

# A Comparison of Cessation Counseling Received by Current Smokers at US Dentist and Physician Offices During 2010–2011

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Tobacco use is associated with several oral and perioral diseases because most tobacco use is administered orally.<sup>1–4</sup> The *National Call to Action to Promote Oral Health* emphasized the need for tobacco cessation and other community programs to promote health.<sup>5</sup> Hence, dental professionals have a critical role in helping their patients quit tobacco use.<sup>6</sup> The impact of intensified involvement of dental professionals in tobacco prevention and cessation may be significant, considering that in 2010, 37% of US adults aged 19 to 64 years and 46.3% of persons aged 2 to 18 years visited a dentist.<sup>7</sup>

The American Dental Association's goal of reducing oral health disparities among underserved populations further highlights the importance of increased involvement of dentists in tobacco cessation.<sup>8</sup> Oral health disparities may mirror disparities in tobacco use (e.g., individuals of low socioeconomic status have disproportionately high prevalence of tobacco use and also poor oral health care access).<sup>9,10</sup> Hence, in recent years, tobacco cessation counseling by dentists has been prioritized in the United States, as evidenced by some of the *Healthy People 2020* targets.<sup>11</sup>

The US Public Health Service outlined a 5-step approach known as the 5 A's to provide a structural framework for health professionals to help their patients quit tobacco use:

1. ask all patients whether they use tobacco,
2. advise all tobacco users to quit,
3. assess tobacco users' willingness to quit,
4. assist tobacco users by offering medications and providing or referring for counseling or additional treatment, and
5. arrange follow-up contact to prevent relapse.<sup>12</sup>

Despite these developments, few nationally representative data exist on the implementation

**Objectives.** We compared patient-reported receipt of smoking cessation counseling from US dentists and physicians.

**Methods.** We analyzed the 2010 to 2011 Tobacco Use Supplement of the Current Population Survey to assess receipt of smoking cessation advice and assistance by a current smoker from a dentist or physician in the past 12 months.

**Results.** Current adult smokers were significantly less likely to be advised to quit smoking during a visit to a dentist (31.2%) than to a physician (64.8%). Among physician patients who were advised to quit, 52.7% received at least 1 form of assistance beyond the simple advice to quit; 24.5% of dental patients received such assistance ( $P < .05$ ). Approximately 9.4 million smokers who visited a dentist in 2010 to 2011 did not receive any cessation counseling.

**Conclusions.** Our results indicate a need for intensified efforts to increase dentist involvement in cessation counseling. System-level changes, coupled with regular training, may enhance self-efficacy of dentists in engaging patients in tobacco cessation counseling. (*Am J Public Health*. 2014;104:e67–e75. doi:10.2105/AJPH.2014.302049)

of tobacco cessation counseling among US dentists. To fill this gap in knowledge, we assessed patient-reported receipt of 2 of the 5 A's (advice and assistance) from a dentist among current smokers who participated in the 2010 to 2011 Tobacco Use Supplement of the Current Population Survey (TUS-CPS), a nationally representative sample of US households with persons aged 18 years or older. To better provide context for the performance of dentists in delivering smoking cessation interventions, we compared patient recall of physician-delivered cessation interventions in the same sample.

## METHODS

The TUS-CPS is a national survey of the civilian noninstitutionalized US adult population that collects a multistage stratified area probability sample of households and is conducted in person or by proxy.<sup>13</sup>

We analyzed pooled data from 3 waves of the TUS-CPS for adults aged 18 years or older. Statistics for each wave were January 2011

( $n = 83\,000$ ; household nonresponse = 8.6%; individual nonresponse = 40.2%), August 2010 ( $n = 63\,000$ ; household nonresponse = 8.0%; individual nonresponse = 38.4%), and May 2010 ( $n = 84\,000$ ; household nonresponse = 7.6%; individual nonresponse = 37.7%). We excluded all respondents interviewed by proxy (27%, 25%, and 24% of total interviews in January 2011, August 2010, and May 2010, respectively). We adjusted data for nonresponse and weighted them according to the nonresponse weight in the TUS-CPS that included only self-respondents.

## Measures

**Sociodemographic characteristics.** The survey collected data on race/ethnicity (Hispanic, White, Black, American Indian/Alaska Native, Asian or Native Hawaiian/other Pacific Islander, or multiple race), age ( $\leq 24$ , 25–44, 45–64, or  $\geq 65$  years), gender (male or female), educational attainment ( $< 12$  years, no diploma; 12 years—general educational development certificate; or  $> 12$  years), and marital status (married; widowed, divorced, or separated; or single).

**Current tobacco use.** Current cigarette smokers were respondents who had smoked at least 100 cigarettes during their lifetime and who smoked daily or on some days at the time of the survey. We recoded average number of cigarettes smoked per day as 1 to 10, 11 to 20, 21 to 30, and 31 or more. The survey also asked whether respondents currently used other noncigarette tobacco products daily or on some days. These noncigarette tobacco products were pipes, water pipes (hookahs), cigars, and smokeless tobacco products.

**Patient-reported visit to a physician or dentist in the past 12 months.** The survey ascertained visits to physicians and dentists from yes responses to the questions, “In the past 12 months, have you seen a medical doctor?” and “In the past 12 months, have you seen a dentist?” We created from these responses a 4-stratum composite variable to describe respondents’ visit to a health care professional in the past 12 months: (1) no visit to either a dentist or a physician, (2) visit to a dentist only, (3) visit to a physician only, and (4) visit to both a physician and a dentist.

**Patient-reported receipt of advice intervention from a physician or dentist.** The survey assessed receipt of the advice intervention from a physician or a dentist only among those who had visited the relevant provider in the past 12 months, as a yes response to the question, “During the past 12 months, did any medical doctor advise you to stop smoking?” or “During the past 12 months, did any dentist advise you to stop smoking?”

**Patient-reported receipt of assistance interventions from a physician or dentist.** Among current smokers who had visited a physician or a dentist in the past 12 months and were advised to quit smoking, the survey assessed implementation of assistance measures with a stem question, followed by several multiple-choice options. The stem questions for physicians’ and dentists’ patients, respectively, were “In the past 12 months, when a medical doctor advised you to quit smoking, did the doctor also . . .” and “In the past 12 months, when a dentist advised you to quit smoking, did the dentist also . . .”

Multiple-choice options were identical for both stem questions: (1) “Suggest that you call or use a telephone help line or quit line?” (2) “Suggest that you use a smoking cessation class, program, or counseling?” (3) “Suggest that you

set a specific date to stop smoking?” (4) “Recommend or prescribe a nicotine product such as a patch, gum, lozenge, nasal spray or inhaler?” and (5) “Prescribe a pill such as Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin?”

We categorized an affirmative response to either of the last 2 options as a positive indication that a physician or dentist had assisted the patient with a medication for smoking cessation. We considered patients to have received any assistance measure if they selected 1 or more of the 5 options.

**Smoking cessation aids used by past-year quit attempters.** The survey defined a quit attempt among current smokers as an affirmative response to the question, “During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking?”

Among past-year quit attempters, the survey ascertained the cessation aid used with the question, “Thinking back to the (last time/time) you tried to quit smoking in the past 12 months did you use any of the following products . . .” Options were

1. “A nicotine patch?”
2. “A nicotine gum or nicotine lozenge?”
3. “A nicotine nasal spray or nicotine inhaler?”
4. “A prescription pill, called Chantix or Varenicline?”
5. “A prescription pill, called Zyban, Bupropion, or Wellbutrin?”
6. “Another prescription pill?”
7. “A telephone help line or quit line?”
8. “One-on-one counseling?”
9. “A stop smoking clinic, class, or support group?”
10. “Help or support from friends or family?”
11. “Internet or web-based program?”
12. “Books, pamphlets, videos or other materials?” and
13. “Acupuncture or hypnosis?”

We classified reports by past-year quit attempters that they used any of options 1 to 6 as use of medication as a smoking cessation aid. We categorized quit attempters who selected 1 or more of options 1 to 13 to have used any smoking cessation aid.

#### Data Analyses

We used percentages and 95% confidence intervals (CIs) to assess receipt of advice and

assistance cessation interventions from a dentist or physician. We considered estimates with relative standard errors of 40% or greater statistically unreliable. We compared estimates with a 2-sample *t* test ( $P < .05$ ). We used sampling weights to extrapolate the estimated number of smokers who had visited a physician or a dentist during 2010 to 2011 but did not receive any cessation counseling.

To further compare cessation-counseling behaviors between dentists and physicians, we performed multivariable logistic regression analyses among past-year quit attempters. The outcomes were the various cessation aids used in the past 12 months, and the primary predictor was the composite variable describing health professional visits made in the past 12 months, with adjustment for types of tobacco used, cigarettes per day, gender, age, race/ethnicity, US census region, education, and marital status ( $P < .05$ ). We weighted all data with the survey (SVY commands) mode in Stata version 11 (StataCorp LP, College Station, TX).

## RESULTS

Approximately 16.1% ( $n = 35\,422$ ) of all respondents were current cigarette smokers. The majority of current smokers (95.7%) used cigarettes exclusively; 4.3% combined cigarette smoking with use of other tobacco products, such as pipes, water pipes, cigars, and smokeless tobacco. Among all smokers, 53.7% smoked 1 to 10 cigarettes per day, 38.3% smoked 11 to 20 cigarettes per day, 5.0% smoked 21 to 30 cigarettes per day, and 3.0% smoked 31 or more cigarettes per day. Other sociodemographic characteristics are shown in Table 1.

The overall proportion of current smokers who had visited a physician in the past 12 months was 63.7%, which was significantly higher than the overall proportion of current smokers who had visited a dentist the same period (39.4%;  $P < .05$ ). Approximately 32.0% of current smokers visited both a dentist and a physician in this period. The proportion of current smokers who had visited a physician or a dentist in the past 12 months varied significantly ( $P < .05$ ) among all subpopulation groups assessed and was generally higher among women, residents of the Northeast, non-Hispanic

**TABLE 1—Characteristics of Adult Current Cigarette Smokers: Current Population Survey Tobacco Use Supplement, United States, 2010–2011**

Characteristic	Smoker Composition, % (No.)	Current Cigarette Smoking Prevalence, % (95% CI)	Dentist Visit in Past Year, % (95% CI)	Physician Visit in Past Year, % (95% CI)	Quit Attempt in Past Year, <sup>a</sup> % (95% CI)
Total	100.0 (35 422)	16.1 (15.9, 16.3)	39.4 (38.7, 40.1)	63.7 (63.0, 64.4)	37.2 (36.5, 37.9)
Gender					
Male	54.2 (18 829)	18.0 (17.7, 18.4)	35.5 (34.5, 36.4)	56.1 (55.1, 57.1)	36.5 (35.5, 37.5)
Female	45.8 (16 593)	14.2 (14.0, 14.5)	44.0 (43.0, 45.0)	72.3 (71.4, 73.2)	38.0 (37.0, 39.0)
Age, y					
≤ 24	13.8 (3626)	17.1 (16.4, 17.8)	36.9 (34.5, 39.2)	54.5 (52.1, 56.9)	42.9 (40.4, 45.4)
25–44	39.3 (13 999)	17.9 (17.6, 18.3)	40.1 (39.0, 41.2)	58.6 (57.5, 59.8)	39.6 (38.5, 40.8)
45–64	38.7 (14 472)	17.8 (17.5, 18.1)	40.5 (39.4, 41.5)	67.9 (66.8, 68.9)	34.3 (33.3, 35.4)
≥ 65	8.2 (3325)	7.8 (7.5, 8.1)	35.1 (33.0, 37.3)	82.7 (81.0, 84.4)	29.9 (27.8, 32.0)
US Census region					
Northeast	16.3 (6556)	14.3 (13.8, 14.7)	47.0 (45.2, 48.8)	68.0 (66.3, 69.7)	38.7 (36.8, 40.5)
Midwest	25.9 (9546)	19.1 (18.7, 19.6)	41.2 (39.8, 42.5)	65.9 (64.6, 67.2)	37.9 (36.5, 39.2)
South	39.4 (11 846)	17.3 (16.9, 17.6)	34.2 (33.1, 35.3)	61.3 (60.1, 62.4)	34.8 (33.6, 36.0)
West	18.4 (7474)	12.8 (12.4, 13.1)	41.4 (39.8, 43.0)	61.1 (59.5, 62.7)	40.3 (38.6, 42.0)
Race/ethnicity					
White	73.8 (27 296)	17.5 (17.2, 17.8)	41.5 (40.7, 42.3)	66.1 (65.4, 66.9)	36.2 (35.4, 37.0)
Black	11.4 (3245)	15.9 (15.3, 16.6)	31.0 (28.9, 33.1)	61.3 (59.0, 63.5)	41.4 (39.0, 43.7)
Hispanic	9.6 (2679)	10.9 (10.4, 11.5)	32.3 (29.9, 34.6)	49.0 (46.5, 51.6)	39.2 (36.4, 41.9)
American Indian/Alaska Native	1.0 (589)	28.4 (25.3, 31.5)	37.7 (31.4, 44.0)	60.1 (53.7, 66.6)	36.1 (29.6, 42.6)
Asian or Native Hawaiian/other Pacific Islander	2.5 (910)	8.3 (7.6, 9.1)	41.2 (36.4, 45.9)	52.4 (47.6, 57.2)	37.8 (32.8, 42.9)
Multiple	1.7 (703)	23.4 (21.2, 25.7)	40.4 (34.9, 45.9)	65.0 (59.7, 70.4)	44.4 (38.7, 50.2)
Marital status					
Married	39.9 (15 526)	12.3 (12.1, 12.6)	44.6 (43.5, 45.7)	67.6 (66.6, 68.7)	36.9 (35.8, 38.0)
Widowed/divorced/separated	27.8 (9529)	21.1 (20.7, 21.6)	34.7 (33.5, 35.9)	68.2 (67.0, 69.4)	35.0 (33.8, 36.3)
Single, never married	32.3 (10 367)	19.4 (18.9, 19.9)	37.0 (35.7, 38.3)	54.5 (53.1, 55.9)	39.5 (38.0, 40.9)
Education, y					
< 12	17.6 (5939)	21.9 (21.2, 22.6)	23.6 (22.1, 25.1)	54.9 (53.1, 56.6)	33.3 (31.6, 35.1)
12/GED	39.4 (14 573)	21.6 (21.2, 22.0)	35.1 (34.0, 36.2)	61.2 (60.0, 62.3)	35.8 (34.7, 37.0)
> 12	43.0 (14 910)	12.0 (11.7, 12.2)	49.7 (48.6, 50.8)	69.2 (68.2, 70.2)	40.1 (39.0, 41.2)

Note. CI = confidence interval; GED = general educational development. Adult current cigarette smokers were aged 18 years or older, had smoked at least 100 cigarettes during their lifetime, and at the time of the survey, smoked daily or on some days.

<sup>a</sup>Defined as a report by a current cigarette smoker of stopping smoking for 1 day or longer during the past year in an attempt to quit.

Whites, and respondents with more than 12 years of schooling (Table 1).

### Patient-Reported Interventions

**Advice interventions.** Among current smokers who had visited a physician, 64.8% reported being advised to quit smoking; 35.2% (~7.8 million current smokers) did not receive this advice. The proportion of dental patients receiving such advice was significantly smaller (31.2%). Among current smokers who visited a dentist, 68.8% (~9.4 million current smokers) were not advised to quit. We observed significant differences in the receipt of

dentists' advice to quit smoking by cigarettes per day, gender, age, and race/ethnicity but not by marital status, education level, US census region, or types of tobacco used (Table 2). Receipt of physicians' advice to quit smoking varied significantly among all subpopulation groups ( $P < .05$ ).

**Assistance interventions.** Among current smokers who had visited a physician in the past 12 months and were advised to quit smoking, about 52.7% received at least 1 form of assistance beyond simply being advised to quit (i.e., ≥ 1 of 4 assistance measures: medication, telephone quit line referral, cessation class or

clinic referral, and help with setting a definite quit date; Table 2). By number of distinct assistance measures received by physicians' patients, 26.3% individuals reported receiving only 1, 14.8% received 2, 7.8% received 3, and 3.7% received all 4 measures assessed. Current smokers who had visited a physician and were provided with at least 1 form of cessation assistance measure beyond advice to quit smoking had higher odds of making a quit attempt than those who only received advice (adjusted odds ratio [AOR] = 1.35; 95% CI = 1.23, 1.48).

Among current smokers who had visited a dentist in the past 12 months and were

**TABLE 2—Adult Current Cigarette Smokers Who Visited a Dentist or Physician in the Past Year and Received a Smoking Cessation Intervention: Current Population Survey Tobacco Use Supplement, United States, 2010–2011**

Variable	Dentist Visit				Physician Visit							
	Advised to Quit Smoking (n = 10 675), % (95% CI)	Offered Any Additional Assistance (n = 3331), <sup>a</sup> % (95% CI)	Referred to a Telephone Quit Line (n = 3318), % (95% CI)	Referred to a Smoking Cessation Class, Program, or Counseling (n = 3322), % (95% CI)	Helped to set a definite quit date (n = 3322), % (95% CI)	Advised to Use Medication (n = 3331), <sup>b</sup> % (95% CI)	Advised to Quit Smoking (n = 17 409), % (95% CI)	Offered Any Additional Assistance (n = 11 445), <sup>a</sup> % (95% CI)	Referred to a Telephone Quit Line (n = 11 382), % (95% CI)	Referred to a Smoking Cessation Class, Program, or Counseling (n = 11 389), % (95% CI)	Helped to set a definite quit date (n = 11 379), % (95% CI)	Advised to Use Medication (n = 11 420), <sup>b</sup> % (95% CI)
Total	31.2 (30.2, 32.3)	24.5 (22.7, 26.2)	13.8 (12.4, 15.2)	10.0 (8.8, 11.2)	9.8 (8.6, 11.0)	12.4 (11.0, 13.7)	64.8 (63.9, 65.6)	52.7 (51.7, 53.8)	19.3 (18.4, 20.1)	17.1 (16.3, 17.9)	18.4 (17.5, 19.2)	39.4 (38.3, 40.5)
Type of tobacco used												
Cigarettes only	31.3 (30.2, 32.3)	24.5 (22.7, 26.3)	13.7 (12.3, 15.2)	10.0 (8.8, 11.3)	9.6 (8.4, 10.8)	12.5 (11.1, 13.8)	65.1 (64.2, 66.0)	52.8 (51.6, 53.9)	19.0 (18.1, 19.8)	17.0 (16.2, 17.9)	18.3 (17.4, 19.1)	39.4 (38.3, 40.5)
Cigarettes and other products <sup>c</sup>	30.8 (25.4, 36.2)	24.1 (15.4, 32.9)	11.7 (5.2, 18.2)	8.7 (2.6, 14.9)	13.8 (6.4, 21.2)	10.1 (3.4, 16.8)	55.4 (50.6, 60.1)	54.0 (47.7, 60.4)	23.3 (17.8, 28.8)	16.7 (12.1, 21.2)	22.0 (16.8, 27.1)	38.7 (32.6, 44.9)
Cigarettes/d												
1–10	30.2 (28.8, 31.6)	24.3 (21.9, 26.7)	14.5 (12.6, 16.5)	9.9 (8.3, 11.6)	10.1 (8.4, 11.8)	12.0 (10.2, 13.9)	60.5 (59.2, 61.7)	49.6 (48.0, 51.1)	19.1 (17.9, 20.3)	16.4 (15.2, 17.5)	16.8 (15.7, 18.0)	34.6 (33.1, 36.1)
11–20	33.0 (31.3, 34.8)	24.9 (22.1, 27.7)	12.7 (10.5, 14.8)	9.6 (7.7, 11.4)	9.7 (7.8, 11.6)	12.6 (10.5, 14.7)	69.3 (68.0, 70.6)	55.5 (53.8, 57.2)	19.0 (17.7, 20.4)	17.0 (15.7, 18.2)	20.3 (18.9, 21.7)	43.2 (41.5, 44.9)
21–30	32.2 (27.3, 37.1)	26.5 (18.3, 34.7)	14.5 (8.0, 20.9)	15.3 (8.5, 22.1)	8.4 (3.3, 13.6)	15.1 (8.4, 21.9)	75.1 (71.8, 78.4)	59.7 (55.4, 64.0)	19.3 (15.9, 22.7)	21.9 (18.2, 25.5)	19.6 (16.3, 23.0)	47.5 (43.1, 51.8)
≥ 31	38.0 (30.6, 45.3)	22.2 (11.6, 32.8)	9.7 (2.1, 17.3)	9.5 (2.3, 16.6)	...	11.4 (3.0, 19.9)	76.0 (71.9, 80.1)	57.7 (52.1, 63.2)	21.5 (16.9, 26.2)	19.9 (15.3, 24.5)	17.8 (13.5, 22.0)	48.8 (43.1, 54.5)
Gender												
Male	33.4 (31.8, 35.0)	25.5 (23.0, 28.1)	14.0 (11.9, 16.0)	10.7 (9.0, 12.5)	10.5 (8.8, 12.3)	13.5 (11.5, 15.4)	63.4 (62.1, 64.7)	52.4 (50.7, 54.1)	19.6 (18.3, 20.9)	17.9 (16.6, 19.1)	17.5 (16.2, 18.7)	39.7 (38.1, 41.3)
Female	29.2 (27.8, 30.6)	23.3 (20.9, 25.7)	13.3 (11.4, 15.1)	9.1 (7.5, 10.7)	8.9 (7.3, 10.5)	11.1 (9.3, 12.9)	66.0 (64.9, 67.1)	53.1 (51.6, 54.5)	18.8 (17.7, 19.9)	16.3 (15.3, 17.4)	19.2 (18.1, 20.3)	39.0 (37.6, 40.4)
Age, y												
≤ 24	31.7 (28.1, 35.4)	22.0 (16.5, 27.5)	11.7 (7.6, 15.8)	7.7 (4.3, 11.1)	8.8 (5.0, 12.6)	11.7 (7.5, 16.0)	51.6 (48.3, 54.9)	45.9 (41.4, 50.4)	18.5 (15.0, 21.9)	11.5 (8.6, 14.3)	17.6 (14.2, 20.9)	28.4 (24.3, 32.5)
25–44	34.2 (32.5, 35.9)	23.6 (21.1, 26.2)	13.6 (11.5, 15.7)	8.0 (6.4, 9.6)	9.2 (7.5, 10.9)	11.0 (9.1, 12.9)	61.4 (60.0, 62.9)	50.5 (48.6, 52.4)	20.2 (18.8, 21.7)	15.4 (14.1, 16.7)	18.5 (17.1, 20.0)	37.3 (35.5, 39.1)
45–64	29.7 (28.1, 31.3)	26.0 (23.2, 28.8)	14.1 (11.9, 16.3)	12.2 (10.1, 14.2)	10.5 (8.6, 12.5)	13.5 (11.4, 15.7)	70.4 (69.2, 71.5)	57.3 (55.8, 58.9)	19.6 (18.3, 20.8)	19.6 (18.4, 20.9)	19.4 (18.2, 20.6)	44.1 (42.6, 45.7)
≥ 65	22.2 (19.0, 25.3)	26.4 (19.3, 33.5)	15.8 (9.8, 21.7)	16.6 (10.5, 22.7)	11.3 (6.0, 16.6)	16.7 (10.7, 22.8)	69.2 (66.9, 71.5)	47.2 (44.3, 50.2)	14.8 (12.7, 16.9)	16.6 (14.4, 18.9)	14.5 (12.4, 16.6)	35.6 (32.7, 38.4)
US Census region												
Northeast	33.8 (31.3, 36.3)	24.2 (20.4, 28.1)	14.5 (11.4, 17.7)	9.8 (7.1, 12.4)	9.1 (6.5, 11.6)	13.4 (10.4, 16.4)	69.9 (67.9, 71.9)	58.2 (55.7, 60.8)	21.0 (18.9, 23.2)	17.0 (15.1, 18.9)	20.5 (18.4, 22.5)	45.5 (42.9, 48.1)
Midwest	31.3 (29.4, 33.3)	22.1 (19.1, 25.2)	11.1 (8.8, 13.4)	8.3 (6.4, 10.3)	10.4 (8.1, 12.6)	10.6 (8.4, 12.8)	65.7 (64.1, 67.3)	52.4 (50.3, 54.4)	17.5 (16.0, 19.0)	15.5 (14.1, 16.9)	18.5 (16.9, 20.0)	39.4 (37.4, 41.3)
South	29.9 (28.0, 31.7)	24.9 (21.7, 28.1)	13.7 (11.1, 16.2)	10.8 (8.5, 13.0)	9.1 (7.1, 11.2)	13.0 (10.5, 15.5)	62.6 (61.1, 64.0)	50.0 (48.1, 51.8)	15.8 (14.4, 17.1)	15.1 (13.8, 16.4)	17.2 (15.8, 18.6)	38.4 (36.6, 40.1)
West	31.0 (28.6, 33.3)	27.4 (23.3, 31.5)	16.2 (12.9, 19.6)	11.1 (8.2, 13.9)	10.7 (7.7, 13.8)	12.5 (9.4, 15.6)	63.1 (61.0, 65.1)	53.3 (50.7, 56.0)	27.1 (24.8, 29.4)	23.7 (21.5, 25.9)	18.5 (16.6, 20.5)	34.5 (32.0, 36.9)
Race/ethnicity												
White	30.5 (29.3, 31.7)	23.5 (21.5, 25.4)	12.5 (11.0, 14.0)	9.2 (7.9, 10.5)	9.2 (7.8, 10.5)	11.9 (10.4, 13.4)	65.6 (64.6, 66.5)	54.0 (52.7, 55.2)	18.9 (17.9, 19.8)	16.7 (15.8, 17.5)	19.5 (18.6, 20.5)	40.9 (39.7, 42.1)
Black	35.0 (31.1, 38.8)	28.1 (22.0, 34.3)	16.7 (11.4, 22.0)	13.6 (9.0, 18.2)	12.0 (7.7, 16.3)	13.3 (8.6, 17.9)	64.3 (61.5, 67.0)	49.2 (45.7, 52.7)	19.4 (16.8, 22.1)	18.9 (16.2, 21.5)	14.1 (11.7, 16.5)	35.4 (32.2, 38.7)
Hispanic	30.5 (26.4, 34.5)	25.1 (18.3, 31.9)	17.0 (11.1, 22.9)	9.5 (4.9, 14.1)	9.1 (4.7, 13.4)	12.3 (7.2, 17.4)	57.9 (54.3, 61.5)	43.4 (38.6, 48.1)	19.6 (15.9, 23.4)	17.2 (13.6, 20.8)	11.4 (8.4, 14.3)	30.3 (26.0, 34.6)
American Indian/Alaska Native	26.9 (17.6, 36.3)	22.2 (6.6, 37.8)	...	3.2 (0.1, 7.0)	...	...	57.2 (49.1, 65.3)	61.3 (50.9, 71.6)	25.1 (16.8, 33.5)	27.8 (18.4, 37.3)	26.6 (17.1, 36.2)	40.5 (30.2, 50.9)
Asian or Native Hawaiian/other Pacific Islander	40.7 (33.4, 48.0)	35.5 (24.0, 47.0)	22.5 (12.7, 32.2)	15.9 (7.8, 24.1)	17.8 (8.1, 27.4)	21.6 (11.9, 31.2)	62.8 (56.3, 69.2)	52.5 (44.0, 60.9)	23.4 (16.1, 30.8)	19.3 (12.5, 26.0)	13.0 (7.2, 18.8)	30.3 (22.6, 38.1)
Multiple marital status												
Married	36.5 (27.6, 45.4)	24.1 (12.7, 35.6)	15.0 (6.0, 24.0)	13.9 (4.9, 22.8)	10.2 (2.2, 18.1)	9.8 (2.3, 17.4)	69.3 (63.1, 75.5)	52.4 (44.1, 60.7)	20.0 (13.8, 26.2)	14.7 (9.5, 20.0)	22.7 (16.3, 29.1)	36.5 (28.8, 44.3)
Widowed/divorced/separated	31.2 (29.7, 32.7)	25.4 (22.9, 28.0)	13.4 (11.4, 15.4)	10.5 (8.7, 12.2)	10.5 (8.8, 12.3)	12.5 (10.6, 14.5)	66.4 (65.2, 67.7)	54.1 (52.5, 55.7)	19.8 (18.5, 21.1)	17.4 (16.2, 18.6)	19.6 (18.3, 20.8)	40.9 (39.3, 42.5)
Single, never married	29.4 (27.4, 31.4)	26.8 (23.1, 30.5)	15.4 (12.4, 18.5)	12.8 (9.9, 15.6)	9.9 (7.5, 12.4)	13.8 (10.9, 16.7)	68.4 (67.0, 69.9)	53.7 (51.8, 55.6)	19.0 (17.6, 20.5)	18.5 (17.1, 20.0)	18.1 (16.7, 19.5)	41.0 (39.2, 42.9)
	32.8 (30.7, 34.9)	21.4 (18.3, 24.5)	12.7 (10.2, 15.1)	7.2 (5.3, 9.1)	8.5 (6.4, 10.7)	11.0 (8.6, 13.3)	58.3 (56.4, 60.1)	48.2 (46.8, 51.6)	18.2 (16.4, 20.0)	14.6 (12.9, 16.2)	16.6 (14.9, 18.4)	34.4 (32.1, 36.6)

Continued

**TABLE 2—Continued**

Education, y	<12	12/GED	>12
	32.9 (29.5, 36.3)	28.3 (22.6, 34.0)	19.4 (14.4, 24.4)
	10.9 (7.3, 14.5)	10.0 (8.0, 12.0)	9.7 (8.1, 11.4)
	8.5 (5.3, 11.6)	9.0 (7.1, 10.8)	10.6 (8.8, 12.3)
	14.6 (10.2, 19.0)	11.0 (9.0, 13.0)	12.7 (10.8, 14.6)
	64.9 (62.7, 67.2)	66.1 (64.7, 67.5)	63.7 (62.4, 64.9)
	48.6 (45.9, 51.4)	53.1 (51.3, 54.9)	53.8 (52.2, 55.4)
	18.9 (16.8, 21.1)	20.0 (18.6, 21.4)	18.6 (17.3, 19.8)
	16.4 (14.4, 18.5)	16.2 (14.9, 17.5)	17.9 (16.7, 19.2)
	16.2 (14.1, 18.2)	16.8 (15.5, 18.1)	20.4 (19.1, 21.7)
	35.4 (32.8, 38.0)	39.1 (37.4, 40.8)	40.8 (39.2, 42.3)

Note. CI = confidence interval; GED = general educational development. Ellipses indicate estimates not shown because they were statistically unreliable (relative SE  $\geq 40\%$ ). Adult current cigarette smokers were aged 18 years or older, had smoked at least 100 cigarettes during their lifetime, and at the time of the survey, smoked daily or on some days. A quit attempt was defined as report by a current cigarette smoker of stopping smoking for 1 day or longer during the past year in an attempt to quit.

<sup>a</sup>Defined as being offered at least 1 of the following help by a dentist or a physician to stop smoking: referral to a telephone quit line; referral to a smoking cessation class, program, or counseling; help to set a definite quit date; or recommendation of any medication for smoking cessation.

<sup>b</sup>Defined as recommendation of nicotine replacement product or prescription medication (nicotine patch, gum, lozenges, nasal spray or inhaler, Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin) during a quit attempt in the past year.

<sup>c</sup>Cigars, pipes, water pipes (hookah), or smokeless tobacco products.

advised to quit smoking, 24.5% indicated that they received a form of assistance beyond the advice (Table 2). By number of distinct assistance measures received by dentists' patients, 13.0% reported receiving only 1; 4.9% received 2, 3.0% received 3, and 3.7% received all 4 measures assessed. However, we did not observe any significant difference in quit attempts between dental patients who received at least 1 cessation assistance measure and those who were simply advised to quit smoking.

Among recipients of a health professional's advice to quit smoking, significantly more physicians' than dentists' patients reported receiving assistance: referral to a telephone quit line (19.3% vs 13.8%); referral to a cessation class, program, or counseling (17.1% vs 10.0%); receipt of a prescription or recommendation to use a cessation medication (39.4% vs 12.4%); or receipt of assistance in setting a definite quit date (18.4% vs 9.8%; all  $P < .05$ ).

The proportion of current smokers who reported receiving at least 1 assistance measure beyond advice to quit smoking from a dentist did not vary significantly by any population subgroup. However, the proportion of current smokers who reported receiving at least 1 form of assistance from a physician differed significantly ( $P < .05$ ) among most subpopulation groups assessed, except by types of tobacco used and gender (Table 2).

### Smoking Cessation Aids

Notably, 37.2% ( $n = 9232$ ) of current smokers had made a quit attempt in the past 12 months, and 51.5% of these had used at least 1 cessation aid (Table 3). Respondents reported using medication (32.2%); help or support from friends or family (31.9%); self-help materials (e.g., books, pamphlets, videos, or other materials; 5.3%); a telephone help line or quit line (3.0%); one-on-one counseling (2.7%); a stop-smoking clinic, class, or support group (2.1%); an Internet program (1.9%); and acupuncture or hypnosis (1.5%).

Among past-year quit attempters, the odds of using any cessation medication were significantly lower among respondents who had only visited a dentist than among those who had only visited a physician (AOR = 0.71; 95% CI = 0.56, 0.90) or those who had visited both a dentist and a physician (AOR = 0.69; 95% CI = 0.55, 0.87). Similarly, past-year quit

attempters who had only visited a dentist in the past 12 months had significantly lower odds than those who had visited both a dentist and a physician to use the following interventions: one-on-one counseling (AOR = 0.40; 95% CI = 0.17, 0.94); Internet resources (AOR = 0.27; 95% CI = 0.11, 0.71), and self-help materials (AOR = 0.55; 95% CI = 0.33, 0.92; data not shown). However, as shown in Table 4, current smokers who had only visited a dentist had significantly higher odds than those who had visited neither a dentist nor a physician to use cessation medication (AOR = 1.43; 95% CI = 1.11, 1.85); acupuncture or hypnosis (AOR = 2.57; 95% CI = 1.09, 6.09); a clinic, class, or support group (AOR = 3.62; 95% CI = 1.47, 8.95); or help from family or friends (AOR = 1.28; 95% CI = 1.01, 1.63).

### DISCUSSION

Our results demonstrated that delivery of smoking cessation counseling was significantly lower among dentists than physicians for all assessed metrics during 2010 to 2011. Furthermore, a comparison of the 2010 to 2011 TUS-CPS survey wave with the 2006 to 2007 wave showed that the proportion of current cigarette smokers who were advised by a dentist to quit smoking declined significantly (2006–2007: 34.9%; 95% CI = 33.9, 36.0; 2010–2011: 31.2%; 95% CI = 30.2, 32.3).<sup>14</sup> However, the proportion of current smokers who were advised by a physician to quit smoking during the same period did not change significantly (2006–2007: 65.1%; 95% CI = 64.3, 66.0; 2010–2011: 64.8%; 95% CI = 63.9, 65.6).

Increasing involvement of dentists in smoking cessation interventions is a *Healthy People 2020* goal. For example, Objective TU-9.3 aims to increase tobacco screening by general dentists or their dental teams to 58.2% (from 52.2% in 2011), and Objective TU-10.3 aims to increase tobacco cessation counseling by general dentists or their dental teams to 39.3% (from 36.5% in 2011).<sup>11</sup> Although our findings (derived from patient-reported receipt of cessation counseling) cannot be directly compared with the *Healthy People 2020* framework (derived from dentist-reported delivery of cessation counseling), both indicators suggest that only about a third of general dentists delivered,

**TABLE 3—Cessation Aids Used by Adult Current Cigarette Smokers Who Made a Quit Attempt in the Past Year: Current Population Survey Tobacco Use Supplement, United States, 2010–2011**

Characteristics	Any Smoking Cessation Aid, <sup>a</sup> % (95% CI)	Medication, <sup>b</sup> % (95% CI)	Telephone Help Line or Quit Line, % (95% CI)	One-on-One Counseling, % (95% CI)	Internet Program, % (95% CI)	Self-Help Materials, <sup>c</sup> % (95% CI)	Stop-Smoking Clinic, Class, or Support Group, % (95% CI)	Acupuncture or Hypnosis, % (95% CI)	Help or Support From Friends or Family, % (95% CI)
Total	51.5 (50.2, 52.7)	32.2 (31.1, 33.3)	3.0 (2.6, 3.4)	2.7 (2.3, 3.1)	1.9 (1.6, 2.2)	5.3 (4.8, 5.8)	2.1 (1.8, 2.5)	1.5 (1.2, 1.8)	31.9 (30.8, 33.1)
Type of tobacco used									
Cigarettes only	51.3 (50.0, 52.5)	32.3 (31.2, 33.5)	3.0 (2.6, 3.4)	2.7 (2.3, 3.1)	2.0 (1.6, 2.3)	5.3 (4.7, 5.8)	2.1 (1.7, 2.4)	1.6 (1.3, 1.8)	31.8 (30.6, 33.0)
Cigarettes and other products <sup>d</sup>	55.8 (49.6, 62.0)	28.9 (23.3, 34.4)	2.2 (0.7, 3.7)	3.1 (1.1, 5.1)	...	5.2 (2.4, 8.1)	3.0 (0.9, 5.1)	...	35.5 (29.4, 41.6)
Cigarettes/d									
1–10	47.1 (45.5, 48.7)	26.5 (25.2, 27.9)	2.7 (2.2, 3.1)	2.3 (1.9, 2.8)	1.8 (1.4, 2.2)	4.8 (4.2, 5.5)	1.7 (1.3, 2.1)	1.3 (1.0, 1.6)	31.3 (29.8, 32.8)
11–20	57.6 (55.6, 59.7)	40.2 (38.2, 42.2)	3.4 (2.6, 4.1)	3.1 (2.4, 3.8)	2.2 (1.6, 2.8)	5.8 (4.9, 6.8)	2.5 (1.9, 3.1)	1.8 (1.3, 2.3)	32.8 (30.9, 34.8)
21–30	65.0 (58.7, 71.3)	45.3 (38.9, 51.7)	4.9 (2.2, 7.6)	3.6 (1.2, 6.0)	...	7.4 (4.2, 10.5)	4.8 (2.1, 7.5)	2.4 (0.8, 4.0)	37.3 (31.0, 43.6)
≥ 31	63.0 (53.8, 72.2)	52.3 (42.9, 61.8)	...	...	...	...	...	...	27.7 (19.5, 35.8)
Gender									
Male	48.5 (46.7, 50.2)	29.2 (27.7, 30.8)	2.2 (1.7, 2.7)	2.2 (1.7, 2.7)	1.4 (1.0, 1.9)	4.1 (3.5, 4.8)	1.9 (1.5, 2.4)	0.9 (0.6, 1.2)	29.7 (28.0, 31.3)
Female	54.9 (53.2, 56.6)	35.5 (33.9, 37.1)	3.8 (3.2, 4.4)	3.2 (2.6, 3.8)	2.4 (1.9, 3.0)	6.5 (5.7, 7.3)	2.4 (1.9, 2.9)	2.2 (1.7, 2.7)	34.4 (32.8, 36.0)
Age, y									
≤ 24	45.3 (41.4, 49.2)	15.2 (12.4, 18.0)	1.4 (0.7, 2.1)	1.1 (0.3, 2.0)	2.3 (1.2, 3.3)	2.5 (1.4, 3.6)	0.8 (0.2, 1.4)	...	35.4 (31.6, 39.1)
25–44	50.6 (48.7, 52.5)	31.7 (30.0, 33.4)	3.2 (2.6, 3.9)	2.1 (1.6, 2.6)	1.8 (1.3, 2.3)	4.6 (3.9, 5.4)	1.5 (1.1, 1.9)	0.9 (0.6, 1.2)	32.2 (30.4, 33.9)
45–64	55.3 (53.4, 57.2)	39.7 (37.8, 41.5)	3.6 (2.9, 4.3)	4.1 (3.3, 4.9)	2.0 (1.5, 2.5)	7.1 (6.1, 8.1)	3.5 (2.8, 4.2)	2.5 (1.9, 3.1)	31.0 (29.3, 32.8)
≥ 65	50.9 (46.5, 55.2)	34.7 (30.6, 38.8)	2.0 (1.0, 3.0)	2.1 (1.0, 3.2)	1.2 (0.3, 2.1)	5.6 (3.8, 7.4)	2.1 (1.1, 3.2)	2.9 (1.5, 4.2)	26.6 (22.9, 30.4)
US Census region									
Northeast	54.4 (51.4, 57.5)	36.6 (33.7, 39.5)	3.8 (2.6, 5.0)	2.9 (1.9, 3.9)	2.0 (1.1, 2.8)	5.9 (4.6, 7.2)	2.1 (1.3, 2.8)	1.3 (0.7, 1.9)	32.8 (29.9, 35.7)
Midwest	52.3 (49.9, 54.6)	32.8 (30.7, 34.9)	2.4 (1.8, 3.0)	2.5 (1.8, 3.1)	1.5 (1.0, 2.1)	4.8 (3.9, 5.8)	2.0 (1.4, 2.5)	1.7 (1.2, 2.3)	32.1 (30.0, 34.3)
South	49.3 (47.2, 51.3)	30.2 (28.4, 32.1)	2.4 (1.9, 3.0)	2.9 (2.2, 3.6)	1.6 (1.1, 2.1)	4.7 (3.9, 5.6)	2.1 (1.6, 2.7)	1.2 (0.7, 1.6)	29.9 (28.0, 31.8)
West	52.1 (49.3, 54.9)	31.2 (28.7, 33.7)	4.2 (3.2, 5.3)	2.3 (1.6, 3.1)	3.0 (2.0, 3.9)	6.3 (5.0, 7.5)	2.5 (1.6, 3.3)	2.1 (1.3, 2.8)	34.8 (32.2, 37.5)
Race/ethnicity									
White	55.3 (53.9, 56.7)	35.7 (34.4, 37.0)	3.1 (2.7, 3.5)	2.6 (2.2, 3.1)	2.1 (1.7, 2.5)	5.7 (5.1, 6.3)	2.2 (1.8, 2.6)	1.8 (1.5, 2.2)	33.8 (32.5, 35.1)
Black	37.0 (33.5, 40.5)	21.1 (18.2, 24.0)	2.4 (1.4, 3.4)	4.0 (2.7, 5.4)	0.9 (0.2, 1.6)	4.4 (3.0, 5.8)	2.5 (1.5, 3.6)	...	23.1 (20.0, 26.1)
Hispanic	39.7 (35.2, 44.2)	18.9 (15.4, 22.3)	3.3 (1.4, 5.1)	1.3 (0.3, 2.3)	1.5 (0.4, 2.6)	4.1 (2.4, 5.8)	1.6 (0.5, 2.6)	...	27.6 (23.5, 31.7)
American Indian/Alaska Native	56.0 (44.8, 67.2)	31.1 (20.8, 41.4)	...	...	...	...	...	...	36.9 (25.8, 48.1)
Asian or Native Hawaiian/other Pacific Islander	39.6 (31.4, 47.9)	24.4 (17.3, 31.5)	...	0.4 (0.1, 1.2)	...	...	...	...	23.6 (16.3, 30.9)
Multiple	67.5 (59.4, 75.6)	41.5 (32.9, 50.0)	4.2 (1.6, 6.9)	4.6 (1.8, 7.4)	...	3.4 (0.9, 6.0)	...	...	43.7 (34.7, 52.8)
Marital status									
Married	55.8 (53.9, 57.6)	36.5 (34.7, 38.2)	2.8 (2.2, 3.4)	2.6 (2.0, 3.1)	2.0 (1.5, 2.5)	5.8 (4.9, 6.6)	2.1 (1.6, 2.6)	1.8 (1.3, 2.3)	34.7 (33.0, 36.5)
Widowed/divorced/separated	51.6 (49.4, 53.9)	36.1 (34.0, 38.2)	4.3 (3.4, 5.2)	4.1 (3.2, 4.9)	2.0 (1.4, 2.6)	5.9 (4.9, 6.9)	3.1 (2.3, 3.8)	2.2 (1.6, 2.8)	28.0 (26.0, 30.0)
Single, never married	46.2 (43.9, 48.6)	24.0 (22.1, 25.9)	2.2 (1.6, 2.8)	1.7 (1.2, 2.3)	1.8 (1.2, 2.4)	4.1 (3.2, 4.9)	1.4 (0.9, 1.9)	0.6 (0.3, 0.9)	31.6 (29.4, 33.8)
Education, y									
< 12	46.0 (42.8, 49.2)	26.8 (24.1, 29.6)	2.9 (1.9, 3.9)	3.1 (2.1, 4.0)	1.1 (0.5, 1.8)	3.7 (2.6, 4.8)	2.3 (1.4, 3.1)	1.0 (0.5, 1.6)	27.7 (24.8, 30.5)
12/GED	48.9 (46.9, 50.9)	29.8 (28.0, 31.5)	2.5 (1.9, 3.0)	1.9 (1.4, 2.4)	1.1 (0.7, 1.6)	4.8 (4.0, 5.6)	1.9 (1.4, 2.4)	1.2 (0.8, 1.5)	30.6 (28.8, 32.5)
> 12	55.6 (53.8, 57.4)	36.1 (34.4, 37.8)	3.5 (2.9, 4.1)	3.2 (2.6, 3.8)	2.8 (2.2, 3.4)	6.2 (5.4, 7.0)	2.3 (1.8, 2.9)	2.0 (1.5, 2.4)	34.4 (32.7, 36.2)

Note. CI = confidence interval; GED = general educational development. Ellipses indicate estimates not shown because they were statistically unreliable (relative SE ≥ 40%). Adult current cigarette smokers were aged 18 years or older, had smoked at least 100 cigarettes during their lifetime, and at the time of the survey, smoked daily or on some days. A quit attempt was defined as report by a current cigarette smoker of stopping smoking for 1 day or longer during the past year in an attempt to quit. Sample size was 9232 participants.

<sup>a</sup>At least 1 of the following: medication; telephone help line or quit line; 1-on-1 counseling; Internet program; self-help materials; acupuncture or hypnosis; a stop-smoking clinic, class, or support group; or help or support from friends or family.

<sup>b</sup>Nicotine replacement product or prescription medication (nicotine patch, gum, lozenge, nasal spray or inhaler, Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin).

<sup>c</sup>Books, pamphlets, videos, or other materials.

<sup>d</sup>Cigars, pipes, water pipes (hookah), or smokeless tobacco products.

and dental patients received, cessation counseling.

We found significant differences in the receipt of dentist- and physician-delivered

cessation counseling. A greater proportion of respondents who smoked at least 31 cigarettes per day received cessation counseling from both dentists and physicians, which may be

related to health professionals' deep understanding of the health consequences of heavy smoking and nicotine addiction. Dentists were most likely to advise patients aged 25 to 44 years

**TABLE 4—Associations Between Health Professional Visit in the Past Year and Use of Cessation Aids Among Adult Current Smokers Who Made a Quit Attempt in the Past Year: Current Population Survey Tobacco Use Supplement, United States, 2010–2011**

Health Professional Visits in Past Year	OR (95% CI)	P	AOR <sup>a</sup> (95% CI)	P
<b>Any cessation aid<sup>b</sup></b>				
None (Ref)	1.00		1.00	
Dentist	1.48 (1.19, 1.84)	< .001	1.41 (1.13, 1.77)	.003
Physician	1.82 (1.59, 2.09)	< .001	1.69 (1.46, 1.95)	< .001
Dentist and physician	2.13 (1.86, 2.45)	< .001	1.87 (1.61, 2.15)	< .001
<b>Medication<sup>c</sup></b>				
None (Ref)	1.00		1.00	
Dentist	1.47 (1.15, 1.88)	.002	1.43 (1.11, 1.85)	.005
Physician	2.30 (1.97, 2.69)	< .001	2.02 (1.72, 2.38)	< .001
Dentist and physician	2.47 (2.12, 2.88)	< .001	2.08 (1.77, 2.45)	< .001
<b>Telephone help line or quit line</b>				
None (Ref)	1.00		1.00	
Dentist	2.18 (0.92, 5.13)	.075	2.05 (0.82, 5.13)	.127
Physician	2.58 (1.61, 4.14)	< .001	2.46 (1.50, 4.01)	< .001
Dentist and physician	3.70 (2.35, 5.83)	< .001	3.56 (2.19, 5.78)	< .001
<b>One-on-one counseling</b>				
None (Ref)	1.00		1.00	
Dentist	1.03 (0.43, 2.50)	.941	0.92 (0.36, 2.36)	.863
Physician	2.26 (1.35, 3.76)	.002	1.92 (1.12, 3.29)	.018
Dentist and physician	2.63 (1.59, 4.37)	< .001	2.29 (1.32, 3.97)	.003
<b>Internet program</b>				
None (Ref)	1.00		1.00	
Dentist	0.60 (0.23, 1.58)	.306	0.38 (0.14, 1.05)	.063
Physician	1.14 (0.66, 1.98)	.640	0.99 (0.57, 1.69)	.960
Dentist and Physician	1.85 (1.10, 3.12)	.021	1.40 (0.82, 2.39)	.224
<b>Self-help materials<sup>d</sup></b>				
None (Ref)	1.00		1.00	
Dentist	1.84 (1.02, 3.32)	.044	1.64 (0.89, 3.01)	.114
Physician	2.84 (1.92, 4.22)	< .001	2.51 (1.68, 3.75)	< .001
Dentist and physician	3.56 (2.42, 5.25)	< .001	2.98 (1.99, 4.45)	< .001
<b>Acupuncture or hypnosis</b>				
None (Ref)	1.00		1.00	
Dentist	2.72 (1.18, 6.29)	.019	2.57 (1.09, 6.09)	.032
Physician	1.57 (0.81, 3.04)	.182	1.07 (0.55, 2.08)	.849
Dentist and physician	4.47 (2.49, 8.03)	< .001	2.96 (1.60, 5.47)	.001
<b>Stop-smoking clinic, class, or support group</b>				
None (Ref)	1.00		1.00	
Dentist	4.00 (1.66, 9.68)	.002	3.62 (1.47, 8.95)	.005
Physician	4.79 (2.53, 9.05)	< .001	4.02 (2.09, 7.70)	< .001
Dentist and physician	5.67 (3.03, 10.61)	< .001	5.18 (2.72, 9.86)	< .001

*Continued*

to quit smoking, possibly because this age group had the highest smoking prevalence among US adults (22.1% in 2011).<sup>10</sup> However, physicians were most likely to recommend smoking

cessation to patients aged 65 years or older, despite their having the lowest adult smoking prevalence (7.9% in 2011),<sup>10</sup> which could be attributable to the relatively higher prevalence of

smoking-related cardiovascular and other systemic diseases among older patients.<sup>15,16</sup> Differences in receipt of cessation counseling by gender or education level may reflect how health professionals perceive the prevalence of smoking among those subgroups or the amount that they smoke.<sup>10</sup> This may explain why current smokers with more than 12 years of education and women were less likely than other patients to receive advice from their dentist or physician to quit smoking.

We observed certain similarities in the pattern of cessation-counseling behaviors among dentists and physicians. For example, both groups of patients were least frequently offered help in setting a definite quit date and referral to a cessation class, program, or counseling. It is interesting that although quit line referrals (the most frequently received assistance intervention among dental patients) were received by a fifth of physicians' patients and about 13.8% of dental patients, only 3.0% of past-year quit attempters reported actually using them. By contrast, medications were the most frequently used cessation aid, a finding that may be attributable to patients' perception of medications as being more effective or as requiring less time commitment than such interventions as classes or programs.<sup>17</sup> Although the 2008 US Public Health Service guidelines recommend that counseling and medication are effective when used by themselves for treating tobacco dependence, the combination of counseling and medication is more effective than either alone.<sup>12</sup>

The observed differences in delivery of cessation assistance between dentists and physicians could be attributable to differences in training, reimbursement, and patient attributes (e.g., presenting complaints, presence of comorbidities, and overall health status), as well as size of practice and staffing characteristics.<sup>18–22</sup> During 2012, 71.3% of all US dentists were sole practitioners, employing an average of 4 to 5 nondentist staff (typically a receptionist–secretary, a dental hygienist, and chairside assistants).<sup>23</sup> With this relatively small workforce, delegation of specific components of the 5 A's to appropriate staff might improve work flow. For example, the receptionist or dental hygienist could ask patients about tobacco use, and the dentist could deliver personal quitting advice, assist with

TABLE 4—Continued

Help or support from friends or family				
None (Ref)	1.00		1.00	
Dentist	1.35 (1.06, 1.71)	.013	1.28 (1.01, 1.63)	.046
Physician	1.42 (1.22, 1.65)	<.001	1.43 (1.22, 1.67)	<.001
Dentist and physician	1.71 (1.47, 1.98)	<.001	1.59 (1.36, 1.85)	<.001

Note. AOR = adjusted odds ratio; CI = confidence interval. Adult current cigarette smokers were aged 18 years or older, had smoked at least 100 cigarettes during their lifetime, and at the time of the survey, smoked daily or on some days. A quit attempt was defined as report by a current cigarette smoker of stopping smoking for 1 day or longer during the past year in an attempt to quit. Sample size was 9232 participants.

<sup>a</sup>Adjusted for type of tobacco used, cigarettes/d, gender, age, US census region, race/ethnicity, marital status, and education level, in a binary logistic regression model ( $P < .05$ ).

<sup>b</sup>At least 1 of the following: medication; telephone help line or quit line; one-on-one counseling; Internet program; self-help materials; acupuncture or hypnosis; a stop-smoking clinic, class, or support group; or help or support from friends or family.

<sup>c</sup>Nicotine replacement product or prescription medication (nicotine patch, gum, lozenge, nasal spray or inhaler, Chantix, Varenicline, Zyban, Bupropion, or Wellbutrin).

<sup>d</sup>Books, pamphlets, videos, or other materials.

medications, and refer to a tobacco intervention resource (e.g., quit line). It is encouraging to note that dental practices have the potential for increased integration of tobacco cessation counseling: in 2012, 36.4% of all US dentists perceived their clinic workload as “not busy enough.”<sup>23</sup> Where necessary, improving patient scheduling might reduce interpatient waiting time, thus increasing consultation time. In 2012, the average clinic wait time for new dental patients was 7.3 minutes,<sup>23</sup> a relatively short period that nonetheless offers an opportunity for another member of the dental team to deliver brief ( $\leq 3$  minutes) cessation counseling.

Integration of cessation counseling into electronic dental records has already been piloted in the United States and may hold promise for increased dentist delivery of the 5 A's.<sup>19</sup> Questions on tobacco use in the electronic system act as cues to ask patients about their smoking status. Also, the system automatically uses information collected to generate a script for personalized quitting advice. Patients' nicotine dependence level (low, moderate, or high) is also automatically computed, which may help the dentist determine how best to assist patients (e.g., with pharmacotherapy). In addition, administered interventions during a consultation can be reviewed at subsequent visits, thus allowing for follow-up.<sup>24</sup>

### Limitations

We did not have data on the frequency of dentist or physician visits in the study period,

the type of physician or dentist visited (i.e., primary care vs specialty care), or the nature of the care (e.g., single visit—annual exam vs ongoing care for a major condition), factors that may influence health professional delivery of or patient adherence to cessation counseling. It is reasonable to expect some degree of misclassification because of the relatively long recall period (12 months). However, any such misclassification is expected to be nondifferential across health professions.

Although tobacco use was self-reported, research has shown high agreement between self-reported smoking and biochemical tests.<sup>25</sup> Because we had relatively high person-level nonresponse rates (e.g., 40.2% during January 2011), selection bias could have been present if systematic differences existed between respondents and nonrespondents. However, the magnitude of this bias was reduced by our use of weighting adjustments for non-response.

### Conclusions

Only about a third of adult current smokers who visited a dentist were advised to quit smoking—approximately half the proportion observed among physicians' patients. Prevalence of receipt of smoking cessation advice or assistance varied by sociodemographic characteristics. Intensified efforts are needed to increase involvement of dentists in tobacco screening and cessation counseling. ■

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### Contributors

I. T. Agaku led the study design, data analyses and interpretation, and article preparation. O. A. Ayo-Yusuf and C. I. Vardavas helped design the study and interpret the data. All authors edited and approved the final article.

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### Human Participant Protection

This secondary data analysis was deemed exempt by the institutional review board of the Harvard School of Public Health.

### References

1. Calsina G, Ramón JM, Echeverría JJ. Effects of smoking on periodontal tissues. *J Clin Periodontol*. 2002;29(8):771–776.
2. Office on Smoking and Health. *The Health Consequences of Smoking: 50 Years of Progress: A Report of the Surgeon General*. Atlanta, GA: National Center for Chronic Disease Prevention and Health Promotion; 2014. Available at: <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/#fullreport>. Accessed March 20, 2014.
3. van Winkelhoff AJ, Bosch-Tijhof CJ, Winkel EG, van der Reijden WA. Smoking affects the subgingival microflora in periodontitis. *J Periodontol*. 2001;72(5):666–671.
4. *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis For Smoking-Attributable Disease: A Report of the Surgeon General*. Atlanta, GA: Centers for Disease Control and Prevention; 2010. Available at: [http://www.cdc.gov/tobacco/data\\_statistics/sgr/2010/index.htm](http://www.cdc.gov/tobacco/data_statistics/sgr/2010/index.htm). Accessed December 10, 2012.
5. Office of the Surgeon General. *National Call To Action To Promote Oral Health*. Rockville, MD: National Institute of Dental and Craniofacial Research; 2003. Available at: <http://www.ncbi.nlm.nih.gov/books/NBK47472>. Accessed March 15, 2013.
6. Tomar SL. Dentistry's role in tobacco control. *J Am Dent Assoc*. 2001;132(suppl):30S–35S.
7. American Dental Association. Health Policy Resources Center. Dental care utilization declined for adults, increased for children during the past decade in the



- United States. Available at: [http://www.ada.org/professionalResources/pdfs/HPRCBrief\\_0213\\_2.pdf](http://www.ada.org/professionalResources/pdfs/HPRCBrief_0213_2.pdf). Accessed November 11, 2013.
8. American Dental Association, Council on Access, Prevention and Interprofessional Relations. Proceedings of the March 23–25, 2009, Access to Dental Care Summit. Available at: [http://www.ada.org/sections/about/pdfs/access\\_dental\\_care\\_summit.pdf](http://www.ada.org/sections/about/pdfs/access_dental_care_summit.pdf). Accessed November 11, 2013.
  9. Frieden TR, Centers for Disease Control and Prevention. Forward: CDC health disparities and inequalities report—United States, 2011. *MMWR Surveill Summ*. 2011;60(suppl):1–2.
  10. Centers for Disease Control and Prevention. Current cigarette smoking among adults—United States, 2011. *MMWR Morb Mortal Wkly Rep*. 2012;61(44):889–894.
  11. US Department of Health and Human Services. Healthy people 2020. Tobacco use. Available at: <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=41>. Accessed November 11, 2013.
  12. Fiore MC, Jaén CR, Baker TB, Bailey WC, Benowitz NL, Curry SJ. *Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline*. Rockville, MD: US Public Health Service; 2008.
  13. US Department of Commerce, Census Bureau. National Cancer Institute-sponsored tobacco use supplement to the Current Population Survey (2010–11). 2012. Available at: <http://appliedresearch.cancer.gov/studies/tus-cps>. Data files (AND/OR) technical documentation (technical documentation Web site: <http://www.census.gov/cps/methodology/techdocs.html>). Accessed January 11, 2014.
  14. US Department of Commerce, Census Bureau. National Cancer Institute-sponsored tobacco use supplement to the Current Population Survey (2006–07). Table 5. Available at: <http://appliedresearch.cancer.gov/tus-cps/results/data0607/table5.html>. Accessed May 6, 2014.
  15. American Heart Association. Older Americans and cardiovascular diseases. 2013. Available at: [http://www.heart.org/idc/groups/heart-public/@wcm/@sop/@smd/documents/downloadable/ucm\\_319574.pdf](http://www.heart.org/idc/groups/heart-public/@wcm/@sop/@smd/documents/downloadable/ucm_319574.pdf). Accessed April 1, 2014.
  16. Stern S, Behar S, Gottlieb S. Cardiology patient pages. Aging and diseases of the heart. *Circulation*. 2003;108(14):e99–e101.
  17. Altman DG, Flora JA, Fortmann SP, Farquhar JW. The cost-effectiveness of three smoking cessation programs. *Am J Public Health*. 1987;77(2):162–165.
  18. Tong EK, Strouse R, Hall J, Kovac M, Schroeder SA. National survey of US health professionals' smoking prevalence, cessation practices, and beliefs. *Nicotine Tob Res*. 2010;12(7):724–733.
  19. Shelley D, Wright S, McNeely J, et al. Reimbursing dentists for smoking cessation treatment: views from dental insurers. *Nicotine Tob Res*. 2012;14(10):1180–1186.
  20. Gordon JS, Albert DA, Crews KM, Fried J. Tobacco education in dentistry and dental hygiene. *Drug Alcohol Rev*. 2009;28(5):517–532.
  21. Albert DA, Severson H, Gordon J, Ward A, Andrews J, Sadowsky D. Tobacco attitudes, practices, and behaviors: a survey of dentists participating in managed care. *Nicotine Tob Res*. 2005;7(suppl 1):S9–S18.
  22. McNeely J, Wright S, Matthews AG, et al. Substance-use screening and interventions in dental practices: survey of practice-based research network dentists regarding current practices, policies and barriers. *J Am Dent Assoc*. 2013;144(6):627–638.
  23. American Dental Association, Health Policy Resources Center. Surveys of dental practice. 2012. Available at <http://www.ada.org/1441.aspx>. Accessed March 31, 2014.
  24. Rush WA, Schleyer TK, Kirshner M, et al. Integrating tobacco dependence counseling into electronic dental records: a multi-method approach. *J Dent Educ*. 2014;78(1):31–39.
  25. Caraballo RS, Giovino GA, Pechacek TF, et al. Racial and ethnic differences in serum cotinine levels of cigarette smokers: Third National Health and Nutrition Examination Survey, 1988–1991. *JAMA*. 1998;280(2):135–139.