



## Medicaid coverage for tobacco dependence treatment: Enrollee awareness and use

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### ABSTRACT

Medicaid-insured adults smoke at twice the rate of privately insured adults. Insurance coverage for tobacco dependence treatments (TDTs) has been shown to increase quit attempts, but few published studies have measured enrollees' awareness of Medicaid coverage. We assessed awareness of Medicaid coverage for and use of TDTs among New York State (NYS) Medicaid-insured smokers and recent quitters. In July-August 2017, we conducted a probability-based online survey of Medicaid enrollees in NYS aged 18 to 65 in fee-for-service and managed care plans (n = 266; AAPOR 4RR = 22.5%). In 2017, we estimated descriptive statistics and used Adjusted Wald tests to assess differences in awareness and use of TDTs ( $p < 0.05$ ). We used logistic regression to assess correlates of coverage awareness and use of TDTs. Most participants (94.3%) were aware of TDTs, but fewer were aware that Medicaid covers them (59.7%). Most participants believed TDTs are effective in helping smokers quit, although many also believed non-evidence-based methods are effective. Awareness of Medicaid coverage was associated with awareness of a Medicaid-related antitobacco television ad ( $p < 0.05$ ), moderate nicotine dependence ( $p < 0.05$ ), and believing that TDTs are effective ( $p < 0.01$ ). Although awareness of Medicaid coverage for TDTs was found to be high, there remains room for improvement, even in a state that actively promotes these benefits. It is important for states to not only expand Medicaid coverage of TDTs but to also promote the benefits to improve the chances of quit success. Understanding Medicaid enrollees' awareness of and perceptions of covered TDTs can inform messaging to maximize utilization of evidence-based benefits.

### 1. Introduction

In the United States, adults enrolled in Medicaid smoke at twice the rate of privately insured adults (25% vs. 12%), (Jamal et al., 2018) and smoking prevalence among Medicaid enrollees has not decreased over time, despite a downward trend nationally (Zhu et al., 2017). FDA-approved tobacco dependence treatments (TDTs) can assist with quit attempts (Fiore et al., 2008), and Medicaid programs across the country cover all or some of these treatments to help Medicaid-enrolled smokers access evidence-based treatment (DiGiulio et al., 2018). Several studies have found Medicaid coverage of TDTs is effective at increasing quit attempts (Keller et al., 2011; Ku et al., 2016; Liu, 2010; Marino et al., 2016), and specifically, successful quit attempts (Greene et al., 2014; Land et al., 2010). Although Medicaid coverage facilitates access to these TDTs, initial and ongoing communication with smokers about this coverage is important. Li and Dresler (2012) found initial increases in

utilization after coverage expansion but a steep drop-off after 3–6 months. Reassessing benefit awareness and use can inform ongoing communication efforts.

As of June 2017, thirty-two states cover all seven FDA-approved cessation treatments (nicotine patch, gum, spray, lozenge, inhaler, and bupropion and varenicline) for all Medicaid enrollees, and ten of these states also cover individual and group counseling (DiGiulio et al., 2018). The majority of New York Medicaid-enrollees participate in managed care plans (77%) (Gifford et al., 2019), and New York's managed care and fee-for-service plans have the same smoking cessation counseling and pharmacotherapy benefits coverage. The New York State (NYS) Medicaid program began providing reimbursement for prescription smoking cessation pharmacotherapy in 1999 and has since undergone several coverage changes. Currently, Medicaid Managed Care and fee-for-service coverage in NYS includes individual and group counseling and all seven FDA-approved stop-smoking medications and nicotine

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replacement (NRT) products. NYS Medicaid reimburses for smoking cessation counseling provided by traditional healthcare providers, dentists, and dental hygienists, and there are no prior authorization requirements for accessing smoking cessation products (New York State Department of Health, 2017). In addition, NYS allows for two medications to be prescribed concurrently and does not place limits on the number of annual trials (New York State Department of Health, 2017). These Medicaid cessation benefits have been communicated to providers and promoted via the state's antitobacco media campaign. Although NYS Medicaid offers substantial TDT coverage, NYS Medicaid-enrolled smokers' awareness of current benefits is unknown.

Few published studies have assessed Medicaid enrollee awareness of coverage, and most of these studies were conducted more than 10 years ago (Murphy et al., 2003; McMenamin et al., 2004; McMenamin et al., 2006). Published studies have found Medicaid enrollee awareness of TDT coverage to be between 7% and 46% (Murphy et al., 2003; McMenamin et al., 2004; McMenamin et al., 2006) and documented some variation across subgroups. McMenamin et al. (2004) found lower awareness of Medicaid NRT coverage among individuals who started smoking before age 16 and those reporting good health. However, a subsequent study by McMenamin et al. (2006) and a study of subsidized housing residents in Ohio (Hood et al., 2013) found no differences in knowledge of Medicaid coverage by smoking status, quit intentions, consumption level, or interest in using NRT or other TDT. Documenting a more recent benchmark of Medicaid coverage awareness is useful for public health program planning, particularly as the health care landscape has changed, but smoking rates remain high among Medicaid enrollees and other low-income populations.

The current study assessed Medicaid-enrolled smokers' and recent quitters' awareness of Medicaid coverage for TDTs in NYS, a state with comprehensive coverage and media communication promoting those benefits. We also documented use of TDTs and perceived effectiveness of these products to explore how benefit awareness, product use, and perceptions of effectiveness are interrelated. In addition, we assessed socio-demographic and smoking-related correlates of awareness of Medicaid coverage and use of evidence-based methods of quitting.

## 2. Methods

### 2.1. Study sample

In July and August 2017, RTI International conducted a probability-based statewide representative online survey of NYS Medicaid enrollees who were current smokers or recent quitters. NYS's Office of Health Insurance Programs (OHIP), through a data use agreement with RTI, selected a simple random sample of 20,000 Medicaid enrollees aged 18–65 in fee-for-service and managed care plans who were enrolled in Medicaid as of June 30, 2016 from a sampling frame of 3.4 million adults. Prior to the study launch, RTI removed 65 records because they had a non-NY address, leaving a sample of 19,935 NY residents.

We mailed an invitation letter with instructions for completing an online survey using a unique identifying code. The invitation letter included a \$2 bill. The online survey was implemented in two parts: after providing informed consent, we invited all participants to complete a screener to determine eligibility in the study (Part 1), for which they were offered a \$5 Amazon gift code. We invited all eligible participants to complete the full survey (Part 2). Participants were eligible for the study if they lived in NYS, were aged 18–65, reported Medicaid as their insurance, and were a current smoker or recent quitter (within the past year). For completing Part 2 of the survey, participants were offered an additional \$10 Amazon gift code. One week after the invitation letter was sent, we mailed a reminder/thank you postcard to all participants. Two weeks later, we mailed a reminder letter to all non-responders. The Institutional Review Boards at RTI and the New York State Department of Health approved the study protocol.

Overall, 2380 participants provided informed consent and

completed the screener; 2082 participants completed the screener but were ineligible. Reasons for ineligibility included not living in NYS ( $n = 9$ ), not being aged 18–65 ( $n = 55$ ), reporting health insurance other than Medicaid ( $n = 986$ ), and not being a recent quitter or current smoker ( $n = 1032$ ). We received undeliverable mailings for 2646 unique individuals. Overall, 298 screened participants were eligible for the study and 266 completed the full survey (AAPOR 4 response rate 22.5%).

### 2.2. Measures

#### 2.2.1. Demographics

The survey instrument included questions about participants' socio-demographics, smoking status (current smoker, recent quitter) nicotine dependence as defined by the Heaviness of Smoking Scale (Heatherton et al., 1989) (low, moderate, high), general health (good, poor), mental health (good, poor), menthol cigarette use, past year quit attempt, and ever and current e-cigarette use. Medicaid plan type (fee-for-service, managed care) was available from the sampling frame.

#### 2.2.2. Awareness of TDTs and Medicaid coverage

We assessed participants' awareness of TDTs with four questions: "Have you heard of..." 1) "the New York State Smokers' Quitline," 2) "nicotine replacement therapy, or NRT, such as the nicotine patch or nicotine gum," 3) "prescription medications that help people quit smoking such as bupropion, Zyban, Wellbutrin, varenicline, or Chantix," and 4) "smoking cessation classes, programs or counseling to help people quit smoking." The survey contained three questions to assess awareness of Medicaid coverage for TDTs: "As far as you know, does Medicaid pay for..." 1) "nicotine replacement therapy, or NRT, such as the nicotine patch or nicotine gum," 2) "stop-smoking medications, such as bupropion, Zyban, Wellbutrin, varenicline, or Chantix," and 3) "smoking cessation classes, programs, or counseling to help people quit smoking." We defined "aware of any cessation service" as aware of at least one cessation service.

#### 2.2.3. Perceived effectiveness of TDTs

We assessed perceived effectiveness of TDTs among participants aware of each product by asking participants how effective five TDTs are in helping people quit smoking: 1) "the New York State Smokers' Quitline," 2) "nicotine replacement therapy, or NRT, such as the nicotine patch or gum," 3) "stop-smoking medications, such as bupropion, Zyban, Wellbutrin, varenicline, or Chantix," 4) "smoking cessation classes, programs, or counseling," and 5) "counseling from a health care provider." We also asked participants "How effective do you think it is to quit smoking 'cold turkey'?" and whether they believed "electronic cigarettes, also known as e-cigarettes, e-cigs, vape pens, hookah pens, or e-hookah" were effective in helping people quit. Participants could answer "very effective," "somewhat effective," "not too effective," "not effective at all." We defined "effective" as either "very effective" or "somewhat effective."

#### 2.2.4. Use of TDTs at last quit attempt

We assessed use of TDTs by asking current smokers with a past year quit attempt and recent quitters if they had used specific quit methods. We asked these respondents to indicate if they "switch[ed] to electronic cigarettes, also known as e-cigarettes, e-cigs, vape pens, hookah pens, or e-hookahs," "give up cigarettes all at once," "use[d] nicotine replacement therapy, or NRT, such as the nicotine patch or nicotine gum," "use [d] prescription stop-smoking medications (bupropion, Zyban, Wellbutrin, varenicline or Chantix)," "attend[ed] a smoking cessation class, program or counseling," "got counseling from a health care provider to help you stop smoking," or "got help from a free telephone quit line." Participants could indicate they used multiple methods or products. Use of any evidence-based quit methods at last quit attempt included stop-smoking medications, quitline, cessation classes, provider counseling, and NRT; non-evidence-based quit methods included quitting cold

turkey and switching to e-cigarettes.

### 2.3. Statistical analysis

We performed analyses using Stata 14. In 2017, we performed descriptive analyses and used Adjusted Wald tests to identify statistically significant differences ( $p < 0.05$ ). We calibrated the data to known population counts of Medicaid enrollees in NYS obtained from OHIP and adjusted for non-response. We used logistic regression to assess correlates of awareness of Medicaid coverage of TDTs and use of evidence-based TDTs at last quit attempt among current smokers.

## 3. Results

### 3.1. Sample characteristics

This study included Medicaid-enrolled current smokers and recent quitters in NYS. About half of participants were male (53.3%) and the average age was 41.1 (CI: 39.3–42.6) (Table 1). Most sample members were enrolled in New York's Medicaid Managed Care program (73.2%). Of current smokers, 50.3% met the criteria for high nicotine dependence. About half of participants primarily smoked menthol cigarettes (51.2%) and over half (59.6%) made a quit attempt in the past year.

### 3.2. Awareness of TDTs and Medicaid coverage

We found that 94.3% of Medicaid-enrolled current smokers and

**Table 1**  
Sample Characteristics of New York Medicaid Enrollees Who Are Current Smokers or Recent Quitters.

Characteristic	Weighted % (n = 266)	95% CI
Age (mean)	41.1 (mean)	39.3 – 42.6
Gender		
Male	53.3	46.2–60.3
Female	46.7	39.7–53.8
Race/ethnicity		
White Non-Hispanic	41.2	34.7–48.1
Black Non-Hispanic	18.8	13.9–25.0
Hispanic	12.6	9.0–17.3
Other	27.4	20.2–36.0
Education		
Less than HS	19.6	14.5–26.0
HS graduate or GED	32.3	25.9–39.4
Some college	31.6	25.3–38.7
College degree or higher	16.5	11.8–22.7
Smoking status		
Current smoker	89.4	84.6–92.8
Recent quitter	10.6	7.2–15.4
Heaviness of Smoking Index		
Low	59.5	51.7–66.8
Moderate	36.4	29.3–44.2
High	4.1	2.1–8.0
Medicaid plan type		
Fee-for-service	26.8	19.9–34.9
Managed care	73.2	65.1–80.1
Housing characteristics		
Live in public housing	17.5	12.7–23.7
Live in multiunit housing	67.9	60.6–74.4
Health status		
Poor general health	23.5	18.0–30.1
Poor mental health	36.9	55.8–69.8
Primarily smoke menthol	51.2	43.9–58.4
Made a past year quit attempt	59.6	51.7–67.1
E-cigarette use		
Ever e-cigarette use	58.6	51.2–65.6
Current e-cigarette use	20.4	15.2–26.9

recent quitters were aware of evidence-based TDTs (Table 2). The majority had heard of NRT (86.8%) and the NYS Quitline (71.6%), and most had heard of stop-smoking medications (67.5%) and cessation classes (60.1%).

Approximately 60% of participants were aware of coverage for any of the three services covered by New York State's Medicaid program (NRT, stop-smoking medications, and cessation classes) (Table 2). Half of enrollees were aware of Medicaid's coverage of NRT (49.4%), with the next-highest awareness level reported for coverage of stop-smoking medications (40.8%).

### 3.3. Perceived effectiveness and use of evidence-based and non-evidence-based quit methods

We asked participants about effectiveness and use of cessation methods (Table 3). About three quarters of respondents (78.7%) believe that stop-smoking medications are effective at helping people quit smoking, but only 13.0% used a medication at their last quit attempt. Similarly, most current smokers and recent quitters believed other forms of evidence-based cessation methods to be effective—the NYS Quitline (74.1%), cessation classes (70.1%), and provider counseling (66.6%)—but few had used these methods when they last tried to quit or had ever used them. Nicotine replacement therapy was believed to be effective by 66.4% of respondents and used by 25.8% of respondents at last quit attempt.

Of all the quit methods, quitting unaided (i.e., “cold turkey”) was most often reported as being ever used (71.3%) and used at the last quit attempt (59.9%). Over 65% of respondents believed evidence-based methods to be effective for quitting smoking, but fewer enrollees used them at the last quit attempt than non-evidence-based methods, with the exception of NRT. More than half of respondents believe quitting unaided (60.8%) and e-cigarettes (53.6%) are effective.

### 3.4. Correlates of awareness of Medicaid coverage

Using a logistic regression model, we estimated variation in awareness of NYS Medicaid coverage for any TDT among current smokers (Table 4). Several factors were correlated with awareness of Medicaid coverage of TDTs, including awareness of the NYS Tobacco Control Program's (TCP) Medicaid-focused television advertisement (OR 2.43,  $p < 0.05$ ), moderate nicotine dependence (OR 3.23,  $p < 0.01$ ), and those who believed any evidence-based TDT to be effective at helping people quit (OR 5.72,  $p < 0.001$ ).

### 3.5. Correlates of use of evidence-based methods of quitting

We also used a logistic regression model to explore variation in use of evidence-based quit methods among those with a past-year quit attempt. We found that some demographic factors were correlated with using evidence-based quit methods; older smokers (OR 1.04,  $p < 0.05$ ) and those who identified as black and non-Hispanic (OR 5.44,  $p < 0.05$ ) were more likely than younger and white participants to use an evidence-based method at their last quit attempt. Current smokers with moderate nicotine dependence also had higher adjusted odds of using an evidence-based method at their last quit attempt (OR 3.64,  $p < 0.05$ ). Those who reported awareness of Medicaid coverage of any TDT had higher adjusted odds of using an evidence-based treatment during their last quit attempt (OR 7.25,  $p < 0.001$ ).

## 4. Discussion

This study assessed awareness of Medicaid coverage and perceived effectiveness of evidence-based TDTs among Medicaid-enrolled current smokers and recent quitters in a state with comprehensive coverage. We found that although 9 out of 10 Medicaid-insured current smokers and recent quitters in NYS were aware of evidence-based TDTs, only 6 in 10

**Table 2**  
Awareness of Tobacco Dependence Treatments and Medicaid Coverage of Tobacco Dependence Treatments.

Tobacco Dependence Treatment	n	% Aware of TDT	95% CI	n	% Aware of Medicaid coverage	95% CI
Any cessation service	251	94.3	88.8–97.2	158	59.7	52.1–66.8
Nicotine replacement therapy	240	86.8	80.5–91.4	138	49.4	42.2–56.7
Quitline	206	71.6	64.0–78.1	–	–	–
Stop-smoking medications	265	67.5	59.7–74.3	119	40.8	34.0–48.0
Cessation classes	161	60.1	52.8–67.0	76	27.1	21.3–33.7

**Table 3**  
Perceived Effectiveness and Use of Evidence-based and Non-evidence-based Quit Methods.

Quit Method	n	% believe effective	95% CI	n	% ever used	CI	n	% used at last quit attempt	95% CI
<i>Evidenced-based quit methods</i>									
Stop-smoking medications	198	78.7	70.5-85.1	180	20.0	14.5-27.0	180	13.0	7.6-18.4
Quitline	206	74.1	66.6-80.3	178	14.6	9.7-21.3	180	9.2	4.3-14.1
Cessation classes	159	70.1	60.7-78.1	178	6.5	3.8-10.8	180	4.2	1.0-7.5
Health Care Provider counseling	263	66.6	59.3-73.1	223	38.1	30.9-45.8	180	8.5	5.1-13.8
Nicotine replacement therapy	239	66.4	58.6-73.5	179	41.0	32.9-49.5	180	25.8	18.6-33.1
<i>Non-evidenced-based quit methods</i>									
Quitting unaided (i.e., “cold turkey”)	266	60.8	53.6-67.5	179	71.3	62.2-78.9	180	59.9	51.3-68.5
E-cigarettes	265	53.6	46.3-60.6	179	38.5	30.6-47.1	180	24.7	17.6-31.8

**Table 4**  
Awareness of Medicaid Coverage and Use of Method at Last Quit Attempt Regressed on Covariates.

Characteristics	Aware of any Medicaid coverage		Used any evidenced-based method at last quit attempt	
	OR (n = 256)	95% CI	OR (n = 175)	95% CI
Age (mean)	1.02	(0.98–1.05)	<b>1.04*</b>	(1.00–1.08)
Gender				
Male	REF		REF	
Female	1.04	(0.52–2.09)	1.25	(0.50–3.12)
Race/ethnicity				
White Non-Hispanic	REF		REF	
Black Non-Hispanic	1.46	(0.53–4.01)	<b>5.44*</b>	(1.43–20.65)
Hispanic	1.54	(0.52–4.51)	2.63	(0.61–11.29)
Other	0.45	(0.17–1.17)	0.48	(0.11–2.09)
Education				
Less than HS	REF		REF	
HS graduate or GED	0.50	(0.18–1.42)	0.40	(0.13–1.31)
Some college	0.63	(0.21–1.86)	1.09	(0.33–3.62)
College degree or higher	0.98	(0.26–3.62)	0.59	(0.15–2.26)
Health status				
Poor general health	0.90	(0.36–2.24)	0.53	(0.17–1.65)
Poor mental health	1.21	(0.54–2.73)	1.08	(0.43–2.74)
Past year quit attempt	0.81	(0.37–1.79)	–	–
Awareness of Medicaid ad	<b>2.43*</b>	<b>(1.16–5.09)</b>	0.60	(0.24–1.49)
Heaviness of Smoking Index				
Low	REF		REF	
Moderate	<b>3.23**</b>	<b>(1.45–7.19)</b>	<b>3.64*</b>	<b>(1.22–10.88)</b>
High	3.78	(0.27–53.60)	2.24	(0.28–18.05)
Perceived effectiveness	<b>5.72***</b>	<b>(1.98–16.56)</b>	2.10	(0.42–10.51)
Menthol use	1.39	(0.66–2.92)	0.61	(0.20–1.81)
Medicaid plan type				
Fee-for-service	REF		REF	
Managed care	1.76	(0.82–3.84)	1.20	(0.42–3.37)
Awareness of any Medicaid coverage	–	–	<b>7.26***</b>	<b>(2.74–19.18)</b>

**Boldface** indicates statistical significance (\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ ).

were aware that Medicaid will pay for them. Awareness of Medicaid coverage for TDTs in this study was high; past studies have found levels of awareness between 7 and 46%. (Murphy et al., 2003; McMenamin et al., 2004; McMenamin et al., 2006; Hood et al., 2013) Since those prior studies, the NY TCP modified cessation-related antitobacco advertising to include promotion of Medicaid benefits.

As in earlier studies, we found no demographic differences in awareness of Medicaid coverage for TDTs. Individuals who were more highly nicotine dependent and believed that evidence-based treatment is effective in helping smokers quit were more likely to be aware of Medicaid coverage of TDTs, which is consistent with earlier studies. (McMenamin et al., 2004; McMenamin et al., 2006; Hood et al., 2013) Our study also found that awareness of Medicaid coverage for TDTs was associated with awareness of an antitobacco television ad aired in NYS that includes information about Medicaid coverage and encouragement to talk with a health care provider.

Even though Medicaid-enrolled smokers and recent quitters believe evidence-based quit methods are effective in helping people quit, those beliefs did not translate to using evidence-based methods. Quitting unaided was by far the most common quit method reported, which is consistent with prior studies (Lavinghouze et al., 2015; Shiffman et al., 2008).

Being older, black non-Hispanic, more highly nicotine dependent, and aware of Medicaid coverage for TDTs were associated with using an evidence-based quit method at last quit attempt. Notably, perceived effectiveness of TDTs was not associated with using evidence-based treatments in our model, which differs from prior studies (McMenamin et al., 2004; McMenamin et al., 2006). One explanation for the discrepancy between the findings in this study and prior studies is that the prior studies individually assessed perceived effectiveness of specific products with use of those products, whereas we were limited to assessing use of any evidence-based treatment at last quit attempt due to sample size.

NYS Medicaid has comprehensive coverage of TDTs and actively promotes tobacco cessation Medicaid benefits to enrollees through cessation-related antitobacco advertising. The NYS Medicaid program covers more than 3,000,000 adults (Kaiser Family Foundation, 2019) and the cessation benefits it offers could effect significant cost savings for the state. Several studies have documented the potential cost savings to Medicaid programs and return on investment of covering and promoting evidence-based tobacco TDTs (Richard et al., 2012; McCallum et al., 2014).



#### 4.1. Study limitations

This study has several limitations that warrant mentioning. First, this study utilizes cross-sectional data and therefore causality cannot be inferred. Second, although our response rate is comparable to other surveys, the small sample size limits the precision of some estimates. However, this study used a probability-based sampling design for a hard-to-reach population, which is a more rigorous approach than prior studies have used. Third, a larger than expected number of participants completing the screener reported not having Medicaid, which may be attributable to the time between the referenced enrollment date for the sample and the survey administration (approximately one year). It is also possible that individuals do not recognize they are enrolled in a Medicaid plan, as there are 18 Medicaid Managed Care plans in NYS, all with different names and most of which also offer private insurance. Although Medicaid enrollment can be dynamic, the extent to which this affected our results is unknown. However, we did not find demographic differences between participants who screened into the survey (by reporting Medicaid) and those who screened out (by reporting any other type of insurance), which suggests the impact on our findings may be minimal. Lastly, it is unclear whether there are differences between our sample and the population of Medicaid-enrolled smokers in NYS. We are not aware of a publicly available dataset that provides a benchmark of characteristics of Medicaid-enrolled smokers in NYS. Although the Behavioral Risk Factor Surveillance System (BRFSS) is a publicly available dataset that includes insurance status, it is unclear to what extent BRFSS accurately captures the true Medicaid population since it also relies on self-reported insurance status, which has been documented in the literature to be problematic (Davern et al., 2008).

#### 5. Conclusions

Our study suggests that New York's efforts to expand coverage for treatments and promote those benefits among enrollees is working. However, even in a state with comprehensive Medicaid coverage for counseling and FDA-approved TDTs and promotion of the benefits, there remains room for improvement in awareness of coverage and use of TDTs. It is important for states to not only expand Medicaid coverage of TDTs but to continue to communicate and promote the benefits to smokers and health care providers. Understanding Medicaid enrollees' awareness of covered cessation services and perceptions of those products and services can inform messaging and help address tobacco-related disparities. Further work could be done to determine the most efficient and effective ways to promote Medicaid benefits to enrollees and health care providers to maximize utilization of available benefits.

#### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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