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Medicaid Tobacco Cessation: Big Gaps Remain In Efforts To Get Smokers To Quit

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Abstract

Medicaid enrollees are about twice as likely as the general US population to smoke tobacco: 32 percent of people in the program identify themselves as smokers. This article provides the first data about the effectiveness of state Medicaid programs in promoting smoking cessation. Our analysis of Medicaid enrollees' use of cessation medications found that about 10 percent of current smokers received cessation medications in 2013. Every state Medicaid program covers cessation benefits, but the use of these medications varies widely, with the rate in Minnesota being thirty times higher than that in Texas. Most states could increase their efforts to help smokers quit, working with public health agencies, managed care plans, and others. In 2013 Medicaid spent \$103 million on cessation medications—less than 0.25 percent of the estimated cost to Medicaid of smoking-related diseases. Additionally, states that have not expanded Medicaid eligibility in the wake of the Affordable Care Act have higher smoking prevalence and lower utilization rates of cessation medication, compared to expansion states. Given these factors, nonexpansion states will have a greater public health burden related to smoking. Medicaid and public health agencies should work together to make smoking cessation a priority for Medicaid beneficiaries.

Smoking is the leading cause of preventable disease in the United States[1] and places a particularly heavy burden on Medicaid, the nation's largest health insurance program. Medicaid enrollees are about twice as likely to be current smokers (32 percent) as the general US population (17 percent), based on our analyses of 2014 data from the National Health Interview Survey. A recent surgeon general's report estimated that 15 percent of all Medicaid expenditures are attributable to smoking—an amount equal to about \$40 billion in 2010.[1] Given projected program growth,[2,3] the cost of smoking-related diseases in Medicaid alone could rise to more than \$75 billion by 2016 (authors' estimate).

Tobacco is addictive. Stopping smoking is difficult, and attempts to quit are often short-lived. Nonetheless, efforts to quit are an effective way to reduce the health consequences and medical costs of smoking, and even temporary breaks from smoking can be helpful.[4–6] Increasing tobacco cessation efforts among Medicaid enrollees is a key public health objective. For example, the objectives of Healthy People 2020 include reducing smoking among adults, increasing smoking cessation efforts, and expanding Medicaid coverage of evidence-based cessation efforts.[7] The Department of Health and Human Services' strategic action plan to control tobacco use has similar goals.[8]

Strengthening Medicaid's commitment to tobacco cessation could reduce morbidity, mortality, and Medicaid costs.[1,9] One study estimated that \$1 invested in tobacco cessation lowered Medicaid expenditures by about \$3 because of a rapid reduction in

hospitalizations for cardiovascular disease.[10] Other research has examined how improved cessation could yield savings for states.[11]

Each state administers its own Medicaid program, establishing most policies and operational practices within a federal regulatory framework. States historically had great flexibility in establishing Medicaid policies, such as whether to cover smoking cessation medications or counseling and whether to charge copayments. The Affordable Care Act (ACA) required that all state Medicaid programs cover at least some tobacco cessation medications for all enrollees and offer comprehensive tobacco cessation benefits without cost sharing for pregnant women and for populations made newly eligible under Medicaid expansion. However, states retain flexibility in many areas, as discussed below.[12]

The Centers for Disease Control and Prevention (CDC) and others have monitored state Medicaid benefit policies, determining which medications approved by the Food and Drug Administration (FDA) and what types of counseling are covered.[13,14] As of 2014, all states covered at least some tobacco cessation medications, but many had restrictions such as prior authorization (thirty-six states) or copayments (thirty-six states) that could reduce use of the medications.

Although all states must cover tobacco cessation counseling for pregnant women, limitations exist for other populations: Nine states do not cover counseling for nonpregnant Medicaid enrollees, and many states cover some forms of counseling but not others. Policies can even vary within a state, since many enrollees are served by managed care plans that might differ in the benefits they cover.

Most smokers want to quit.[15] However, this article shows that many Medicaid enrollees who smoke do not get help in quitting, even though the program provides smoking cessation benefits. Barriers such as cost sharing and prior authorization requirements, as well as enrollees' lack of knowledge or encouragement, limit access and utilization. For example, previous research found that a majority of smokers and many health care providers did not realize that Medicaid covered tobacco cessation services.[16,17] More recently, fewer than half of the smokers in Medicaid managed care plans reported that their physicians offered assistance such as medications or counseling patients to quit.[18] To address these gaps, some states have initiated education and outreach programs to promote smoking cessation among Medicaid enrollees—but most states have not.

This article provides the first report on state Medicaid programs' success in smoking cessation, based on the use of cessation pharmacotherapy in the period 2010–13. Such use is a more direct measure of tobacco cessation efforts than benefit coverage policies. Medication and counseling are both important. However, previous research has found that medications are the primary form of therapy used in Medicaid: Counseling is used much less often and typically in conjunction with medication.[10,19] Previous Medicaid research has focused on medication claims as the primary measure of the use of cessation benefits.[20]

Brief counseling may be provided by physicians or others as part of general office visits, but such counseling is typically not reported in claims data. Some counseling may also be provided through quit lines or text messaging programs, but that is not reported in claims

data, either. Quit lines are toll-free telephone lines through which counseling and, in some cases, medications are available to help people stop smoking. Some of the medications provided are not covered by Medicaid.

The estimates reported here were based on data about the level of use and cost of prescriptions (either fills or refills, but not including unfilled prescriptions) paid for by state Medicaid programs. We focused on FDA-approved tobacco cessation medications: nicotine replacement therapies such as gum, patch, inhaler, spray, or lozenge; bupropion (which has generic and brand-name versions, including Zyban); and varenicline (brand-name Chantix). All of these medications seek to reduce the cravings associated with nicotine withdrawal to make it easier to stop smoking. Nicotine replacement therapies use lower levels of nicotine to gradually wean smokers from tobacco. Bupropion and varenicline ease tobacco withdrawal through other neurological mechanisms.[21]

Study Data And Methods

Data

We accessed Medicaid drug utilization files from CMS.[22,23] State Medicaid agencies submit these data to CMS quarterly to determine the level of Medicaid drug rebates. Virtually all outpatient drugs paid for by Medicaid earn the program rebates from the drugs' manufacturers, and the rebates totaled over \$16 billion in 2013 alone.[24] The files show each state Medicaid program's aggregate volume and payment levels for prescriptions, listed by National Drug Code—which gives access to detailed information such as the drug's name, manufacturer, dosage level, and formulation. The drugs include over-the-counter medications, such as nicotine gum, paid for by Medicaid after the patient receives a physician's prescription.

Because of changing drug and rebate policies, we focused on the period 2010–13. Before August 2010 drug rebates were available only for fee-for-service claims paid directly by a Medicaid agency. But beginning in that month the ACA required rebates for drugs provided by Medicaid managed care organizations, so reporting became more complete.[25] Medicaid agencies were required to report the volume of medications purchased on a fee-for-service basis. Although Medicaid managed care organizations were not required to report drug purchases to the state before 2010, some states “carved out” drugs from managed care and paid for them on that basis.

The application of rebates to managed care later widened the scope of drug rebates and required managed care organizations to report drug data. An early audit found that by 2011 most states were collecting the required rebate and utilization data and taking steps to verify the data. According to that audit, with support from CMS almost all states were on track to collect the data by 2012.[26]

We selected utilization data for all FDA-approved tobacco cessation medications (nicotine replacement therapies, bupropion, and varenicline). The main unit of analysis for tobacco cessation utilization was a prescription fill or refill, both of which in Medicaid are generally for one month or thirty days. (Below we refer prescription fills or refills as prescriptions.)

Analyses

We restricted our analyses of bupropion usage to the 150 mg twelve-hour formulation, which is the form usually recommended for smoking cessation.[27,28] Bupropion is an antidepressant that is also prescribed for mental health conditions. Prescriptions written by doctors do not report the diagnoses associated with the medications, which makes it impossible to accurately determine if bupropion was prescribed for smoking or depression. A further complication is that smoking is linked to depression: Depression increases smoking, and vice versa.[29,30] In many cases, bupropion may be prescribed for both problems. Using only prescriptions for the 150 mg twelve-hour formulation yields more conservative estimates of the use of this medication for smoking cessation. It is plausible, however, that this formulation is sometimes prescribed for mental health conditions and that other formulations are sometimes prescribed for smoking cessation.

Under ideal circumstances, the appropriate denominator for data about smoking cessation would be the annual number of smokers enrolled in Medicaid in each state. Unfortunately, such data are not directly available. Medicaid enrollment data do not include smoking status. The National Health Interview Survey collects data about the smoking status of Medicaid enrollees, but the CDC does not offer public access to state identifiers or permit state-level reporting. The Tobacco Use Supplement to the Census Bureau's Current Population Survey contains information on smoking status but is not available annually (it was last conducted in 2011–12), and state sample sizes are limited.

Instead, we estimated smoking status using the CDC's Behavioral Risk Factor Surveillance System (BRFSS) for the period 2010–13. The system reports the percentage of low-income (earning under \$20,000 annually) insured adults who were smokers in each state.[31] Medicaid status is not available for all states in the BRFSS. We used low-income insured adults as a proxy since the great majority of low-income insured adults are Medicaid enrollees. BRFSS data are collected annually from a very large sample designed to represent states and are the most widely used data about state-level smoking prevalence.[32,33] Annual reporting allowed us to account for changes in smoking prevalence and insurance coverage over time. Our analysis of 2013 National Health Interview Survey data found that low-income privately insured adults were less likely to smoke than low-income adults enrolled in Medicaid. Thus, our estimates—which include both low-income adults with private insurance and those with Medicaid—are conservative and may slightly underestimate Medicaid smoking prevalence.

To estimate the number of adult Medicaid enrollees who smoked in the period 2010–13, we multiplied the percentage of low-income insured smokers in each state by the number of adult Medicaid enrollees (including nonelderly adult and elderly or disabled enrollees) in December each year.[34,35]

To help put these estimates in perspective, we then translated them into estimates of the percentage of adult Medicaid smokers who received tobacco cessation prescriptions in each state in each year. The drug utilization data did not directly reveal how many people received these prescriptions each year, so we generated a rough estimate based on typical usage. A CDC analysis of Medicaid claims data for 1999–2008 found that one to two

prescriptions per year was most common (Ann Malarcher and Paul Mowery, CDC, personal communication, January 25, 2015). Our analyses of 2010 Medicaid claims data from Mississippi and Oregon indicated that two to three prescriptions per year were typical.

In this study we assumed that a typical Medicaid smoker received two prescriptions per year. This is a rough estimate: If the actual level was closer to 1.5 prescriptions per year, then about one-third more of the smokers got medications, while if the level was closer to 2.5 per year, then one-fifth fewer of the smokers did.

Limitations

Our study had several limitations. First, reporting of drug utilization may be subject to error, although the linkage of the data to a multibillion-dollar rebate system creates strong incentives for thorough reporting. An audit indicated modest reporting gaps in the first year or two of reporting, but these were being fixed in subsequent years.[26]

Second, the data show how many prescriptions were filled, but not if the medications were taken or who took them. Some Medicaid enrollees may receive medications or counseling outside of Medicaid (for example, through quit lines).

Third, since bupropion may be used for smoking cessation or depression, there is uncertainty about why it was prescribed. To be conservative, we included only bupropion in the 150 mg twelve-hour formulation, as explained above. In alternative analyses, we eliminated bupropion: This halved the total volume of prescriptions, but most patterns were similar to those in our main analysis. The differences in utilization between expansion and nonexpansion states increased when bupropion was excluded.

Fourth, survey data were used to estimate the percentage of low-income insured enrollees who smoked in each state, but these data are subject to reporting and sampling errors about smoking and insurance status. BRFSS data do not report Medicaid coverage, although most low-income insured adults are on Medicaid. Because people with private insurance are less likely to smoke than people with Medicaid, we may have underestimated the prevalence of smoking among Medicaid enrollees.

Finally, this study examined the use of tobacco cessation medications, but it did not shed light on how many people quit smoking or on the health consequences. These issues will be examined in future research.

Study Results

The number of prescriptions for tobacco cessation medications climbed from 1.5 million in 2010 to 1.8 million in 2011 and then declined to 1.7 million in 2013 (Exhibit 1). The apparent increase between 2010 and 2011 may be attributable to the gradual inclusion of managed care prescriptions in the Medicaid drug utilization files, which began in 2010. In each year of the study period, about half of all prescriptions were for bupropion. Varenicline's share declined from 22 percent in 2010 to 16 percent in 2013, while nicotine replacement therapies' share rose from 28 percent to 34 percent.

Assuming an annual average of two prescription fills per person, we found that about 10 percent of adult Medicaid smokers received tobacco cessation medications each year, or around 830,000 people in 2013. The prevalence of smoking appeared to rise in 2011 and then fall in the following two years. This reduction caused the estimated number of low-income insured adult smokers to decline from 8.85 million in 2011 to 8.3 million in 2013.

Average utilization rates of tobacco cessation medications were 0.18 prescriptions per Medicaid smoker in 2010 and 0.20 prescriptions in the period 2011–13. The slight increase between 2010 and 2011 may be an artifact of expanded reporting by managed care plans. From 2011 to 2013 the utilization rate per smoker was relatively steady. However, the number of prescriptions declined slightly as a result of reductions in the prevalence of smoking.

Medicaid programs spent \$103 million in 2013 for tobacco cessation medications (nominal costs, not adjusted for inflation), before drug rebates were applied (Exhibit 2). Rebate levels are not public, but an overall discount of 10–15 percent seems plausible. On a per prescription basis, varenicline was more expensive than bupropion or nicotine replacement therapies. However, evidence suggests that varenicline may be more effective in promoting quitting.[6] The average costs of bupropion and nicotine replacement therapies declined from 2010 to 2013, while the average cost of varenicline increased.

Southern states tend to have lower rates of tobacco cessation efforts than Northeastern states (Exhibit 3). Utilization rates vary greatly across the states, with more than a thirtyfold difference between the states with the highest (Minnesota, at 0.530 prescription per smoker) and lowest rates (Texas, at 0.014 prescription per smoker) (Exhibit 4). The states with utilization rates above 0.30 were Arizona, Connecticut, Massachusetts, Minnesota, New Hampshire, Oregon, Utah, and Wisconsin. The states with rates below 0.075 were Alabama, Arkansas, Kansas, Mississippi, Rhode Island, and Texas.

Medicaid expansion decisions affect the number of adults who could get tobacco cessation benefits. Twenty-nine states and the District of Columbia expanded or planned to expand Medicaid as of June 2015, while twenty-one states were not planning to do so.[36]

Nationwide, 30 percent of Medicaid adults smoke and have an average utilization rate of 0.20 prescription per smoker per year, so about 10 percent of Medicaid smokers receive cessation medications. Medicaid expansion states tend to have lower smoking prevalence and higher rates of tobacco cessation medication use (on average, 25 percent of adult enrollees smoke, the utilization rate is 0.23 prescription per smoker, and about 12 percent of smokers receive cessation medications), compared to nonexpansion states (on average, 32 percent of adult enrollees smoke, the utilization rate is 0.14 prescription per smoker, and about 7 percent of Medicaid smokers receive cessation therapy).

Discussion

The promotion of tobacco cessation should be an important Medicaid policy objective. About one-third of adult Medicaid enrollees smoke, making them a high-risk population.[1] As Medicaid expands, it is serving millions more adults, many of whom smoke. Thus,

Medicaid is in a position to considerably expand the number of people who can get help with quitting smoking. Nonetheless, this study shows that in most states only a small share of smokers access cessation benefits. Given that smoking-related illnesses cost Medicaid tens of billions of dollars each year,[1] it is worrisome that only \$103 million was spent in 2013 on medications to help smokers quit, which is less than 0.25 percent of the cost of smoking-related diseases.

Our estimates suggest that roughly one-tenth of adult smokers in Medicaid received tobacco cessation medications in 2013. However, states' utilization rates differed markedly, with the rate in Minnesota more than thirty times higher than that in Texas.

We are conducting research to understand reasons for the differences across states. Sociocultural factors, Medicaid and public health policies and practices, and other policies and laws (such as imposing cigarette taxes and creating smoke-free areas) probably play a role. In some states where utilization rates of tobacco cessation medications are high—such as Massachusetts[37,38] and Wisconsin[20]—public health and Medicaid officials collaborated to develop education campaigns promoting smoking cessation among Medicaid enrollees. Other states, such as Arizona or New Hampshire, have reduced barriers that might discourage smoking cessation by not requiring prior authorization for Medicaid tobacco cessation medications.

Jessica Greene and coauthors found that states without copayments for medications or counseling had better rates of Medicaid enrollees who quit smoking, compared to states that charged copayments.[39] Another study found that copayments diminished the likelihood that postpartum women would fill their prescriptions.[40]

Medicaid expansion states usually have lower smoking prevalence and greater use of tobacco cessation, compared to nonexpansion states. We do not believe that differences in smoking or tobacco cessation rates are caused by states' decisions about expanding Medicaid. These patterns began long before those decisions were made, and there are examples of high and low smoking prevalence and cessation among both expanding and nonexpanding states.

Nonetheless, the differences have serious public health consequences. By covering more people, expansion states make tobacco cessation more broadly available, expanding its potential public health impact. Nonexpansion states cover fewer people and already have higher smoking prevalence, so they will experience a greater health burden, compared to expansion states.

Medication for tobacco cessation is seriously underused in most state Medicaid programs. It is not known what the highest attainable utilization rate of medication is. However, the enormous discrepancies across states demonstrate that most states could do much more to achieve higher rates. Medicaid agencies, working with public health agencies, can make it a priority to increase tobacco cessation for Medicaid enrollees.[41]

Most smokers want to quit but need help both to try and to succeed.[1] Patients must be engaged and willing to try to quit. Clinicians, insurers, and public agencies can help

motivate and support people's efforts to quit through medication and counseling. However, they need to understand patients' needs and realize that not everyone can quit and that some people may need to make many attempts to quit. The gains from even modest reductions in smoking or from moderate periods of abstinence can be substantial. Thus, increased tobacco cessation efforts could lead to substantial reductions in the prevalence of smoking, which could in turn reap substantial health benefits.[42]

Medicaid pays for medications and counseling, but more can be done. Medicaid policies such as cost sharing or prior authorization that limit access to these benefits should be reviewed.[43] States can work with managed care plans to strengthen education of both patients and clinicians and monitoring of smoking and tobacco cessation.[44] Tobacco cessation is one of CMS's recommended core adult Medicaid quality measures, but performance measures for smoking cessation should be used more consistently.[18]

Conclusion

Medicaid agencies can play a leadership role—collaborating with public health agencies, managed care plans, and other stakeholders such as physician groups and health advocacy organizations—in actively promoting tobacco cessation for low-income populations covered by Medicaid. All state health departments operate smoking quit lines, which are eligible for Medicaid funding under CMS policy.[45] Many states, but not all, have established collaborative efforts.[46] Text messaging, like quit lines, is a promising approach to patient engagement that can be supported by Medicaid.[47]

The fundamental challenges are informing health care providers and patients about the importance of stopping smoking and engaging them in cessation efforts, making medications and counseling available, and developing innovative strategies to help patients change their behavior. As the US health system seeks to focus on population health, Medicaid and public health agencies can make important contributions to efforts to improve health and lower health costs by preventing smoking in the first place and helping those who smoke to quit.

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Exhibit 3. Map Comparing Medicaid Tobacco Cessation Utilization Rates, 2013

Source: George Washington University analyses. See text.

Note: Low = Less than .13, Medium = .13 to .22 and High = More than .22 tobacco cessation prescriptions per Medicaid smoker per year.

Exhibit 1**Use Of Medicaid Tobacco Cessation Medications, 2010–13**

	2010	2011	2012	2013
Annual prescription fills or refills (1,000s) ^a				
Bupropion	752.0	893.1	871.0	833.3
Varenicline	322.4	361.6	310.7	266.6
Nicotine replacement therapies	420.1	537.3	573.0	567.6
Total	1,494.5	1,792.1	1,754.8	1,667.5
Share of fills or refills				
Bupropion	50.3%	49.8%	49.6%	50.0%
Varenicline	21.6	20.2	17.7	16.0
Nicotine replacement therapies	28.1	30.0	32.7	34.0
Estimated Medicaid population				
Adults (1,000s) ^b	24,964	26,103	26,880	27,558
Smokers ^c	32.7%	33.9%	31.6%	30.1%
Adult smokers (1,000s)	8,152	8,850	8,498	8,306
Use of tobacco cessation medications				
Prescriptions per smoker per year	0.183	0.203	0.206	0.201
Estimated percent of smokers using medications ^d	9.2	10.1	10.3	10.0
Estimated number of smokers receiving treatment (1,000s) ^d	747	896	877	834

SOURCE Authors' analysis of data from the sources below.

NOTE Amounts may not sum to totals because of rounding.

^a Medicaid drug utilization files for 2010–13 (see Note 22).

^b Adult enrollees, December 2010–13, from Henry J. Kaiser Family Foundation. Monthly Medicaid enrollment for adults and children (Note 34 in text).

^c Low-income insured, 2010–13, from Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System (Note 31 in text).

^d Assuming the average user received two prescriptions per year.

Exhibit 2**Medicaid Payments for Tobacco Cessation Medications, 2010–13**

	2010	2011	2012	2013	Average annual change
Payments (millions of nominal dollars)					
Bupropion	\$ 38.4	\$ 37.7	\$ 29.3	\$ 23.3	–15.3%
Varenicline	39.8	51.8	50.6	50.6	8.3
Nicotine replacement therapies	26.8	32.7	31.9	29.0	2.7
Total	105.1	122.3	111.9	103.0	–0.7
Average cost per prescription (nominal dollars)					
Bupropion	\$ 51.11	\$ 42.22	\$ 33.66	\$ 27.98	–18.2
Varenicline	123.56	143.32	162.96	189.97	15.4
Nicotine replacement therapies	63.88	60.89	55.73	51.16	–7.1
Overall	70.33	68.22	63.76	61.77	–4.2

SOURCE Authors' analysis of data for 2010–13 from the Medicaid drug utilization files (see Note 22).

NOTES The payments are before rebates from drug manufacturers are applied. Amounts may not sum to totals because of rounding.

Exhibit 4

Percentage And Number Of Medicaid Adult Smokers And Utilization Rates For Tobacco Cessation Medications In 2013, By State

<u>Adult Medicaid smokers^a</u>				
	Percent	No. (1,000s)	Rx per smoker ^b	Estimated percent of smokers using medications ^c
Expanded Medicaid eligibility as of June 2015				
Arizona	27	172	0.37	19
Arkansas	41	104	0.06	3
California	18	859	0.13	7
Colorado	33	111	0.13	7
Connecticut	31	102	0.30	15
Delaware	34	43	0.08	4
District of Columbia	38	53	0.12	6
Hawaii	24	38	0.17	9
Illinois	26	304	0.21	11
Indiana	38	169	0.23	12
Iowa	34	81	0.18	9
Kentucky	40	161	0.20	10
Maryland	36	182	0.15	8
Massachusetts	30	260	0.35	18
Michigan	38	382	0.22	11
Minnesota	35	167	0.53	27
Montana	34	16	0.22	11
Nevada	28	35	0.19	10
New Hampshire	38	18	0.49	25
New Jersey	28	114	0.22	11
New Mexico	28	54	0.23	12
New York	29	966	0.24	12
North Dakota	33	10	0.11	6
Ohio	41	455	0.28	14
Oregon	37	109	0.39	20
Pennsylvania	39	445	0.28	14
Rhode Island	36	38	0.03	2
Vermont	38	33	0.26	13
Washington	37	171	0.16	8
West Virginia	47	82	0.18	9
Had not expanded Medicaid eligibility as of June 2015				
Alabama	37	137	0.07	4
Alaska	42	19	0.17	9
Florida	22	366	0.14	7

<u>Adult Medicaid smokers^a</u>				
	Percent	No. (1,000s)	Rx per smoker^b	Estimated percent of smokers using medications^c
Georgia	28	174	0.09	5
Idaho	28	27	0.16	8
Kansas	35	49	0.05	3
Louisiana	27	136	0.11	6
Maine	39	61	0.12	6
Mississippi	36	104	0.06	3
Missouri	40	131	0.29	15
Nebraska	34	28	0.18	9
North Carolina	36	227	0.18	9
Oklahoma	40	104	0.14	7
South Carolina	36	124	0.10	5
South Dakota	38	15	0.09	5
Tennessee	47	306	0.08	4
Texas	21	218	0.01	1
Utah	19	23	0.49	25
Virginia	36	136	0.20	10
Wisconsin	38	180	0.37	19
Wyoming	27	7	0.23	12

SOURCE Authors' analysis of data from the sources below.

^aHenry J. Kaiser Family Foundation, Monthly Medicaid enrollment for adults and children (Note 34 in text); and Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (Note 31 in text).

^bMedicaid drug utilization files for 2010–13 (see Note 22).

^cAssuming the average user received two prescriptions per year.