonexpansion state |
| IN | 271 | 369 | 5,246 | 0.4 | 0.6 | 5.9 | Late 2014–16 expansion state |
| VT | 15 | 51 | 748 | 0.1 | 0.4 | 5.7 | Early 2014 expansion state |
| CT | 812 | 1184 | 4,391 | 1.5 | 1.9 | 5.5 | Early 2014 expansion state |
| TN | 721 | 1,726 | 4,286 | 0.9 | 2.0 | 4.7 | Nonexpansion state |
| NJ | 537 | 686 | 6,009 | 0.9 | 0.6 | 4.5 | Early 2014 expansion state |
| MO | 494 | 921 | 2,613 | 0.8 | 1.4 | 4.1 | Nonexpansion state |
| NY | 83 | 1,415 | 19,904 | 0.0 | 0.3 | 3.7 | Early 2014 expansion state |
| WA | 0 | 135 | 4,805 | 0.0 | 0.1 | 3.1 | Early 2014 expansion state |
| AZ | 5 | 40 | 3,541 | 0.0 | 0.0 | 2.9 | Early 2014 expansion state |
| MT | 24 | 2 | 431 | 0.4 | 0.0 | 2.6 | Late 2014–16 expansion state |
| IL | 29 | 20 | 5,358 | 0.0 | 0.0 | 2.6 | Early 2014 expansion state |
| LA | 3 | 69 | 1,948 | 0.0 | 0.1 | 2.3 | Late 2014–16 expansion state |
| ND | 3 | 33 | 126 | 0.1 | 0.5 | 1.7 | Early 2014 expansion state |
| ME | 122 | 244 | 344 | 0.4 | 1.1 | 1.6 | 2019 expansion state |
| RI | 24 | 11 | 303 | 0.2 | 0.1 | 1.4 | Early 2014 expansion state |
| CA | 6 | 426 | 9,711 | 0.0 | 0.1 | 1.1 | Early 2014 expansion state |
| OR | 15 | 162 | 723 | 0.0 | 0.2 | 0.9 | Early 2014 expansion state |
| NV | 0 | 21 | 385 | 0.0 | 0.1 | 0.8 | Early 2014 expansion state |
| VA | 42 | 13 | 503 | 0.1 | 0.0 | 0.8 | 2019 expansion state |
| KS | 47 | 36 | 139 | 0.2 | 0.2 | 0.6 | Nonexpansion state |
| MN | 121 | 188 | 517 | 0.2 | 0.2 | 0.6 | Early 2014 expansion state |
| NC | 253 | 226 | 618 | 0.2 | 0.2 | 0.5 | Nonexpansion state |
| NM | 26 | 36 | 187 | 0.1 | 0.1 | 0.4 | Early 2014 expansion state |
| ID | 85 | 74 | 57 | 0.6 | 0.5 | 0.3 | Nonexpansion state |
| DC | 2 | 24 | 62 | 0.0 | 0.1 | 0.3 | Early 2014 expansion state |
| WY | 23 | 2 | 10 | 0.6 | 0.0 | 0.3 | Nonexpansion state |
| IA | 0 | 3 | 104 | 0.0 | 0.0 | 0.2 | Early 2014 expansion state |
| OK | 7 | 17 | 89 | 0.0 | 0.0 | 0.2 | Nonexpansion state |
| SC | 0 | 29 | 105 | 0.0 | 0.0 | 0.2 | Nonexpansion state |
| FL | 4 | 3 | 438 | 0.0 | 0.0 | 0.1 | Nonexpansion state |
| AL | 155 | 53 | 65 | 0.3 | 0.1 | 0.1 | Nonexpansion state |
| NE | 0 | 17 | 18 | 0.0 | 0.1 | 0.1 | Nonexpansion state |
| TX | 2 | 6 | 206 | 0.0 | 0.0 | 0.1 | Nonexpansion state |
| MS | 0 | 0 | 13 | 0.0 | 0.0 | 0.0 | Nonexpansion state |

| | Total Vivitrol Prescriptions | | | Vivitrol Prescriptions Per 1,000 Medicaid Enrollees Ages 12 and Older | | | Medicaid Expansion Status ^a |
|-----------------|------------------------------|---------------|----------------|---|------------|------------|--|
| | 2011 | 2014 | 2018 | 2011 | 2014 | 2018 | |
| SD | 0 | 0 | 2 | 0.0 | 0.0 | 0.0 | Nonexpansion state |
| HI | 101 | 32 | 7 | 0.5 | 0.1 | 0.0 | Early 2014 expansion state |
| GA | 0 | 3 | 19 | 0.0 | 0.0 | 0.0 | Nonexpansion state |
| AR | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | Early 2014 expansion state |
| US total | 7,474 | 22,350 | 216,561 | 0.2 | 0.5 | 4.1 | |

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: States are listed by largest to smallest number of Vivitrol prescriptions per 1,000 Medicaid enrollees ages 12 and older in 2018. The Medicaid State Drug Utilization Data exclude prescriptions written by prescribers at some safety net providers participating in the 340B Drug Pricing Program, such as federally funded clinics. See the methodological appendices for more details (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

^a Early 2014 expansion states expanded Medicaid between 3/1/2010 and 4/1/2014, late 2014–16 expansion states expanded Medicaid between 8/15/2014 and 7/1/2016, and 2019 expansion states expanded Medicaid between 1/1/2019 and 1/10/2019.

TABLE A.4

Probuphine and Sublocade Prescriptions in All States and DC, 2011, 2014, and 2018

| State | Probuphine | | | Sublocade |
|-------|------------|------|------|-----------|
| | 2016 | 2017 | 2018 | 2018 |
| WI | 0 | 11 | 1 | 540 |
| OH | 0 | 0 | 0 | 516 |
| PA | 1 | 2 | 0 | 424 |
| MI | 0 | 0 | 3 | 367 |
| MD | 0 | 0 | 0 | 234 |
| CT | 0 | 0 | 0 | 216 |
| NC | 0 | 0 | 0 | 205 |
| LA | 0 | 0 | 0 | 204 |
| AK | 0 | 2 | 0 | 192 |
| NY | 0 | 4 | 3 | 155 |
| MA | 0 | 0 | 2 | 148 |
| KY | 0 | 0 | 0 | 146 |
| CO | 0 | 0 | 0 | 105 |
| NJ | 0 | 3 | 1 | 74 |
| CA | 0 | 1 | 1 | 60 |
| IL | 0 | 0 | 0 | 59 |
| AL | 0 | 0 | 0 | 57 |
| NM | 0 | 1 | 0 | 42 |
| IN | 0 | 2 | 1 | 32 |
| MO | 0 | 0 | 0 | 31 |
| MT | 0 | 0 | 0 | 31 |
| FL | 0 | 0 | 0 | 28 |
| TN | 0 | 0 | 0 | 28 |
| OR | 0 | 0 | 0 | 28 |
| DE | 0 | 0 | 0 | 28 |
| WA | 0 | 1 | 0 | 26 |
| NV | 0 | 0 | 0 | 23 |
| VA | 0 | 0 | 0 | 21 |
| VT | 0 | 0 | 0 | 19 |
| KS | 0 | 0 | 0 | 17 |
| HI | 0 | 0 | 0 | 11 |
| SC | 0 | 0 | 0 | 11 |
| UT | 0 | 0 | 0 | 11 |
| GA | 0 | 0 | 0 | 9 |
| AZ | 0 | 0 | 1 | 8 |
| WV | 0 | 0 | 0 | 8 |
| RI | 0 | 0 | 0 | 7 |
| OK | 0 | 0 | 0 | 5 |
| NH | 0 | 0 | 0 | 3 |
| ND | 0 | 0 | 0 | 2 |
| MS | 0 | 0 | 0 | 1 |
| ID | 0 | 0 | 0 | 1 |
| NE | 0 | 0 | 0 | 1 |
| MN | 0 | 1 | 2 | 0 |
| SD | 0 | 0 | 0 | 0 |
| IA | 0 | 0 | 0 | 0 |
| AR | 0 | 0 | 0 | 0 |
| TX | 1 | 6 | 0 | 0 |
| ME | 0 | 0 | 0 | 0 |
| DC | 0 | 0 | 0 | 0 |

| State | Probuphine | | | Sublocade |
|-----------------|------------|-----------|-----------|--------------|
| | 2016 | 2017 | 2018 | 2018 |
| WY | 0 | 0 | 0 | 0 |
| US total | 2 | 34 | 15 | 4,134 |

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Notes: States are ordered by largest to smallest number of Sublocade prescriptions in 2018. The Medicaid State Drug Utilization Data exclude prescriptions written by prescribers at some safety net providers participating in the 340B Drug Pricing Program, such as federally funded clinics. See the methodological appendices for more details (Clemans-Cope et al. 2019; Lynch, Winiski, and Clemans-Cope 2019).

TABLE A.5

State Medicaid Documents Used to Identify Coverage for Extended-Release MOUDs

| State | Citation |
|-------|--|
| AL | "Alabama Medicaid Preferred Drug List," https://medicaid.alabama.gov/content/4.0_Programs/4.3_Pharmacy-DME/4.3.7_Preferred_Drug_List.aspxf . |
| AK | "Alaska Medicaid Base Rate Reimbursement Adjustments for SFY2020," http://manuals.medicaidalaska.com/medicaidalaska/providers/FeeSchedule.asp ; "Alaska Medicaid Preferred Drug List (PDL) - Updated on 08/08/14," http://dhss.alaska.gov/dhcs/Pages/pdl/default.aspx ; "Alaska Medicaid Prior Authorization Medication List," https://aws.state.ak.us/OnlinePublicNotices/Notices/Attachment.aspx?id=110941 . |
| AZ | "AHCCCS Acute – Long-Term Drug List Effective October 1, 2018," https://www.azahcccs.gov/Resources/Downloads/PharmacyUpdates/AHCCCS_DRUG_LIST_10012018.pdf . |
| AR | "Arkansas Medicaid Preferred Drug List;" "Arkansas Medicaid Prescription Drugs Prior Authorization Form." |
| CA | "California Department of Health Care Services Contract Drugs List," https://files.medi-cal.ca.gov/pubsdoco/manual/man_query.asp?wSearch=%28%23filename+drugscdl%2A%2Edoc+OR+%23filename+drugscdl%2A%2Ezip%29&wFLogo=Contract+Drugs+List&wFLogoH=52&wFLogoW=516&wAlt=Contract+Drugs+List&wPath=N2017 ; "Medi-Cal Medicaid-Approved Drug List," https://fm.formularynavigator.com/FBO/4/California_Complete_English.pdf . |
| CO | "Colorado Department of Health Care Policy and Financing Pharmacy Resources," https://www.colorado.gov/pacific/hcpf/pharmacy-resources ; "Colorado Department of Health Care Policy and Financing Provider Rates and Fee Schedule," https://www.colorado.gov/pacific/hcpf/provider-rates-fee-schedule . |
| CT | "Connecticut Medicaid Preferred Drug List (PDL)," https://www.ctdssmap.com/CTPortal/Portals/0/StaticContent/Publications/CT_PDL_medicaid.pdf ; "Husky Health Connecticut Medical Manager," https://www.huskyhealthct.org/providers/medical-management.html . |
| DC | "District of Columbia Department of Health Care Finance Pharmacy PDL," https://dc.fhsc.com/downloads/providers/DCRx_PDL_listing.pdf . |
| DE | "Delaware Health and Social Services Division of Medicaid and Medical Assistance PDL," https://medicaidpublications.dhss.delaware.gov/dotnetnuke/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=940&language=en-US&PortalId=0&TabId=94 . |

| State | Citation |
|-------|---|
| FL | "Florida Medicaid Preferred Drug List," https://ahca.myflorida.com/medicaid/Prescribed_Drug/pharm_thera/pdf/PDL.pdf . |
| GA | "Georgia Department of Community Health Preferred Drug Lists," https://dch.georgia.gov/providers/provider-types/pharmacy/preferred-drug-lists . |
| HI | "AlohaCare Medicaid Formulary." |
| ID | "Idaho Department of Health and Welfare Preferred Drug List," https://healthandwelfare.idaho.gov/Medical/PrescriptionDrugs/tabid/119/Default.aspx . |
| IL | "Illinois Preferred Drug List," https://www.illinois.gov/hfs/SiteCollectionDocuments/PDLFinal.pdf |
| IN | "Indiana Medicaid Fee-for-Service Pharmacy Benefit," https://inm-providerportal.optum.com/providerportal/faces/PreLogin.jsp ; "MHS Indiana Prior Authorization Forms for Specialty Drugs," https://www.mhsindiana.com/providers/pharmacy/prior-auth-specialty.html . |
| IA | "Iowa Department of Human Services Informational Letter 2000-MC-FFS," https://dhs.iowa.gov/sites/default/files/2000-MC-FFS_Medication_Coverage_for_Medication_Assisted_Treatment.Phy__0.pdf?090320192245 . |
| KS | "Kansas Department of Health and Environment Preferred Drug List (PDL)," http://www.kdheks.gov/hcf/pharmacy/pharmacy_druglist.html ; "Kansas Department of Health and Environment July 2018 HCPCS Updates," https://www.kmap-state-ks.us/Documents/Content/Bulletins/18134%20-%20General%20-%20July_HCPCS.pdf . |
| KY | "Kentucky Pharmacy Policy Branch," https://chfs.ky.gov/agencies/dms/dpo/ppb/Pages/default.aspx . |
| LA | "Louisiana Medicaid Preferred Drug List (PDL)/Non-Preferred Drug List (NPDL)," http://ldh.la.gov/assets/HealthyLa/Pharmacy/PDL.pdf . |
| ME | "MaineCare Preferred Drug Lists (PDL)," http://mainecarepdl.org/pdl . |
| MD | "Maryland Medicaid Pharmacy Preferred Drug List," https://mmcp.health.maryland.gov/pap/pages/Preferred-Drug-List.aspx . |
| MA | "MassHealth Drug List," https://masshealthdruglist.ehs.state.ma.us/MHDL/pubtheradetail.do?id=72&drugId=1426 |
| MI | "Michigan Department of Health and Human Services Preferred Drug List," https://michigan.magellanrx.com/provider/external/medicaid/mi/doc/en-us/MIRx_PDL.pdf . |
| MN | "Minnesota Fee-for-Service and Managed Care Medicaid Uniform Preferred Drug List," https://mn.gov/dhs/assets/preferred-drug-list-2019-10-01_tcm1053-403630.pdf . |
| MS | "Mississippi Division of Medicaid Universal Preferred Drug List," https://medicaid.ms.gov/wp-content/uploads/2019/04/MSPDLeffective07012019.pdf . |
| MO | "MO HealthNet Preferred Drug List (PDL) and Diabetic Supply Program (DSP) Searchable Database," https://pdlsearchabledatabase.pharmacy.services.conduent.com/ . |
| MT | "Montana Healthcare Programs Fee Schedule Physician Services," https://medicaidprovider.mt.gov/Portals/68/docs/feeschedules/2019FS/Q22019/JULY2019a/July2019PhysicianServicesFeeSchedulea.pdf . |
| NE | "Magellan Medicaid Administration Inc. Nebraska Medicaid Drug Lookup v1.0," https://druglookup.fhsc.com/druglookupweb/pages/unsecured/druglookup/chooseProgram.jsf;jsessionid=HD6nd4TTyQSHHmlwyJgWrPyz9M10p9Glm31bcghRn0RfNpj62r!-175654864 . |

| State | Citation |
|-------|---|
| NV | “Nevada Medicaid and Nevada Check Up Preferred Drug List (PDL),” https://www.medicaid.nv.gov/Downloads/provider/NV_PDL_20190927.pdf ; “OptumRX Nevada Medicaid Prescription Drug List,” https://www.optumrx.com/oe_rxexternal/prescription-drug-list?type=ClientFormulary&var=UCSNVQ1&infoid=UCSNVQ1&page=insert . |
| NH | “New Hampshire Department of Health and Human Services Fee-for-Service Medicaid Preferred Drug List (PDL),” https://nhcontent.magellanmedicaid.com/Downloads/provider/NHRx_PDL.pdf . |
| NJ | “New Jersey Medicaid-Approved Preferred Drug List,” https://fm.formularynavigator.com/FBO/4/New_Jersey_PDL_English.pdf ; “Pharmacy Aetna Better Health of New Jersey,” https://www.aetnabetterhealth.com/newjersey/providers/pharmacy . |
| NM | “New Mexico Medicaid Fee for Service HCPCS Level II Codes Fee Schedule,” https://www.hsd.state.nm.us/uploads/FileLinks/e7cfb008157f422597ccdc11d2034f0/Fee_Schedule__HCPCS_Codes_22.pdf . |
| NY | “New York State Medicaid Fee-for-Service Pharmacy Programs,” https://newyork.fhsc.com/downloads/providers/NYRx_PDP_PDL.pdf ; “New York State Medicaid Managed Care Pharmacy Benefit Information Center,” https://mmcdruginformation.nysdoh.suny.edu/search/ . |
| NC | “NC Medicaid: Physician Administered Drug Program Fee Schedule,” https://medicaid.ncdhhs.gov/fee-schedule/physician-administered-drug-program-fee-schedule ; “North Carolina Medicaid and Health Choice Preferred Drug List (PDL),” https://files.nc.gov/ncdma/documents/files/PDL_September_1_2019.pdf . |
| ND | “North Dakota Medicaid Preferred Drug List (PDL) and Prior Authorization,” http://www.hidesigns.com/assets/files/ndmedicaid/NDPDL.pdf . |
| OH | “Ohio Drug Search,” https://druglookup.ohgov.changehealthcare.com/DrugSearch ; “Ohio Medicaid Pharmacy Benefit Management Program,” https://pharmacy.medicaid.ohio.gov/sites/default/files/OH_PDL_Effective_20190701.pdf . |
| OK | “SoonerCare Prior Authorization Changes for Medication Assisted Treatments,” https://www.okhca.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=23629&libID=2261 . |
| OR | “Oregon Fee-for-Service Enforceable Physical Health Preferred Drug List,” https://www.oregon.gov/oha/HSD/OHP/Tools/Oregon%20Medicaid%20Preferred%20Drug%20List%2C%20July1%2C%202019.pdf ; “Oregon Medicaid Pharmaceutical Services Prior Authorization Criteria,” https://www.oregon.gov/oha/HSD/OHP/Tools/Oregon%20Medicaid%20PA%20Criteria,%20August%2019,%202019.pdf . |
| PA | “Pennsylvania Department of Human Services Preferred Drug List (PDL),” https://papdl.com/sites/default/files/ghs-files/Penn%20PDL%2001282019_v5.pdf . |
| RI | “Rhode Island Medicaid Fee for Service Preferred Drug List,” http://www.eohhs.ri.gov/Portals/0/Uploads/Documents/Pharmacy/pdl_list.pdf . |
| SC | “South Carolina Pharmacy Services Preferred Drug List,” http://southcarolina.fhsc.com/providers/pdl.asp . |
| SD | “South Dakota Department of Social Services,” https://dss.sd.gov/medicaid/providers/pa/ . |
| TN | “Tennessee Medicaid PDL,” https://tenncare.magellanhealth.com/static/docs/Preferred_Drug_List_and_Drug_Criteria/TennCare_PDL.pdf . |

| State | Citation |
|-------|--|
| TX | "Preferred Drugs Vendor Drug Program," https://www.txvendordrug.com/formulary/prior-authorization/preferred-drugs . |
| UT | "Bureau of Healthcare Policy and Authorization Coverage and Reimbursement Code Lookup," https://health.utah.gov/stplan/lookup/CoverageLookup.php ; "Utah Medicaid Preferred Drug List," https://medicaid.utah.gov/pharmacy/PDL/files/PDL%20Archive/2019/Utah%20Medicaid%20PDL%20(01-01-19).pdf . |
| VT | "Department of Vermont Health Access Preferred Drug List (PDL) and Clinical Criteria," https://dvha.vermont.gov/for-providers/preferred-drug-list-clinical-criteria/ . |
| VA | "Preferred Drug List / Common Core Formulary," https://www.virginiamedicaidpharmacyservices.com/provider/preferred-drug-list/ . |
| WA | "Apple Health Preferred Drug List (PDL) Washington State Health Care Authority," https://www.hca.wa.gov/billers-providers-partners/programs-and-services/apple-health-preferred-drug-list-pdl . |
| WV | "Preferred Drug List," https://dhhr.wv.gov/bms/BMS%20Pharmacy/Pages/Preferred-Drug-List.aspx . |
| WI | "Wisconsin Forward Health Drug Search," https://www.forwardhealth.wi.gov/WIPortal/Subsystem/Provider/DrugSearch.aspx . |
| WY | "Preferred Drug List," http://www.wyomedicaid.org/pdl ; "Wyoming Medicaid Procedure Code Search," https://wyomedicaid.portal.conduent.com/fees/Fee_Schedule/index.asp . |

Note: MOUDs = medications to treat opioid use disorder.

TABLE A.6

Medicaid Spending on Extended-Release MOUDs in All States and DC, 2018

| | Vivitrol | | Probuphine | | Sublocade | |
|----|-------------------------|------------------------------------|-------------------------|------------------------------------|-------------------------|------------------------------------|
| | Total Medicaid spending | Medicaid spending per prescription | Total Medicaid spending | Medicaid spending per prescription | Total Medicaid spending | Medicaid spending per prescription |
| AK | 1,445,492 | 470 | | | 120,487 | 628 |
| AL | 38,847 | 617 | | | 25,870 | 507 |
| AR | | | | | | |
| AZ | 3,286,224 | 935 | 3,807 | 3,807 | 522 | 87 |
| CA | 6,376,733 | 657 | 0 | 0 | 17,128 | 285 |
| CO | 4,327,919 | 522 | | | 31,768 | 324 |
| CT | 2,624,816 | 598 | | | 130,550 | 604 |
| DC | 43,606 | 727 | | | | |
| DE | 21,824 | 11 | | | 9,218 | 279 |
| FL | 400,507 | 916 | | | 9,877 | 341 |
| GA | 18,558 | 844 | | | 4,509 | 501 |
| HI | 4,844 | 969 | | | 7,547 | 686 |
| IA | 62,577 | 613 | | | | |
| ID | 32,838 | 576 | | | 715 | 179 |
| IL | 5,220,264 | 970 | | | 23,455 | 419 |
| IN | 4,662,622 | 892 | 0 | 0 | 9,372 | 469 |
| KS | 130,211 | 937 | | | 6,590 | 507 |
| KY | 7,174,050 | 934 | | | 68,592 | 473 |
| LA | 1,079,298 | 569 | | | 71,207 | 356 |
| MA | 15,932,144 | 817 | 3,823 | 1,912 | 59,290 | 482 |

| | Vivitrol | | Probuphine | | Sublocade | |
|--------------|-------------------------|------------------------------------|-------------------------|------------------------------------|-------------------------|------------------------------------|
| | Total Medicaid spending | Medicaid spending per prescription | Total Medicaid spending | Medicaid spending per prescription | Total Medicaid spending | Medicaid spending per prescription |
| MD | 4,159,024 | 594 | | | 135,387 | 579 |
| ME | 204,213 | 592 | | | | |
| MI | 7,364,889 | 517 | 11,360 | 3,787 | 246,175 | 671 |
| MN | 434,662 | 862 | 0 | 0 | | |
| MO | 1,754,322 | 671 | | | 8,149 | 281 |
| MS | 7,101 | 710 | | | 139 | 35 |
| MT | 263,694 | 612 | | | 18,919 | 498 |
| NC | 369,842 | 598 | | | 140,162 | 680 |
| ND | 97,461 | 792 | | | 538 | 179 |
| NE | 16,285 | 905 | | | | |
| NH | 1,117,387 | 895 | | | 142 | 36 |
| NJ | 5,595,198 | 932 | 0 | 0 | 24,070 | 454 |
| NM | 144,185 | 810 | | | 19,220 | 565 |
| NV | 319,364 | 836 | | | 26,705 | 763 |
| NY | 7,792,056 | 389 | 0 | 0 | 58,705 | 362 |
| OH | 31,861,327 | 878 | | | 187,295 | 417 |
| OK | 58,315 | 655 | | | 1,078 | 216 |
| OR | 594,968 | 852 | | | 6,783 | 234 |
| PA | 27,679,671 | 912 | | | 176,872 | 426 |
| RI | 282,927 | 934 | | | 2,456 | 351 |
| SC | 96,235 | 908 | | | 3,239 | 324 |
| SD | 1,369 | 685 | | | | |
| TN | 2,626,334 | 613 | | | 41,436 | 1,036 |
| TX | 188,250 | 923 | | | | |
| UT | 693,943 | 583 | | | 9,087 | 454 |
| VA | 379,087 | 752 | | | 13,397 | 462 |
| VT | 402,986 | 603 | | | 6,861 | 343 |
| WA | 3,897,794 | 813 | | | 12,423 | 518 |
| WI | 4,087,691 | 609 | 1,147 | 1,147 | 345,692 | 640 |
| WV | 3,536,566 | 590 | | | 2,996 | 428 |
| WY | 7,291 | 608 | | | | |
| Total | 158,917,814 | 731 | 20,138 | 1,343 | 2,084,627 | 517 |

Source: Urban Institute analysis of Medicaid State Drug Utilization Data from the Centers for Medicare & Medicaid Services, including some unsuppressed data. See methods section above.

Note: MOUDs = medications to treat opioid use disorder.

Notes

- ¹ To examine spending, we adjusted expenditures for estimated federal rebates to Medicaid, which reduced estimated costs substantially for each extended-release MOUD. After adjusting for both the federal basic and inflation rebates in 2018, Medicaid spending for extended-release MOUDs totaled \$126.3 million for Vivitrol and \$4.7 million for Sublocade. Because Probuphine sample sizes are not adequate to compute the inflation rebate, we adjusted Probuphine spending for the federal basic rebate alone, leading to an adjusted Medicaid spending estimate of \$29,000.
- ² “List vs. Net Price,” Novo Nordisk Inc., accessed April 2, 2020, https://www.novonordisk-us.com/content/dam/USA/AFFILIATE/www-novonordisk-us/Home/blog/List_vs_Net.pdf; “Back to Basics: What are List and Net Price?” Eli Lilly and Company, accessed March 2, 2020, <https://lillypad.lilly.com/entry.php?e=10173>.
- ³ Supplemental rebates, in addition to the mandated federal rebates, are negotiated by nearly all state Medicaid programs or multistate coalitions (MACPAC 2019a). However, drug-level data and/or rebate formulas are not available to estimate the size of these supplemental rebates.
- ⁴ For suppressed data that have a corresponding entry with more than 11 prescriptions in the unsuppressed file, we calculated the spending per prescription, imputed the number of prescriptions, and then calculated total and Medicaid spending based on the imputed number of prescriptions.
- ⁵ “Recent Medicaid Prescription Drug Laws and Strategies,” National Conference of State Legislatures, August 8, 2018, <https://www.ncsl.org/research/health/medicaid-pharmaceutical-laws-and-policies.aspx>.
- ⁶ See also “Status of State Action on the Medicaid Expansion Decision,” Henry J. Kaiser Family Foundation, updated August 1, 2019, <https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/>; Lynn A. Blewett, “Medicaid ‘Early Opt-In’ States,” State Health Access Data Assistance Center, October 9, 2015, <https://www.shadac.org/news/medicaid-%E2%80%99Early-opt-in%E2%80%9D-states>.
- ⁷ Kao-Ping Chua and Rena M. Conti, “Revocation of Orphan Drug Designation for Extended-Release Buprenorphine Injection: Implications and Next Steps,” *Health Affairs Blog*, March 5, 2020, <https://www.healthaffairs.org/doi/10.1377/hblog20200302.846103/full/>.
- ⁸ These per prescription estimates are similar to our estimates of the average price paid by wholesalers in 2018, the average manufacturer price (AMP), for the two drugs for which AMP could be estimated, Vivitrol and Sublocade. Estimated AMP in 2018 was \$1,165 for Vivitrol and \$1,584 for Sublocade. Thus, gross Medicaid spending per prescription was about 103 percent of AMP for Vivitrol and 96 percent of AMP for Sublocade. We do not estimate AMP for Probuphine as no quarter of data in 2018 has over five prescriptions, which may make the data unreliable for estimating AMP. For a detailed methodology of the AMP estimates, see Clemans-Cope and colleagues (2020).
- ⁹ Chua and Conti, “Revocation of Orphan Drug Designation for Extended-Release Buprenorphine Injection: Implications and Next Steps,” *Health Affairs Blog*.
- ¹⁰ “Probuphine Risk Evaluation and Mitigation Strategy (REMS) Program,” Titan Pharmaceuticals, accessed April 2, 2020, <https://probuphinerems.com/healthcare-providers/>.
- ¹¹ Abby Goodnough and Kate Zernicke, “Study Finds Competing Opioid Treatments Have Similar Outcomes,” *New York Times*, November 24, 2017, <https://www.nytimes.com/2017/11/14/health/vivitrol-suboxone-addiction-treatment.html>; Jake Harper, “A Drugmaker Tries to Cash In on the Opioid Epidemic, One State Law at a Time,” *All Things Considered*, NPR, June 12, 2017, <https://www.npr.org/sections/health->

[shots/2017/06/12/523774660/a-drugmaker-tries-to-cash-in-on-the-opioid-epidemic-one-state-law-at-a-time.](#)

¹² "Probuphine Risk Evaluation and Mitigation Strategy (REMS) Program," Titan Pharmaceuticals.

¹³ Chua and Conti, "Revocation of Orphan Drug Designation for Extended-Release Buprenorphine Injection: Implications and Next Steps," *Health Affairs Blog*.

References

- Azar, Alex. 2019. *T-MSIS Substance Use Disorder (SUD) Data Book: Treatment of SUD in Medicaid, 2017*. Report to Congress. Baltimore: Centers for Medicare & Medicaid Services.
- Banken, Reiner, Ifeoma Otuonye, Katherine Fazioli, Varun Kumar, Rick Chapman, Sumeyye Samur, et al. 2018. *Extended-Release Opioid Agonists and Antagonist Medications for Addiction Treatment (MAT) in Patients with Opioid Use Disorder: Effectiveness and Value*. Boston: Institute for Clinical and Economic Review.
- Chilcoat, Howard D., Halle R. Amick, Molly R. Sherwood, and Kelly E. Dunn. 2019. "Buprenorphine in the United States: Motives for Abuse, Misuse, and Diversion." *Journal of Substance Abuse Treatment* 104:148–57. <https://doi.org/10.1016/j.jsat.2019.07.005>.
- Clemans-Cope, Lisa, Marni Epstein, and Emma Winiski. 2020. "Federal Rebate Calculation for Medications to Treat Opioid Use Disorder in State Medicaid Programs." Washington, DC: Urban Institute.
- Clemans-Cope, Lisa, Marni Epstein, Emma Winiski, and Victoria Lynch. 2019. "Tracking Medicaid-Covered Prescriptions to Treat Opioid Use Disorder: Methodology Appendix." Washington, DC: Urban Institute.
- Coe, Marion, Michelle Lofwall, and Sharon Walsh. 2019. "Buprenorphine Pharmacology Review: Update on Transmucosal and Long-Acting Formulations." *Journal of Addiction Medicine* 13 (2): 93. <https://doi.org/10.1097/ADM.0000000000000457>.
- Comer, Sandra, Chinazo Cunningham, Marc Fishman, Adam Gordon, Kyle Kampman, Daniel Langleben, et al. 2015. *The ASAM National Practice Guideline for the Use of Medications in the Treatment of Addiction Involving Opioid Use*. Rockville, MD: American Society of Addiction Medicine.
- Crumley, Diana, Jim Lloyd, Madeline Pucciarello, and Brittany Stapelfeld. 2018. *Addressing Social Determinants of Health via Medicaid Managed Care Contracts and Section 1115 Demonstrations*. Hamilton, New Jersey: Center for Health Care Strategies.
- Darke, Shane, Michael Farrell, Johan Duflou, Briony Larance, and Julia Lappin. 2019. "Circumstances of Death of Opioid Users Being Treated with Naltrexone." *Addiction* 114 (11): 2000–07. <https://doi.org/10.1111/add.14729>.
- Dickson, Sean. 2019. "Estimates of the Number of Brand-Name Drugs Affected by the Medicaid Rebate Cap in 2017." *JAMA Internal Medicine* 179 (3): 3. <https://doi.org/10.1001/jamainternmed.2018.6559>.
- Gertner, A. 2019. FOIA-Related Quarterly State Medicaid State Drug Utilization Data (Medicaid SDUD). Chapel Hill, North Carolina: University of North Carolina at Chapel Hill.
- Haffajee, Rebecca L., and Richard G Frank. 2020. "Abuses of FDA Regulatory Procedures — The Case of Suboxone." *New England Journal of Medicine* 382 (6): 496–98. <https://doi.org/10.1056/NEJMp1906680>.
- ICER (Institute for Clinical and Economic Review). 2018. *Extended-Release Opioid Agonists and Antagonist Medications for Addiction Treatment (MAT) in Patients with Opioid Use Disorder: Effectiveness and Value*. Boston: Institute for Clinical and Economic Review.
- Kampman, Kyle, and Margaret Jarvis. 2015. "American Society of Addiction Medicine (ASAM) National Practice Guideline for the Use of Medications in the Treatment of Addiction Involving Opioid Use." *Journal of Addiction Medicine* 9 (5): 358–67. <https://doi.org/10.1097/ADM.0000000000000166>.
- Kraus, Mark, Daniel Alford, Margaret Kotz, Petros Levounis, Todd Mandell, Marjorie Meyer, et al. 2011. "Statement of the American Society of Addiction Medicine Consensus Panel on the Use of Buprenorphine in Office-Based Treatment of Opioid Addiction." *Journal of Addiction Medicine* 5 (4): 254–63. <https://doi.org/10.1097/ADM.0b013e3182312983>.

- Larochelle, Marc, Dana Bernson, Thomas Land, Thomas J. Stopka, Na Wang, Zimng Xuan, et al. 2018. "Medication for Opioid Use Disorder after Nonfatal Opioid Overdose and Association with Mortality: A Cohort Study." *Annals of Internal Medicine* 169 (3): 137. <https://doi.org/10.7326/M17-3107>.
- Lee, Joshua D., Edward V. Nunes, Patricia Novo, Ken Bachrach, Genie L. Bailey, Snehal Bhatt, et al. 2018. "Comparative Effectiveness of Extended-Release Naltrexone versus Buprenorphine-Naloxone for Opioid Relapse Prevention (X:BOT): A Multicentre, Open-Label, Randomised Controlled Trial." *The Lancet* 391 (10118): 309–18. [https://doi.org/10.1016/S0140-6736\(17\)32812-X](https://doi.org/10.1016/S0140-6736(17)32812-X).
- Ling, Walter, Paul Casadonte, George Bigelow, Kyle Kampman, Ashwin Patkar, Genie L. Bailey, et al. 2010. "Buprenorphine Implants for Treatment of Opioid Dependence: A Randomized Controlled Trial." *JAMA* 304 (14): 1576–83. <https://doi.org/10.1001/jama.2010.1427>.
- Lynch, Victoria, Emma Winiski, and Lisa Clemans-Cope. 2019. "Medicaid Enrollment for Individuals Who May Receive a Prescription for Medication to Treat Opioid Use Disorder." Washington, DC: Urban Institute.
- Ma, Jun, Yan-Ping Bao, Ru-Jia Wang, Meng-Fan Su, Mo-Xuan Liu, Jin-Qiao Li, et al. 2018. "Effects of Medication-Assisted Treatment on Mortality among Opioids Users: A Systematic Review and Meta-analysis." *Molecular Psychiatry* 1. <https://doi.org/10.1038/s41380-018-0094-5>.
- MACPAC (Medicaid and CHIP Payment and Access Commission). 2018a. "The 340B Drug Pricing Program and Medicaid Drug Rebate Program: How They Interact." Washington, DC: Medicaid and CHIP Payment and Access Commission.
- . 2018b. "Medicaid Payment for Outpatient Prescription Drugs." Washington, DC: Medicaid and CHIP Payment and Access Commission.
- . 2019a. "Medicaid Drug Spending Trends." Washington, DC: Medicaid and CHIP Payment and Access Commission.
- . 2019b. "Next Steps in Improving Medicaid Prescription Drug Policy." In *Report to Congress on Medicaid and CHIP*. Washington, DC: Medicaid and CHIP Payment and Access Commission.
- . 2019c. *Report to Congress: Utilization Management of Medication-Assisted Treatment in Medicaid*. Washington, DC: Medicaid and CHIP Payment and Access Commission.
- Miller, Niki. 2018. *A Comprehensive Listing of What States Cover for Substance Use Disorder, Including Medications*. Sudbury, MA: Advocates for Human Potential Inc.
- Murrin, Suzanne. 2016. *State Efforts to Exclude 340B Drugs from Medicaid Managed Care Rebates*. Washington, DC: US Department of Health and Human Services, Office of the Inspector General.
- Nunes, Edward V., Michael Gordon, Peter D. Friedmann, Marc J. Fishman, Joshua D. Lee, Donna T. Chen, et al. 2018. "Relapse to Opioid Use Disorder after Inpatient Treatment: Protective Effect of Injection Naltrexone." *Journal of Substance Abuse Treatment* 85: 49–55. <https://doi.org/10.1016/j.jsat.2017.04.016>.
- Otuonye, Ifeoma S., Reiner Banken, Varun M. Kumar, and Steven D. Pearson. 2019. "Effectiveness and Value of Extended-Release Opioid Agonists and Antagonists for Addiction Treatment of Opioid Use Disorder." *Journal of Managed Care & Specialty Pharmacy* 25 (6): 630–34. <https://doi.org/10.18553/jmcp.2019.25.6.630>.
- Roehrig, Charles. 2018. "The Impact of Prescription Drug Rebates on Health Plans and Consumers." Ann Arbor, MI: Altarum.
- Rosenthal, Richard N., Michelle R. Lofwall, Sonnie Kim, Michael Chen, Katherine L. Beebe, Frank J. Vocci, et al. 2016. "Effect of Buprenorphine Implants on Illicit Opioid Use among Abstinent Adults with Opioid Dependence Treated with Sublingual Buprenorphine: A Randomized Clinical Trial." *JAMA* 316 (3): 282–90. <https://doi.org/10.1001/jama.2016.9382>.
- Schuckit, Marc A. 2016. "Treatment of Opioid-Use Disorders." *New England Journal of Medicine* 375 (4): 357–68. <https://doi.org/10.1056/NEJMra1604339>.

- Sommers, Benjamin D., Emily Arntson, Genevieve M. Kenney, and Arnold M. Epstein. 2013. "Lessons from Early Medicaid Expansions under Health Reform: Interviews with Medicaid Officials." *Medicare & Medicaid Research Review* 3 (4): E1–E23. <https://doi.org/10.5600/mmrr.003.04.a02>.
- Sordo, Luis, Gregorio Barrio, Maria J. Bravo, B. Iciar Indave, Louisa Degenhardt, Lucas Wiessing, et al. 2017. "Mortality Risk during and after Opioid Substitution Treatment: Systematic Review and Meta-analysis of Cohort Studies." *BMJ* 357:j1550. <https://doi.org/10.1136/bmj.j1550>.
- Tanum, Lars, Kristin Klemmetsby Solli, Zill-e-Huma Latif, Jūratė Šaltytė Benth, Arild Opheim, Kamni Sharma-Haase, et al. 2017. "Effectiveness of Injectable Extended-Release Naltrexone vs Daily Buprenorphine-Naloxone for Opioid Dependence: A Randomized Clinical Noninferiority Trial." *JAMA Psychiatry* 74 (12): 1197–1205. <https://doi.org/10.1001/jamapsychiatry.2017.3206>.

About the Authors

Lisa Clemans-Cope is a senior research associate in the Health Policy Center at the Urban Institute. Her areas of expertise include substance use disorder and opioid use disorder and treatment, health use and spending, access to and use of health care, private insurance, Medicaid and the Children's Health Insurance Program, people dually eligible for Medicare and Medicaid, health reform legislation and regulation, and health-related survey and administrative data. She has led qualitative and quantitative research projects examining the impacts of policies to integrate physical, behavioral, and substance use treatment; assessing treatment interventions for opioid use disorder; and assessing policies to increase access to treatment. Her research includes analyses of the Affordable Care Act, Medicaid program costs and quality, hospital costs under Medicaid and Medicare, access to care under Medicare, and private health insurance.

Clemans-Cope has published her research in the *New England Journal of Medicine*, *Health Affairs*, *Pediatrics*, and *Inquiry*. Her work has been widely cited in the media, including the *New York Times*, *Wall Street Journal*, *Los Angeles Times*, Bloomberg, *Forbes*, *National Journal*, FactCheck.org, Huffington Post, *Incidental Economist*, and *Modern Healthcare*. She has appeared on NPR and Fox News.

Clemans-Cope has a BA in economics from Princeton University and a PhD in health economics from the Johns Hopkins Bloomberg School of Public Health.

Emma Winiski is a research assistant in the Health Policy Center. Her current works focuses on treatment of substance use disorder under Medicaid and analysis of survey data. She received a BS from Furman University.

Marni Epstein is a research assistant in the Health Policy Center. Her works primarily focuses on substance use disorder treatment and health spending through quantitative analyses of Medicaid administrative claims and survey data. She received a BA from Johns Hopkins University.

Luis Basurto is a research analyst in the Health Policy Center. He received his BBA from the University of Texas Rio Grande Valley, where he majored in economics and finance and minored in mathematics. Basurto graduated with honors with highest distinction for his honors thesis that examined cross-country output growth and convergence using a recursive rolling window regression approach to identify periods of explosive behavior. In addition, he was a peer review board member

for the Economics Scholars Program hosted by the Federal Reserve Bank of Dallas and spent a summer developing his econometric portfolio at the London School of Economics. Before joining Urban, Basurto interned at the American Enterprise Institute and the Keystone Research Center.

STATEMENT OF INDEPENDENCE

The Urban Institute strives to meet the highest standards of integrity and quality in its research and analyses and in the evidence-based policy recommendations offered by its researchers and experts. We believe that operating consistent with the values of independence, rigor, and transparency is essential to maintaining those standards. As an organization, the Urban Institute does not take positions on issues, but it does empower and support its experts in sharing their own evidence-based views and policy recommendations that have been shaped by scholarship. Funders do not determine our research findings or the insights and recommendations of our experts. Urban scholars and experts are expected to be objective and follow the evidence wherever it may lead.



500 L'Enfant Plaza SW
Washington, DC 20024

www.urban.org