RESEARCH PAPER

The uninsured and Medicaid Oregon tobacco user experience in a real world, phone based cessation programme

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Objective: To describe the experience of uninsured and Medicaid Oregon tobacco users who registered in Free & Clear (F&C), a telephone based cessation programme including five scheduled outbound calls.

Design and setting: Using a retrospective cohort design, 1334 (423 uninsured, 806 Medicaid, and 105 commercially insured) Oregon tobacco users who registered in F&C between 18 November 1998 and 28 February 2000 were identified and followed for 12 months post-registration; 648 (48.6%) were successfully contacted at 12 months. Information was collected from the F&C database. Unconditional logistic regression, adjusted for race and education, was used.

Results: The seven day quit rate at 12 months, assuming non-respondents were smokers, was 14.8% (95% confidence interval (CI) 13.0 to 16.9). This rate was significantly higher among commercially insured participants (v Medicaid but not uninsured) and among participants who completed ≥ 5 calls ($v < 5$ calls). The quit rate for those contacted at 12 months was 30.6% (95% CI 27.0% to 34.3%) and varied, however not significantly, by insurance and number of calls. After adjustment, respondents who completed ≥ 5 calls were 60% more likely to quit tobacco (odds ratio (OR) 1.6, 95% CI 0.9 to 3.1), and uninsured respondents who completed ≥ 5 calls were 70% more likely to quit tobacco (OR 1.7, 95% CI 0.9 to 3.5), relative to those who completed < 5 calls, but the difference was not significant.

Conclusions: The quit rates are similar to those reported in efficacy trials. The observed variation in quitting tobacco for respondents by number of calls completed and by insurance merits further investigation concentrating on increasing compliance with the call schedule, particularly for the uninsured.

Group Health Cooperative's (GHC) Center for Health Promotion (CHP) contracted with the State of Oregon Health Division (OHD) Department of Human Services to deliver telephone based tobacco cessation services to residents of Oregon state as part of the state's effort to reduce tobacco use. The Oregon Tobacco Quit Line (OQL), established in the fall (autumn) of 1998, provides free one-time counselling services to all interested callers and referral to additional resources for which they are eligible. In addition to basic OQL services, uninsured Oregon tobacco users are eligible to receive a comprehensive telephone based cessation programme, Free & Clear (F&C), that offers behavioural cessation services over a one year programme comprising five proactive calls and access to adjunctive pharmacotherapy (APT), usually nicotine patches. Similarly, Oregon tobacco users who are on the Oregon Health Plan (Medicaid) are eligible for F&C services at no charge. This is because these plans have chosen to participate in cooperative purchasing of F&C to fulfil their contract obligations to provide coverage for tobacco cessation services to members. Furthermore, some Oregon tobacco users who have commercial insurance are also eligible for F&C under various cost sharing arrangements.

Both OHD and CHP were interested in determining participants' characteristics and compliance with the F&C programme as measured by number of calls completed and successful contact at 12 months post-registration. Furthermore, we were interested in determining the effectiveness of the F&C programme for uninsured Oregon tobacco users and those on Medicaid as measured by the quit rate for F&C participants at the end of the programme (12 months post-registration). As part of our effort to determine a "gold standard" quit rate for this population, we conducted a Medline

search, between the years 1966 to 2002, using search words such as tobacco cessation, smoking cessation, uninsured, and Medicaid. The literature addressed smoking rates and utilisation of tobacco cessation programmes¹⁻³; however, information on the success of cessation approaches among the uninsured and Medicaid population was sparse and contradictory. Overall, these studies focused on special populations, such as pregnant women⁴ and African Americans⁵ and were mainly institution based.⁵⁻⁷ Furthermore, these studies varied greatly in the type of intervention and in quit status verification, which complicated comparing results. In several studies, the intervention had no long term benefit when compared to a control group.^{3,8} Most studies followed up participants no longer than six months⁵⁻⁹ and a quit rate at 12 months was rarely reported.¹⁰ Very few studies adjusted for baseline differences or comorbidities.^{5,10} In one study, individuals on Medi-Cal (federal and state medical coverage for the medically indigent) were somewhat more likely to make a quit attempt; however, tobacco abstinence rates over 12 months did not as a function of insurance status.¹¹ From the literature review, we were unable to identify quit rates to use as our gold standard for uninsured and Medicaid tobacco users following a population wide intervention similar to the campaign in Oregon. For this reason, this paper set out to examine quit rates by insurance status, among all Oregon residents participating in the F&C programme.

Abbreviations: APT, adjunctive pharmacotherapy; CHP, Center for Health Promotion; CI, confidence interval; F&C, Free & Clear; GHC, Group Health Cooperative; OHD, Oregon Health Division; OR, odds ratio; OQL, Oregon Quit Line

METHODS

Definition of concepts

Free & Clear (F&C)

F&C was developed in the late 1980s and tested through a large National Cancer Institute funded randomised clinical trial.¹² It has operated within the GHC system since 1989. F&C provides telephonic cessation services to approximately 12 000 clients annually. Each F&C participant receives a series of five scheduled telephone calls from an F&C counsellor during a one year period from the date of registration. They are scheduled according to each participant's "best time to be reached" as indicated at registration. The first call, or intake call, occurs within 7–10 business days from the date of registration. This timing provides the participants with sufficient time to receive and review the programme materials sent to them after registration. An assessment of tobacco dependence is conducted and previous quit attempts and methods used are also explored. Pharmacotherapy options are discussed as well. During calls 2–4, counsellors assist participants in developing a quit plan and provide motivational and behaviour change counselling. Counsellors tailor each call to each participant's needs including changes in lifestyle, stress, family, and emotional issues. During the last call (call 5) at 12 months post-registration, the counsellor answers questions and reinforces the importance of quitting and staying quit. In addition, the counsellor collects final quit status. To maximise the success of reaching participants, F&C makes three attempts to reach participants for calls 1–4 and eight attempts for call 5. If these attempts are unsuccessful, a letter is sent to the participant encouraging them to call the programme directly. Those individuals responding to the letter by calling the F&C programme toll-free number are provided ad hoc interventions. These ad hoc interventions are identical in content to scheduled outbound calls initiated by F&C counsellors. F&C is a registered trademark and service mark of Group Health Cooperative.

Registration in F&C

All uninsured OQL callers were offered F&C at no charge. Eight Medicaid plans also offered OQL callers F&C at no charge. Two commercial plans offered OQL callers F&C with co-pay. Uninsured participants must register in F&C through the OQL whereas commercially insured and participants on Medicaid could register in F&C either directly through their health plan or through calling OQL. Because in our study a relatively small proportion (113/806, 14.0%) of F&C Medicaid participants registered in F&C through OQL, and even a smaller proportion of commercially insured did so (3/105, 2.9%), we presented data for all Medicaid and commercially insured F&C participants regardless of source of referral. Selected information by source of referral for these two groups is available in our report.*

APT recommendations for use

APT use (for example, use of nicotine patches or gum, or bupropion) is discussed with F&C participants unless they are under 18 years of age or pregnant. Recommendations about APT dosing are made unless participants: (1) have a medical contraindication, such as a recent heart attack; (2) state that they do not want to use APT; (3) smoke fewer than five cigarettes per day; or (4) if the callers' health plan does not cover APT and they do not want to buy it over the counter. All uninsured F&C participants can have patches or gum mailed directly to their home.

*McAfee T, El-Bastawissi A, Hindmarsh M, et al. Oregon Tobacco Quit Line: evaluation of the Oregon Tobacco Quit Line, grant year 2, 15 November 2000.

Seven day quit rate

Our outcome measure was seven day quit rate at 12 months. This was defined as participant reporting no use of tobacco for at least seven days before the 12th month follow up call—that is, at scheduled call 5. We present seven day quit rates for those who we could successfully contact at 12 months post-registration. We also present quit rates assuming non-respondents were smokers (intent-to-treat).

Subject definition

All Oregon tobacco users who registered in F&C between 18 November 1998 (launch of OQL) and 28 February 2000 were included in this analysis. This allowed one year for those who had registered on 28 February 2000 to complete their five call programme by 1 March 2001. We included all Oregon F&C participants whether they directly registered in F&C through their health plan or did so through the OQL. Furthermore, all participants were included whether or not they had completed all their scheduled calls over the one year period. The total sample size was 1334.

Data collection

The GHC's institutional review board approved this project. We analysed data from the F&C database. Information collected included: (1) demographic characteristics of participants such as age, sex, race/ethnicity, and education; (2) recommendations for APT use—APT use was not recommended by the counsellor if the participant was not interested in using APT or APT was medically contraindicated, whereas APT use was recommended by the counsellor if the participant was interested in APT and APT was medically indicated; (3) participants' quit status at last contact (participant did not quit, tobacco free for previous 24 hours, tobacco free for previous seven days to less than one month, and tobacco free for previous one month or more); (4) participants' insurance status at the time of programme enrolment (uninsured, Medicaid, and commercial); (5) number of scheduled proactive calls participants actually received from a counsellor (1–5); (6) number of total calls participants received which included both proactive outbound calls made by counsellors and inbound ad hoc calls made by participants into F&C quit line (1 to ≥ 5); and (7) whether the participant was successfully reached at 12 months post-registration when the counsellor collects final quit status.

Statistical analysis

Pearson χ^2 test was used for comparing insurance groups and Student's *t* test was used to compare means. A probability value of $p < 0.05$ was considered significant. We calculated 95% confidence intervals (CI) for quit rates using the binomial exact CI. One rate was considered significantly different from another when the rate's 95% CI did not overlap with the 95% CI of the other rate. We used unconditional logistic regression to measure the effect of the number of calls completed on seven day point prevalence quit status at 12 months while controlling for other factors. We treated quit status as a dichotomous outcome, by comparing participants who quit tobacco for at least seven days at the 12 month follow up to those who did not quit. We also dichotomised call completion into "completing < 5 calls" and "completing ≥ 5 calls" (scheduled plus ad hoc) in this analysis, because few participants fell into the lowest categories of call completion and for ease of interpretation and presentation. We calculated unadjusted odds ratio (OR) and 95% CI comparing the odds of quitting tobacco among participants who completed ≥ 5 calls versus the odds of quitting tobacco among participants who completed < 5 calls (reference category). The final logistic regression model included covariates that changed unadjusted ORs by at least 10%. Full adjustment included race (white *v* non-white) and the four groups of education ($<$ high

Table 1 Characteristics of all participants and of those contacted at 12 months post-registration by insurance

	Insurance						Insurance				
	All n=1334 (%)	Uninsured n=423 (%)	Medicaid n=806 (%)	Commercial n=105 (%)	p Value	Contacted at 12 months n=648 (%)	Uninsured n=221 (%)	Medicaid n=356 (%)	Commercial n=71 (%)	p Value	
Age at time of registration in F&C*											
<26 years	172 (12.9)	76 (18.1)	94 (11.7)	2 (1.9)	<0.001	55 (8.5)	30 (13.7)	24 (6.8)	1 (1.4)	<0.001	
26–40 years	551 (41.5)	193 (46.0)	329 (40.9)	29 (27.6)		252 (39.1)	93 (42.5)	141 (39.7)	18 (25.4)		
41–60 years	547 (41.2)	139 (33.1)	346 (43.0)	62 (59.1)		294 (45.6)	88 (40.2)	165 (46.5)	41 (57.8)		
>60 years	59 (4.4)	12 (2.9)	35 (4.4)	12 (11.4)		44 (6.8)	8 (3.7)	25 (7.0)	11 (15.5)		
Sex											
Female	830 (62.2)	236 (55.8)	529 (65.6)	65 (61.9)	0.003	400 (61.7)	122 (55.2)	232 (65.2)	46 (64.8)	0.049	
Male	504 (37.8)	187 (44.2)	277 (34.4)	40 (38.1)		248 (38.3)	99 (44.8)	124 (34.8)	25 (35.2)		
Race†											
White	363 (89.0)	269 (87.1)	90 (94.7)	4 (100.0)	0.088	185 (89.4)	145 (88.4)	38 (92.7)	2 (100.0)	0.648	
Non-white	45 (11.0)	40 (12.9)	5 (5.3)	0 (0.0)		22 (10.6)	19 (11.6)	3 (7.3)	0 (0.00)		
Education†											
Less than high school	98 (24.0)	68 (21.9)	30 (31.9)	0 (0.0)	0.009	39 (18.8)	32 (19.4)	7 (17.5)	0 (0.0)	0.331	
High school/GED	145 (35.5)	105 (33.9)	40 (42.6)	0 (0.0)		72 (34.8)	53 (32.1)	19 (47.5)	0 (0.0)		
Some college	135 (33.1)	112 (36.1)	20 (21.3)	3 (75.0)		80 (38.7)	67 (40.6)	11 (27.5)	2 (100.0)		
College graduate or more	30 (7.4)	25 (8.1)	4 (4.3)	1 (25.0)		16 (7.7)	13 (7.9)	3 (7.5)	0 (0.0)		
APT recommended											
None	731 (54.8)	135 (31.9)	537 (66.6)	59 (56.2)	<0.001	302 (46.6)	57 (25.8)	211 (59.3)	34 (47.9)	<0.001	
Nicotine patch	518 (38.8)	270 (63.8)	218 (27.1)	30 (28.6)		291 (44.9)	152 (68.8)	115 (32.3)	24 (33.8)		
Nicotine gum	18 (1.4)	18 (4.3)	0 (0.0)	0 (0.0)		12 (1.9)	12 (5.4)	0 (0.0)	0 (0.0)		
Bupropion	67 (5.0)	0 (0.0)	51 (6.3)	16 (15.2)		43 (6.6)	0 (0.0)	30 (8.4)	13 (18.3)		
Number of calls completed‡											
0	128 (9.6)	28 (6.6)	95 (11.8)	5 (4.8)	<0.001	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0.174	
1	210 (15.7)	66 (15.6)	140 (17.4)	4 (3.8)		12 (1.9)	7 (3.2)	5 (1.4)	0 (0.0)		
2	182 (13.6)	64 (15.1)	105 (13.0)	13 (12.4)		45 (6.9)	20 (9.1)	21 (5.9)	4 (5.6)		
3	232 (17.4)	69 (16.3)	148 (18.4)	15 (14.3)		107 (16.5)	39 (17.7)	60 (16.9)	8 (11.3)		
4	255 (19.1)	81 (19.2)	143 (17.7)	31 (29.5)		170 (26.2)	46 (20.8)	102 (28.7)	22 (31.0)		
≥5	327 (24.5)	115 (27.2)	175 (21.7)	37 (35.2)		314 (48.5)	109 (49.3)	168 (47.2)	37 (52.1)		

*We did not have information on age for five callers.

†We had information on race and education for 408 of the 1334 callers.

‡Including scheduled + ad hoc calls.

APT, adjunctive pharmacotherapy; GED, General Educational Development.

Table 2 Characteristics of those contacted and those not contacted at 12 months post-registration assessment

	All n=1334 (%)	Contact at 12 months		p Value
		Contacted at 12 months n=648 (%)	Not contacted at 12 months n=686 (%)	
Age at time of registration in F&C*				
<26	172 (12.9)	55 (8.5)	117 (17.1)	<0.001
26–40	551 (41.5)	252 (39.1)	299 (43.7)	
41–60	547 (41.2)	294 (45.6)	253 (37.0)	
>60	59 (4.4)	44 (6.8)	15 (2.2)	
Sex				
Female	830 (62.2)	400 (61.7)	430 (62.7)	0.720
Male	504 (37.8)	248 (38.3)	256 (37.3)	
Race†				
White	363 (89.0)	185 (89.4)	178 (88.6)	0.793
Non-white	45 (11.0)	22 (10.6)	23 (11.4)	
Education‡				
Less than high school	98 (24.0)	39 (18.8)	59 (29.4)	0.033
High school/GED	145 (35.5)	72 (34.8)	73 (36.3)	
Some college	135 (33.1)	80 (38.7)	55 (27.4)	
College graduate or more	30 (7.4)	16 (7.7)	14 (7.0)	
APT recommended				
None	731 (54.8)	302 (46.6)	429 (62.5)	<0.001
Nicotine patch	518 (38.8)	291 (44.9)	227 (33.1)	
Nicotine gum	18 (1.4)	12 (1.9)	6 (0.9)	
Bupropion	67 (5.0)	43 (6.6)	24 (3.5)	
Number of calls completed‡				
0	128 (9.6)	0 (0.0)	128 (18.7)	<0.001
1	210 (15.7)	12 (1.9)	198 (28.9)	
2	182 (13.6)	45 (6.9)	137 (20.0)	
3	232 (17.4)	107 (16.5)	125 (18.2)	
4	255 (19.1)	170 (26.2)	85 (12.4)	
≥5	327 (24.5)	314 (48.5)	13 (1.9)	

*We did not have information on age for five callers.

†We had information on race and education for 408 of the 1334 callers.

‡Including scheduled + ad hoc calls.

APT, adjunctive pharmacotherapy; GED, General Educational Development.

school, high school, some college, and college graduate or more), all as categorical variables. Age, sex, APT use recommended, and insurance changed unadjusted OR by < 10% and were therefore not included in the final model. We evaluated the insurance specific associations between call completion and quitting tobacco by calculating adjusted ORs for quitting stratified by the three insurance categories: uninsured, Medicaid, and commercial.

RESULTS

We identified a total of 1334 F&C participants from Oregon between 18 November 1998 and 28 February 2000 in the F&C database (423 uninsured, 806 Medicaid, and 105 commercial). All 423 uninsured participants identified in the F&C database registered in F&C through the OQL. For Medicaid participants, 113 registered in F&C through the OQL and 693 registered directly in F&C through their health plan, yielding a total of 806 Medicaid F&C participants. For commercially insured, three registered in F&C through the OQL and 102 registered directly in F&C, yielding a total of 105 commercially insured F&C participants.

Of the 1334 participants enrolled in F&C, we successfully reached 648 (48.6%) participants at 12 months post-registration for the follow up assessment: 221 of 423 (52.2%) uninsured, 356 of 806 (44.2%) Medicaid, and 71 of 105 (67.6%) commercially insured participants ($p = 0.000$).

Table 1 examines characteristics of all participants and of those contacted at the 12 month follow up assessment by insurance status. Most Oregon F&C participants were white (89.0%), female (62.2%), 40 years of age or younger (54.4%), and 24.0% had less than a high school education. Approximately 45.2% intended to use APT as part of their quit process (38.8% intended to use nicotine patches, 1.4% nicotine gum, and 5.0% intended to use bupropion). Most participants

(61.0%) had completed three or more calls, with 24.5% of participants completing five or more calls. Participants who were successfully contacted at 12 month assessment shared similar characteristics of all participants except that they were mostly over 40 years of age (52.4%), fewer had less than a high school education (18.8%), and a higher proportion was recommended for APT use (53.4%). Compared to Medicaid and commercial F&C participants, uninsured participants were more likely to be younger, male, and to have used nicotine patches (table 1). Commercially insured participants were more likely to have higher education, to have used bupropion, and to have completed more calls when compared to the other two insurance categories. The mean (SD) number of calls completed for commercially insured was 3.7 (1.5) v 3.1 (1.7) for uninsured participants ($p = 0.001$), and 2.8 (1.8) for those on Medicaid ($p < 0.001$). These same variations between the three insurance groups existed among those successfully contacted at 12 month assessment except that the insurance groups did not vary by education or number of calls completed.

Participants not reached at the 12 month assessment were significantly different from those reached at 12 months in that they were younger ($p < 0.001$) and less educated ($p = 0.033$) (table 2). They were also less likely to have been recommended for APT ($p < 0.001$), and they completed fewer calls ($p < 0.001$).

Table 3 shows the seven day quit rate at 12 months for all F&C participants ($n = 1334$; treating non-respondents at 12 months as smokers) and for participants whom we successfully contacted at 12 months ($n = 648$). We identified a total of 198 participants who were quit at 12 months. Thus, 30.6% (95% CI 27.0 to 34.3) of individuals who were reached at 12 months were quit. However, when treating non-responders as smokers, 14.8% (95% CI 13.0 to 16.9) were quit. The quit rates

Seven day quit rate*								
Number quit at 12 months	All participants n=1334 (95% CI)	Insurance		Insurance			Commercial n=71 (95% CI)	
		Uninsured n=423 (95% CI)	Medicaid n=806 (95% CI)	Commercial n=105 (95% CI)	All contacted at 12 months n=648 (95% CI)	Uninsured n=221 (95% CI)		Medicaid n=356 (95% CI)
Overall	198	14.8 (13.0 to 16.9)	13.4 (11.1 to 15.9)	24.8 (16.9 to 34.1)	30.6 (27.0 to 34.3)	29.0 (23.1 to 35.4)	30.3 (25.6 to 35.4)	36.6 (25.5 to 48.9)
Number of calls completed†	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	2	1.0 (0.1 to 3.4)	0.7 (0.0 to 3.9)	0.0	16.7 (2.1 to 48.4)	14.3 (0.4 to 57.9)	20.0 (0.5 to 71.6)	0.0
2	6	3.1 (1.2 to 7.0)	1.9 (0.2 to 6.7)	15.4 (1.9 to 45.4)	13.3 (5.1 to 26.8)	10.0 (1.2 to 31.7)	9.5 (1.2 to 30.4)	50.0 (6.8 to 93.2)
3	25	10.8 (7.1 to 15.5)	10.8 (6.3 to 17.0)	13.3 (1.7 to 40.5)	23.4 (15.7 to 32.5)	17.9 (7.5 to 33.5)	26.7 (16.1 to 39.7)	25.0 (3.2 to 65.1)
4	46	18.0 (13.5 to 23.3)	18.9 (12.8 to 26.3)	19.4 (7.5 to 37.5)	27.1 (20.5 to 34.4)	28.3 (16.0 to 43.5)	26.5 (18.2 to 36.1)	27.3 (10.7 to 50.2)
≥5	119	36.4 (31.2 to 41.9)	35.4 (28.4 to 43.0)	43.2 (27.1 to 60.5)	37.9 (32.5 to 43.5)	37.6 (28.5 to 47.4)	36.9 (29.6 to 44.7)	43.2 (27.1 to 60.5)

*Seven day quit rate: being quit for at least 7 days at 12 months—that is, at fifth scheduled call at which caller was contacted. †Binomial exact 95% confidence interval. ‡Scheduled and ad hoc calls

varied by number of calls completed and increased from 16.7% for successfully contacted participants if they have completed one call, to 37.9% if they have completed five or more calls. However, the difference was not significant, as evidenced by overlapping 95% CI for the rates. Similarly, the rates varied by number of calls completed when considering non-respondents as smokers, from 1.0% with completing one call to 36.4% when completing five or more calls. In this group the difference was highly significant, as evidenced by lack of overlap of 95% CI for the rates.

Among those successfully contacted at 12 months, the three insurance categories did not differ significantly in their seven day quit rate at 12 months nor did they differ by number of calls completed. However, the quit rates in general were higher when more calls were completed. This same pattern held true when considering non-respondents as smokers except that, overall, commercially insured (quit rate 24.8%, 95% CI 16.9% to 34.1%) had significantly higher quit rates than those on Medicaid (quit rate 13.4%, 95% CI 11.1% to 15.9%). Furthermore, the quit rates varied significantly by number of calls completed for uninsured and for those on Medicaid. Uninsured who completed 4 or ≥ 5 calls had a significantly higher quit rate than those who completed only one call. Participants on Medicaid who completed 3, 4, or ≥ 5 calls had a significantly higher quit rate than those who completed only one call. The number of calls completed did not significantly vary for the commercially insured group, most likely because of the small sample size as evidenced by the wide CIs.

We further examined the relationship between quitting tobacco and call completion (< 5 (reference group) $v \geq 5$ calls) among those successfully contacted at 12 months using unconditional logistic regression. Among those contacted at 12 months, unadjusted OR showed that participants who completed five or more calls were twice as likely to have quit tobacco as those who completed < 5 calls (OR 2.0, 95% CI 1.4 to 2.8). Upon adjusting for race and education, participants who completed ≥ 5 calls were 60% more likely to have quit tobacco than those who completed < 5 calls, however the difference was not significant (OR 1.6, 95% CI 0.9 to 3.1). Among uninsured, participants who completed ≥ 5 calls were 70% more likely to quit tobacco than those who completed < 5 calls, but the difference was not significant either (OR 1.7, 95% CI 0.9 to 3.5). Among those on Medicaid there was no difference in quit rates by number of calls completed (OR 1.1, 95% CI 0.2 to 5.5). There were very few observations for commercially insured participants and therefore the adjusted OR could not be calculated.

DISCUSSION

Most of our information about the effectiveness of cessation programmes among uninsured and those on Medicaid comes from efficacy trials conducted in a research context. This examination of the real world experience of participants in a phone programme provides valuable information about the actual experiences of uninsured and Medicaid Oregon tobacco users taking part in a comprehensive telephone support programme. The experience was part of a larger public health campaign that involves a telephone quit line advertised with mass media and that attempts to increase availability of services to those without insurance and with low income government supported insurance.

The seven day quit rate for Oregon residents who registered in F&C between 18 November 1998 and 28 February 2000 and whom we could contact at 12 months was 30.6%. The quit rate for all participants with those lost to follow up counted as smokers was 14.8%. The quit rate increased with completing more calls. The lack of significance for the observed difference in quit rates among those successfully contacted at 12 months when completing more calls is most likely due to small numbers, particularly in the lowest categories of call completion.

This is evidenced by the wide 95% CI of the rates. Despite the lack of significance, participants successfully contacted at 12 months and who completed ≥ 5 calls quit at a 60% higher rate than those who completed < 5 calls after full adjustment. Furthermore, those uninsured who completed ≥ 5 calls quit at an even higher rate of 70% compared to those who completed < 5 calls. The increasing quit rates with increasing number of calls is consistent with Wadland *et al* who reported that participants who completed at least four sessions showed higher quit rates than those who did not.¹³ We did not examine the relationship between quitting tobacco and call completion for participants not contacted at 12 months when using logistic regression, because quit status for these participants would have been ascertained at various timelines from registration, depending on the time of last contact.

Self quit rates (that is, quit rates for people who quit on their own without any treatment) vary from 3–5% for smokers from population based samples¹⁴ to 10.8% of participants in research studies.¹⁵ Our reported quit rates for uninsured and participants on Medicaid were consistent with what has been reported in the literature (range 10–42%).^{5–10} Unlike these published studies, our study measured the effectiveness of a real life programme as opposed to a controlled environment of a randomised clinical trial. It should be noted that the quit rate of 14.8% using the intent to treat methodology might be an underestimation of the true quit rate. Some participants might have quit before 12 months follow up and never relapsed and therefore did not respond to the proactive call schedule. Others who were unreachable because their phone number changed or have moved may have been abstinent. In a recent four cell randomised trial comparing different medication doses and levels of behavioural treatment, intent-to-treat quit rates for the two cells using F&C averaged 32% at 12 months, with 85% of participants contacted (Swan GE *et al*, unpublished data, 2002).

It is not possible from this study to determine causality regarding the relationship between number of calls completed and quit rates. Increased quit rates could be caused by increased exposure to an effective intervention, or increased contacts could reflect increased motivation to quit and stay connected on the part of those completing five or more calls, or a combination of both. Nevertheless, attempts to increase compliance with calls may be a way to improve rates in these populations. We plan to concentrate our quality improvement activities on increasing compliance with the call schedule. This will include both an increase in number of attempts made, as well as increased efforts to attain reliable collateral contact information initially and during the programme.

Information on the cost effectiveness of the intervention has been described by Curry *et al*.¹⁶ Furthermore, a randomised clinical trial is currently being conducted at GHC to further examine the best cessation intervention and cost effectiveness of the various intervention approaches.

There were a relatively smaller number of commercially insured F&C participants during the time period of the study. This could be because eligible health plans require a co-pay that may affect the participation rate in F&C programme.¹⁶ Thus, the commercial group participating in F&C might represent a more motivated group of tobacco users and therefore might demonstrate an increased call completion and quit rate compared to uninsured and those on Medicaid.

We recognise that this study has some limitations that constrain the interpretation of the results. First, we had a low participation rate in the 12 month follow up assessment (48.6%). As indicated, the rate of contact has been much higher in the commercial population. This has been our experience in other states as well, where 12 month contact rates for commercial participants ran between 65–90%. We currently do not have a way to readily determine and quantify reasons why most participants do not complete all five calls and are lost to follow up. Our data showed that the commer-

What this paper adds

Most information about the effectiveness of tobacco cessation programmes among uninsured and Medicaid population comes from efficacy trials conducted in a research context. There is little information in the literature on the effectiveness of cessation programmes among uninsured and Medicaid population in a “real world” setting. This study provides information about the experiences of Oregon tobacco users taking part in a telephone support programme available in the state of Oregon as part of a larger public health campaign to increase availability of tobacco cessation services to those without insurance and with low income government supported insurance.

cial population was more likely than the uninsured and Medicaid population to have completed more calls. This could be explained on the basis that uninsured callers and callers on Medicaid were more likely to have moved and to have had disconnected phone numbers compared to commercially insured. Data from a previous survey that we conducted with a sample of OQL callers support this hypothesis (data not presented). Another plausible explanation from results shown in this paper is that those not contacted at 12 months were less likely to have been recommended for APT, which might have been against participants’ expectation and hence lost motivation to complete programme.

Secondly, quit status was ascertained by self report and not by biochemical verification to correct for the possible over reporting of abstinence. Caraballo *et al* analysed data collected from participants in the Third National Health and Nutrition Examination Survey (1988 to 1994) and concluded that self reported smoking status among adult respondents was accurate and that among self reported non-smokers, only 1.4% had serum cotinine > 15.0 ng/ml, the selected cutoff point for identifying smokers in their report.¹⁷ Although self reports of smoking are considered reasonable estimates in large scale epidemiological studies, future studies may benefit from validating smoking using biochemical verification.

Third, ascertainment bias might be an issue in this study because the data were collected in the context of a counselling session by the counsellor rather than by an independent surveyor. We recommend that future studies assess outcomes independently. Lastly, data on the level of addiction and dependence, as well as level of tobacco use, were not available for analysis. These variables are known predictors of continued smoking as well as successful cessation, and future studies should collect and analyse these variables as potential covariates.

Strengths of this study include its population based focus and its retrospective cohort design where participants who registered in F&C in an earlier time period were followed up to capture their quit status. The relatively large sample size allowed for stratification by insurance status and by number of calls completed, although some strata had very small numbers to detect differences between categories.

Future research should focus on conducting large well designed, population based studies to evaluate the effectiveness of available tobacco cessation programmes for the uninsured tobacco users and for those on Medicaid. These “real world” studies could provide better understanding of the determinants affecting quitting tobacco for these special populations. These studies should assess quit attempts, readiness to quit, and barriers to quitting as well as actual quit status. It would be worthwhile to survey a large number of participants independently at a specified time such as six or 12 months post-registration, instead of basing quit status on internal programme data collected by counsellors. It might also be worthwhile considering randomising uninsured

participants and those on Medicaid to receive an intervention that lasts over fewer months versus the standard F&C 12 month programme to reduce the proportion of lost to follow up for this population. Further randomised studies examining the impact of more aggressive attempts to maintain contact with people attempting to quit are indicated, taking into account cost effectiveness considerations.

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ELECTRONIC PAGES

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The following electronic only article is published in conjunction with this issue of *Tobacco Control*.

Cigarette use among male and female grade 8–10 students of different ethnicity in South African schools

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Objectives: To provide data on the prevalence of cigarette use by male and female South African students of different ethnic backgrounds in grades 8–10 (ages ≤ 11 to ≥ 17 years), their age of initiation of cigarette use, as well as their access to cigarettes through underage sales.

Design: A nationally representative survey was conducted using self administered questionnaires translated into seven languages.

Setting: School based.

Participants: Students in grades 8–10 in all of South Africa's nine provinces.

Outcome measures: The prevalence data for current users of cigarettes (smoked on one or more days in 30 days preceding

the survey), and for the age of initiation (first smoking cigarettes before the age of 10) were analysed.

Results: Of the 160 selected schools, 123 schools participated in the survey. The completed survey comprised 6045 of 7074 selected students; 23% of the sample reported being current users of cigarettes. Significantly more males (28.8%) than females (17.5%), and significantly more “Coloured” students than “Black/African” students were classified as current smokers. Sex was the strongest contributor to the prediction of current smoking status. On the issue of age of initiation, 18.5% of students reported having first smoked cigarettes before the age of 10 years with more “Black/African” students than “Coloured” having done so.

Conclusions: In order to tailor tobacco control programmes to the needs of students, historical “racial”/ethnic and sex differences have to be taken into account. Specific determinant studies are needed to understand these differences and to develop appropriate responses.

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