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# Quitline Promotion to Medicaid Members Who Smoke: Effects of COVID-19–Specific Messaging and a Free Patch Offer

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**Introduction:** People who smoke are at increased risk of serious COVID-19-related disease but have had reduced access to cessation treatment during the pandemic. This study tested 2 approaches to promoting quitline services to Medicaid members who smoke at high rates: using COVID-19-specific messaging and offering free nicotine patches. The hypotheses were that both would increase enrollment.

**Methods:** A California Medicaid mailing from October 2020 to January 2021 (N=7,489,093) included 4 versions of a flyer following a 2 × 2 design comparing generic with COVID-19-specific messaging and a no-patch with free-patch offer. The main outcome measure was quitline enrollments. Quit outcomes (attempted quitting, quit ≥7 days, quit ≥30 days) were assessed at 2 months. A subsequent free-patch offer was sent to all members (N=7,577,198) from April 2021 to June 2021. Data were collected in 2020–2021 and analyzed in 2022.

**Results:** The first mailing generated 1,753 enrollments. Response rates were 0.023% and 0.024% for generic and COVID-19-specific messaging, respectively ( $p=0.538$ ), and 0.006% and 0.041% for no-patch and free-patch offers, respectively, the latter being 6.7 times more effective than the former ( $p<0.0001$ ). Quit outcomes were comparable across conditions. The subsequent free-patch offer generated 3,546 enrollments at \$40.28 per enrollee.

**Conclusions:** In a Medicaid mailing during COVID-19, offering free patches generated more than 6 times as many quitline enrollments as offering generic help. COVID-19-specific messaging was no more effective than generic messaging. Offering free patches was highly cost-effective. Medicaid programs partnering with quitlines should consider using similar strategies, especially during a pandemic when regular health care is disrupted.

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## INTRODUCTION

In March 2020, California became the first state in the U.S. to shelter in place owing to the coronavirus disease 2019 (COVID-19) pandemic.<sup>1</sup> Health care was disrupted because health systems prioritized the pandemic response and because patients delayed or canceled care.<sup>2</sup> Recognizing that people who smoke were at increased risk of severe COVID-19-related disease,<sup>3</sup> the state tobacco control program and its partners sought ways to promote tobacco cessation during the pandemic. The state planned an intensive, multicomponent, Quit

for COVID campaign to encourage quitting and promote the state quitline. Quitlines provide free, telephone-based cessation counseling—a safe telehealth

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service—and the California quitline has been shown to double the odds of quitting successfully.<sup>4,5</sup>

A key component of the Quit for COVID campaign focused on reaching the state's most vulnerable populations through ongoing quarterly mailings to Medicaid members. With a smoking prevalence rate twice that of privately insured individuals,<sup>6</sup> Medicaid members were identified as a high-priority target for cessation messaging. Previous research showed that inserting a flyer into Medicaid mailings is a cost-effective way to reach low-income tobacco users,<sup>7</sup> and the California Tobacco Control Program has used this strategy for several years to promote the state quitline. The earlier study also showed that offering an incentive of free nicotine patches quadrupled the likelihood of Medicaid smokers enrolling in the quitline compared with an offer of more generic help.<sup>7</sup>

This study employed a 2 × 2 design to analyze and compare the impacts of using COVID-19-specific messaging and offering free patches in flyers inserted into these Medicaid mailings on quitline enrollment. One hypothesis was that COVID-19-specific messaging would increase enrollment relative to generic messaging because it would seem timelier and more relevant to people who smoke during the pandemic. The other hypothesis was that offering free patches would increase enrollment relative to a no-patch offer, in line with previous findings.<sup>7</sup> Findings from the first mailing in this study informed a second mailing. Both are included in cost analyses of these strategies for increasing quitline enrollment.

## METHODS

### Study Sample

The study sample included all California Medicaid members who, as of October 2020, were on the state's list to receive JvR mailings. JvR stands for Jackson versus Rank, a court case in the 1980s that resulted in the quarterly mailing of benefits information to all Medicaid members in California.<sup>8</sup> The list is maintained by the California Department of Health Care Services, which oversees the state's Medicaid program. The mailings are conducted by the Office of State Publishing (OSP).

The first mailing in this study, conducted from October 2020 to January 2021, was sent to 7,489,093 Medicaid members on the mailing list at that time. A second mailing, conducted from April 2021 to June 2021, was sent to 7,577,198 members then on the list.

Participants were counted as responding to the mailings if they contacted the quitline and had Medicaid, were aged 18 years, smoked cigarettes or called on behalf of someone who did, and had a valid promotional code. For practical reasons, participants had 6 months from the end of the mailing to be counted.

For the first mailing in this study, OSP printed and distributed 4 similar versions of a flyer, shown in [Figure 1](#). All 4 flyers

featured a young woman with a pained expression holding a cigarette in one hand and a picture of blackened lungs in the other. All 4 provided the quitline's contact information, but they varied with respect to messaging and the services offered. Following a 2 × 2 design, the flyers included either the generic message, "Stop smoking. Live your life," or a COVID-19-specific message, "Quit for COVID. Smokefree lungs fight harder," and they included either a usual care offer, "Free quit service—Can increase your chances of quitting for good," or an offer of free nicotine replacement therapy (NRT), "Free patches—Call the Helpline for home delivery." Because patches were only available for a limited time through research funding, the free-patch offer also included the following in smaller print: "While supplies last. Must be 18." For tracking purposes, each version of the flyer had a different promotional code. The flyers were printed in English on one side and Spanish on the other.

OSP took steps to distribute the flyers as randomly as possible. The 4 versions were printed on a single large sheet before being cut and boxed, ensuring that they were printed in equal quantities. During fulfillment, OSP staff used the boxes of flyers in a nonpreferential manner to maintain roughly equal proportions throughout the mailing. It would have been optimal to use a randomized series to mix the 4 flyers, but that was not feasible because of operational constraints.

The second mailing included only 1 flyer featuring a free-patch offer to ensure that all Medicaid members were informed of this opportunity. This flyer also had a unique promotional code.

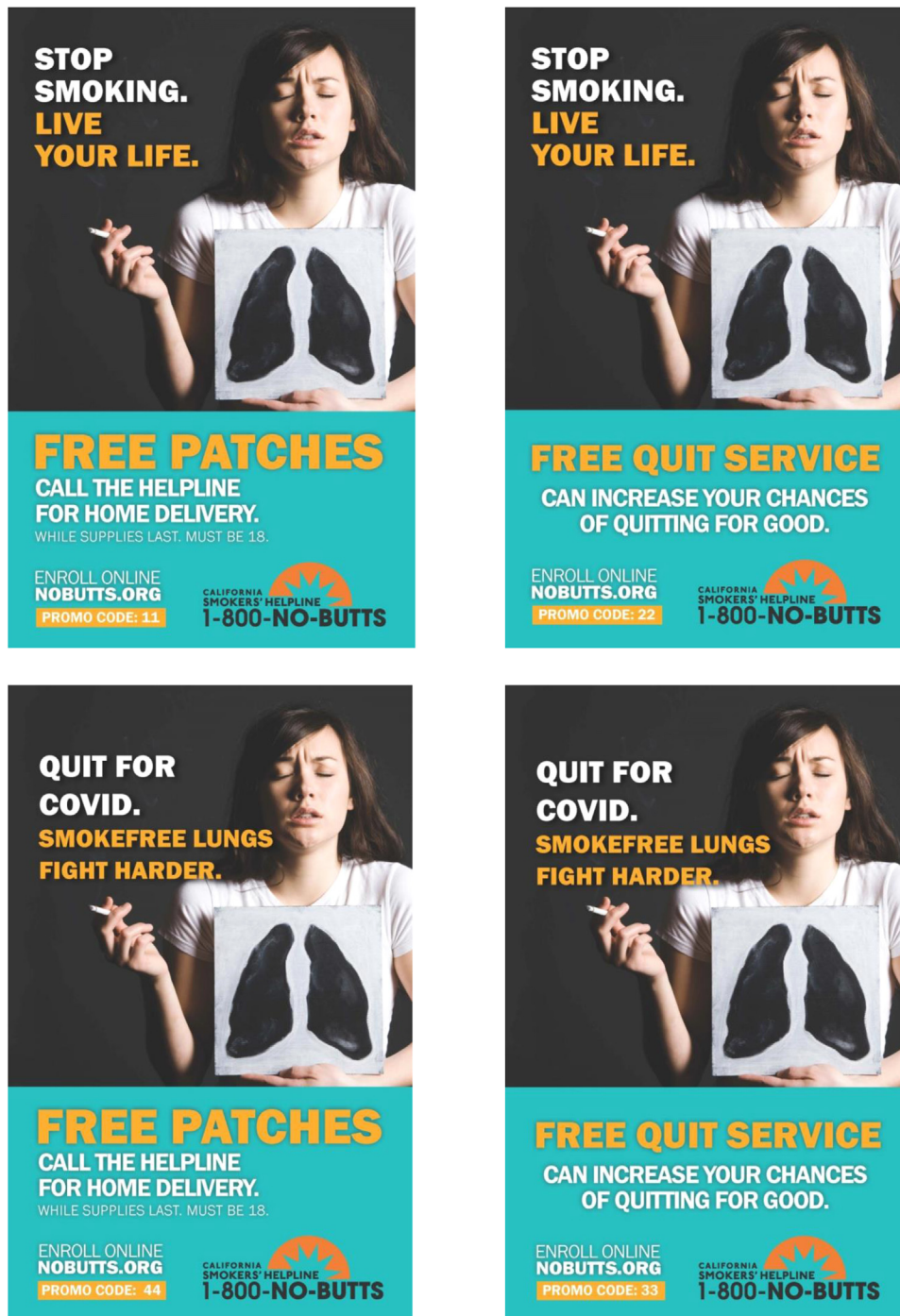
During the study, all participants were eligible for free telephone counseling, considered usual care. All Medicaid members who smoked were also eligible for free patches, unless contraindicated, regardless of which flyer they received. Patches were not considered usual care because they were available only through the research grant funding this study. Eligible participants received a 2-week starter kit of over-the-counter patches sent by express mail. Alternatively, Medicaid members could receive NRT by obtaining a prescription from their doctor and taking it to a pharmacy. However, previous research showed that Medicaid members are much more likely to use NRT when it is sent to them directly.<sup>9</sup> All services were provided by the quitline.

Only participants who agreed to follow-up were contacted for evaluation. The study was approved by the Human Research Protections Program of the University of California, San Diego (number 171562).

### Measures

A standardized intake protocol was used to enroll participants in the quitline. Data collected during intake included standard demographic measures (gender, age, race/ethnicity, language, education), insurance status, chronic health conditions (hypertension, diabetes, previous heart attack, previous stroke), behavioral health conditions (depression, anxiety, bipolar disorder, schizophrenia, alcohol or other drug disorder), smoking status, and cigarettes per day. Medicaid members who smoked were asked whether they received a flyer and, if so, were asked for the promotional code on the flyer they received.

The primary outcome measure was the number of quitline enrollments (the number of Medicaid members completing intake who provided a promotional code corresponding to a flyer in the study). Other outcome measures included response rates (the



**Figure 1.** The 4 flyers distributed in the first JvR mailing.

Note: Clockwise from upper left: (1) generic messaging with a free-patch offer, (2) generic messaging with a no-patch offer, (3) COVID-19-specific messaging with a no-patch offer, (4) COVID-19-specific messaging with a free-patch offer.

number of enrollments divided by the number of members receiving flyers of a given condition), relative responsiveness (the response rate for a given condition divided by the response rate for the generic flyer in that condition), and promotional cost per

enrollee (the total cost of flyers in a given condition divided by the number of enrollments in that condition).

Staff not involved in delivering counseling conducted follow-up calls 2 months after enrollment. Secondary outcome measures

assessed in these calls included the quit attempt rate and 7-day and 30-day point prevalence abstinence rates (self-reported, with no biochemical verification). Evaluators assessed current smoking status first, then asked when the most recent quit attempt was and how long it lasted. Abstinence focused on smoking only. Quit attempts were defined as intentional attempts lasting at least 1 day.

Of enrolled participants, 92.6% consented to evaluation. However, 14.1% of these were not sampled for follow-up because their primary language was not English, they had called on behalf of someone else, or they were recruited into other studies. Of those sampled for follow-up, evaluators reached 61.1%. The analysis of quit attempt and abstinence rates was based on these participants.

### Statistical Analysis

Data on printing costs and the numbers of flyers distributed were obtained from OSP. Intake and outcome measures were provided by the quitline. Data were collected from October 2020, when the first mailing began, through December 2021, 6 months after the second mailing ended.

Response rates were compared using the GENMOD procedure in SAS for generalized linear models. Marginal means for the 2 × 2 design were compared to ascertain the effect of each condition. Demographics of participants from the first mailing were analyzed and compared by whether they responded to the free-patch or no-patch offer. Quit outcomes for the first mailing were analyzed by condition. Follow-up rates did not significantly differ by condition, so a complete case analysis was used. Analyses were conducted in 2022 using SAS, Version 9.4.

## RESULTS

A total of 1,753 Medicaid members enrolled in the quitline in response to the first mailing. As shown in [Table 1](#), flyers with generic messaging and COVID-19-specific messaging generated 873 and 880 enrollments, respectively. The 2 approaches had similar response rates: 0.023% and 0.024%, respectively. Relative responsiveness to COVID-19-specific messaging compared with that of generic messaging was 1.01. Promotional costs per enrollee were also

similar for the 2 approaches: \$84.85 and \$84.17, respectively (all  $p=0.996$ ).

In contrast, the nature of the offer had a large impact on enrollment. The generic, no-patch offer generated 227 enrollments, whereas the free-patch offer generated 1,526 enrollments. Response rates for these 2 approaches were 0.006% and 0.041%, respectively. Relative responsiveness to the free-patch offer compared with that of the no-patch offer was 6.72. Promotional costs per enrollee were \$326.30 for the no-patch offer vs \$48.54 for the free-patch offer (all  $p<0.0001$ ).

[Table 2](#) shows the characteristics of enrollees overall and by type of offer. Among enrollees overall, 52.9% were female, 73.8% were aged  $\geq 45$  years, 51.4% were non-White, 8.8% were Spanish speakers, 49.9% had a high school education or less, 52.1% had a chronic health condition, 49.4% had a behavioral health condition, 34.2% smoked a pack of cigarettes or more daily, 28.8% co-used marijuana, and 17.4% co-used another tobacco product besides cigarettes. There were no significant differences either by type of offer or by whether COVID-19-specific messaging was used (the latter not shown).

[Table 3](#) shows quit outcomes by condition. Overall, 75.5% attempted quitting, 37.7% quit for at least 7 days, and 28.6% quit for at least 30 days (data not shown). There were no significant differences in outcomes by condition. Participants responding to the no-patch offer appeared more likely to attempt quitting than those responding to the free-patch offer, 82.6% vs 74.4%, but the difference was not significant ( $p=0.056$ ).

The second mailing in this study, which included a flyer with a free-patch offer, generated 3,546 enrollments. The response rate, 0.047%, was similar to that of the free-patch offer in the first mailing, but the promotional cost, \$40.28, was 17.0% lower (data not shown).

**Table 1.** Impacts of Type of Messaging and Type of Offer on Quitline Enrollment

Conditions	Quitline enrollments	Response rate, <sup>a</sup> %	Relative responsiveness <sup>b</sup>	Promotional cost per participant, <sup>c</sup> U.S.\$
Type of messaging				
Generic	873	0.023	1.00	84.85
COVID-19-specific	880	0.024	1.01	84.17
Type of offer				
No patch	227	0.006	1.00	326.30
Free patch	1,526	0.041	6.72	48.54

<sup>a</sup>Based on a mailing of 7,489,093 flyers divided into equal halves.

<sup>b</sup>Setting the first group in each condition at 1.00.

<sup>c</sup>Based on an overall cost of \$148,140 for the mailing. Promotional costs per participant include printing and mailing costs but not the costs of providing counseling and nicotine patches, considered treatment costs. Having called the quitline, all Medicaid members were eligible for counseling and patches regardless of which flyer they received.

**Table 2.** Demographics of Medicaid Members Responding to the First Mailing, Overall and by Type of Offer

Variables	Overall (N=1,753), %	No-patch offer (n=227), %	Free-patch offer (n=1,526), %	p-value
Gender				0.178
Female	52.9	47.5	53.7	
Male	46.6	51.6	45.9	
Other	0.5	0.9	0.5	
Age, years				0.465
18–24	2.1	1.8	2.2	
25–44	24.0	26.9	23.6	
45–64	53.2	54.2	53.1	
≥65	20.6	17.2	21.1	
Race/ethnicity				0.093
White	48.6	52.5	48.0	
Black	13.6	11.1	14.0	
Hispanic	22.5	19.4	22.9	
Asian/Pacific Islander	4.4	6.0	4.2	
American Indian	1.0	0.9	1.0	
Multiracial	7.2	5.1	7.5	
Other	2.8	5.1	2.4	
Language				0.215
English	91.2	93.4	90.9	
Spanish	8.8	6.6	9.1	
Education				0.388
<High school	22.4	25.3	22.0	
High school, GED	27.5	27.1	27.5	
Some college	37.9	33.5	38.6	
BA/BS+	12.1	14.0	11.9	
Physical health condition				0.067
Hypertension	46.2	39.8	47.2	
Diabetes	14.2	10.2	14.8	
Heart attack	5.5	6.0	5.4	
Stroke	5.6	4.6	5.7	
Any of the above	52.1	46.3	53.0	
Behavioral health condition				0.291
Anxiety	34.5	35.7	34.3	
Depression	36.4	40.7	35.7	
Bipolar	13.4	11.0	13.8	
Schizophrenia	6.7	7.5	6.6	
Drug or alcohol	9.3	12.9	8.7	
Any of the above	49.4	52.8	48.9	
Cigarettes per day				0.528
≤10	48.9	45.4	49.4	
11–19	16.9	18.5	16.7	
≥20	34.2	36.1	33.9	
Marijuana co-use	28.8	30.4	28.6	0.571
Other tobacco product co-use	17.4	17.6	17.4	0.925

Note: All racial groups are non-Hispanic. Percentages may not add up to 100.0% because of independent rounding. Physical and behavioral health conditions are self-reported.

BA/BS+, bachelor's degree or higher.

**Table 3.** Quit Outcomes of Enrollees at 2-Month Follow-Up, by Condition (Complete Case)

Outcomes	Type of messaging			Type of offer		
	Generic messaging (n=422), % (95% CI)	COVID-19-specific messaging (n=430), % (95% CI)	p-value	No patch (n=115), % (95% CI)	Free patch (n=737), % (95% CI)	p-value
Made quit attempt	77.3 (73.2, 81.3)	73.7 (69.6, 77.9)	0.231	82.6 (75.7, 89.6)	74.4 (71.2, 77.5)	0.056
Quit ≥7 days	39.6 (34.9, 44.2)	35.8 (31.3, 40.4)	0.258	34.8 (26.1, 43.5)	38.1 (34.6, 41.6)	0.491
Quit ≥30 days	29.1 (24.8, 33.5)	28.1 (23.9, 32.4)	0.745	25.2 (17.3, 33.2)	29.2 (25.9, 32.5)	0.383

## DISCUSSION

This study during the COVID-19 pandemic found that outreach materials offering free nicotine patches generated >6 times as much quitline enrollment among low-income individuals who smoke as a generic quitline offer did. It also found that COVID-19-specific messaging was no more effective than generic messaging. The strength of this study was its 2 × 2 design embedded in an ongoing mailing to nearly 7.5 million Medicaid members, allowing a direct comparison of the impacts of these 2 variables on quitline enrollment. To ensure that all members were informed of the NRT availability, a subsequent mailing offered free patches to all, achieving a response rate comparable with that of the first patch offer. Through these 2 mailings, more than 5,000 Medicaid members enrolled in counseling and received free patches. This population health strategy increased access to tobacco treatment during a time when health systems were prioritizing the broader COVID-19 response and clinical preventive care services were disrupted.

The finding that offering free patches increased quitline enrollment is consistent with that of previous research. Numerous pre–post studies have shown that quitline utilization significantly increases when free medication is offered.<sup>10–21</sup> Effect sizes in these studies ranged from 1.4 to 25 times.<sup>12,15</sup> Quasi-randomized studies have had similar findings. One that targeted disadvantaged Australians who smoke found that offering free patches attracted 2.7 times as many people as offering counseling alone.<sup>10</sup> The other, by the current research team targeting California Medicaid members who smoke, found that offering free patches increased quitline enrollment fourfold.<sup>7</sup> This study, conducted 7.5 years later during COVID-19, found a greater-than-sixfold increase in enrollment from flyers offering free patches. This study also occurred during a time when many people who smoke use E-cigarettes to quit instead of approved medications,<sup>22,23</sup> yet it showed that patches still appeal to many who want to quit. These consistent findings suggest that among low-income people who

smoke, offering free quitting aids is a much stronger inducement to enroll in quitlines than more generic offers of help.

The study found no significant differences in baseline characteristics by condition. However, among participants overall, 51.4% were non-White, similar to the 46.6% in an earlier Medicaid mailing study.<sup>7</sup> More than half had a chronic health condition, and nearly half had a behavioral health condition. Nearly 3 in 10 co-used marijuana, and 17.4% co-used E-cigarettes or other tobacco products. These findings suggest that promoting cessation in Medicaid communications can reach a diverse and high-need population.

Notably, there was no difference in response rates on the basis of COVID-19-specific messaging. The value of linking quitline promotion to COVID-19 was previously unknown. It was hypothesized that the Quit for COVID theme would increase the perceived relevance and timeliness of flyers and make recipients more inclined to contact the quitline. That did not appear to be true, perhaps owing to pandemic fatigue, because the flyers were distributed nearly a year after COVID-19 was first reported in the news. It is possible that different COVID-19 messages would have had more impact, but it seems unlikely that even optimal messaging could have improved the response rates as much as the free-patch offer did.

Quit outcomes in this study were high overall and showed no significant differences by condition. The similarity in outcomes by patch condition was unsurprising, given that participants self-selected into the study, and all were offered free patches at intake. Providing both medication and behavioral support, either in person or by telephone, has been shown to increase quit rates compared with medication alone.<sup>24</sup> The study was designed not to find differences in quit outcomes but to assess whether participants quit at expected rates, which they did. In fact, participants responding to the free-patch offer in this study had outcomes comparable with those of participants receiving free patches ( $n=1,093$ ) in a previous RCT with California Medicaid members.<sup>9</sup> Quit attempt rates were 74.4% and 77.5% in the current and previous studies, respectively ( $p=0.1221$ ); 7-day abstinence rates were

38.1% and 33.1%, respectively ( $p=0.0278$ ); and 30-day abstinence rates were 29.2% and 25.7%, respectively ( $p=0.1022$ ). The consistent outcomes suggest that offering free NRT, even a 2-week starter kit, remains a viable strategy both for promoting quitline enrollment and for helping Medicaid members who smoke to quit.

The 4 flyers cost the same amount to produce, so differences in response rates translated directly to differences in promotional costs. With or without COVID-19 messaging, the flyers cost just under \$85 per enrollee. Without the free-patch offer, the flyers cost \$326 per enrollee, comparable with the reported \$260 per caller in the first national TIPS media campaign a decade earlier.<sup>25</sup> With a free-patch offer, the promotional cost was only \$49 per enrollee. In the subsequent mailing offering free patches to all Medicaid members, the promotional cost was even lower, about \$40 per enrollee. Adjusting for inflation, this was close to the \$32 promotional cost for the comparable flyer in our Medicaid study 7.5 years earlier.<sup>7</sup> The promotional savings from this approach were more than enough to cover the cost of the NRT itself.

These findings have real-world implications. First, free cessation medications, unless contraindicated, should be offered to all quitline users and should be the main selling point in messages promoting quitlines. Second, effective cessation messaging should not be dropped or postponed during a crisis such as COVID-19, especially when cessation can help protect people from that crisis. Third, Medicaid programs should use mass communication strategies to motivate their members to take advantage of covered medications, whether through quitlines or through local providers. Fourth, to scale this intervention for population impact, Medicaid programs should cover the cost of medications provided to their members by quitlines. This is especially important in states where the public health agency funding the quitline is legally prohibited from paying for pharmacotherapy. Medicaid programs can and should fully fund and promote the widespread use of approved quitting aids because treating tobacco use is ultimately less costly than treating tobacco-related diseases.<sup>26,27</sup> Adopting these strategies would help to move Medicaid programs beyond basic treatment coverage<sup>27–29</sup> toward the more active promotion of tobacco cessation.<sup>6,30,31</sup>

### Limitations

This study had limitations. First, because of operational constraints, it was not feasible to achieve full randomization in the mailings, although the 4 flyers were printed in equal quantities and distributed as randomly as possible. Second, the strong response to the free-patch offer may have been due partly to the fact that the quitline is

not normally funded to provide NRT. The offer even included the phrase “while supplies last,” an appeal to scarcity that may have increased the response rate.<sup>32</sup> The offer may also have appealed to people who smoke by boosting their self-efficacy (i.e., by making it easier to take action).<sup>33</sup> It is not possible to determine how much of the response was owing to the appeal of patches themselves versus how the offer was presented. Finally, the extent to which the repeated use of the Medicaid mailing strategy over the previous 7.5 years influenced response rates in this study is unknown, as is the impact of contemporaneous promotions.

### CONCLUSIONS

In a  $2 \times 2$  study embedded in a statewide Medicaid mailing during the COVID-19 pandemic, offering free nicotine patches generated more than 6 times as much quitline enrollment as offering generic help, whereas COVID-19-specific messaging was no more effective than generic messaging. The response rate for the free-patch offer was replicated in a subsequent mailing in which all Medicaid members were offered free patches. This population health strategy connected many diverse Medicaid members with physical and behavioral health conditions to evidence-based tobacco treatment and was more cost effective than traditional media campaigns promoting state quitlines. Medicaid programs should consider these findings when partnering with quitlines on mass communication approaches to drive quit attempts and improve access to treatment, especially during a pandemic when regular health care is disrupted.

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