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Proactive, motivationally enhanced smoking cessation counseling among women with elevated cervical cancer risk

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Current treatment guidelines recommend that all smokers be given motivational or action-oriented counseling, as is appropriate to their readiness to quit smoking. The present study assessed the acceptability and impact of a proactively delivered, motivationally tailored phone counseling program targeted to women with elevated risk for cervical cancer. Female smokers with a recent abnormal pap exam or a colposcopy were contacted and invited to participate, regardless of their interest in quitting smoking. Participants were randomly assigned to usual care (UC) or UC plus motivationally enhanced phone counseling (MEC). The intervention was well received: 79% of eligible women enrolled ($n=275$), and 90% completed at least three of four calls. Participation did not vary by baseline motivation to quit. Compared with control subjects, counseling participants were more likely to seek additional treatment services and had a higher 7-day point-prevalence abstinence rate at 6 months (20% MEC vs. 12% UC, $p<.05$). MEC impact was sustained at 12 months, but abstinence increased among the UC group (18% MEC vs. 20% UC, $p=ns$). There was no difference in repeated point-prevalence abstinence at 6 and 12 months (11% MEC vs. 10% UC, $p=ns$). Outcomes were similar in a subgroup of 229 women who, at baseline, were interested in quitting in the next 6 months.

Introduction

Despite declines in smoking prevalence over the past four decades, nearly one-quarter (22.8%) of adults in the United States are regular smokers (Centers for Disease Control and Prevention [CDC], 2003). Most smokers report that they want to quit someday (CDC, 2002), but only a small percentage are ready to do so at any given time. In a recent population-based survey, less than 8% of adult smokers were seriously interested in quitting in the next 30 days and had made a quit attempt in the past year. Nearly two-thirds reported no current interest in quitting (Wewers, Stillman, Hartman, & Shopland, 2003). In other surveys, 37%–42% of smokers had no current interest in quitting (Velicer et al., 1995). These statistics underscore the need for both motivational and action-oriented services. Although effective action-oriented treatments exist (Fiore et al., 2000), effective motivational treatments are lacking (Burke, Arkowitz, & Menchola, 2003). More research in this area has been called for (Fiore et al., 2000).

Motivational treatments pose unique delivery challenges. Even when ready to quit, most smokers fail to seek formal assistance and prefer to quit on their own (Fiore et al., 1990). Thus smokers who are not interested in quitting are not likely to seek treatment. To reach these individuals, motivational treatments need to be proactive. Proactive recruitment is an effective way to reach smokers at all stages of readiness to quit smoking (Curry, McBride, Grothaus, Louie, & Wagner, 1995; McBride, Scholes, Grothaus, Curry, & Albright, 1998; Prochaska, Velicer, Fava, Rossi, & Tsoh, 2001). This approach also is consistent with the current Public Health Service (PHS) clinical practice guideline for treating tobacco use and dependence (Fiore et al., 2000),

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which recommends that all smokers be advised to quit and offered either motivational or action-oriented intervention, based on their readiness to quit. However, it can be difficult to proactively deliver cessation counseling, particularly to individuals not interested in quitting smoking at the point of initial contact. One way to make the intervention more acceptable could be to capitalize on a "teachable moment" such as a relevant health event. It is commonly thought that timing interventions to coincide with these events might increase their effectiveness. Although the evidence for this practice is mixed (McBride, Emmons, & Lipkus, 2003), there is some support for an abnormal pap exam or a colposcopy representing a teachable moment, during which women are more receptive to advice about quitting smoking.

Smoking is causally linked to both cervical cancer and premalignant cervical lesions (U.S. Department of Health and Human Services [USDHHS], 2004), and among those with low-grade cervical abnormalities, quitting smoking can result in healed lesions and lower cervical cancer risk (Szarewski et al., 1996). Most women are not aware of the link between smoking and cervical cancer (McBride et al., 1998), but clearly educating them about this link can increase their readiness to quit (Hall, Bishop, & Marteau, 2003, 2004). Whether such an approach can also translate to enhanced cessation rates when combined with treatment is unclear.

Only one study has addressed this question. McBride et al. (1999) proactively recruited female smokers within 1 month of their pap exams. Women were mailed a self-help cessation kit and called up to three times within 3 months to discuss the relation between smoking and cervical cancer and to encourage use of the quit kit. Cessation rates at 6 and 15 months were no different than in usual care, even when analyses were limited to those women with an abnormal pap result. However, this finding could be the result of the minimal intervention or moderate participation rates (65% read most or all of the self-help materials, and 60% accepted all three calls).

The present study combines the PHS recommendation to provide a motivationally tailored cessation intervention to all smokers with evidence that women may be receptive to quitting when such an intervention is paired with information linking cervical cancer and smoking. Unlike McBride et al. (1999), we targeted women who had recently had an abnormal pap exam or a colposcopy, and we enhanced the intervention by including more counseling calls, extending the potential window for treatment from 3 to 6 months, and actively encouraging women to use all cessation aids available to them through the health care organization or their community.

The purpose of the present study was to determine if women, especially those with no immediate interest in quitting, would be willing to participate in the phone counseling program, whether the program would enhance use of alternative cessation aids, and whether the intervention would affect women's efforts to quit.

Method

Procedure

The study was conducted at Group Health Cooperative (GHC), a staff-model integrated health care organization in western Washington State, with over 550,000 enrollees. Study enrollment ran from March 2000 to September 2003. Data collection was completed in September 2004. The study was approved by GHC's institutional review board.

Potential participants were identified through automated data records. Women were potentially eligible if they were at least 18 years old, their tobacco status had been documented in the past year as a current smoker, or their current status was unknown (i.e., they had no recent documentation of smoking status, regardless of their documentation prior to the past year; known current nonsmokers were excluded), and they had had an abnormal pap smear or a colposcopy within the preceding 2 months. All potentially eligible women were mailed a letter that briefly described the study and provided instructions on how to opt out if they did not want to be contacted further. The remaining women were called within 2 weeks and screened for eligibility. Women were eligible if, in addition to the criteria above, they smoked at least 5 cigarettes/day for the past year; could read, speak, and write in English; had a telephone; and were not currently receiving treatment for smoking cessation. A desire to quit smoking was not required.

Participants were randomly assigned to usual care (UC) or motivationally enhanced counseling (MEC). At 1 week after enrollment, everyone was mailed a packet that contained a letter explaining the association between cervical cancer and smoking and advising women to quit; a self-help booklet (*Clearing the Air*; USDHHS, 1995); and contact information for the Free & Clear program, a comprehensive phone-based smoking cessation treatment program and covered benefit for GHC consumers. In addition, MEC participants received up to four brief calls from a study counselor over the next 6 months. Calls were designed to last approximately 15 min each. Their specific content was individualized based on each woman's readiness to quit smoking, but counselors followed a general content format. Interest in quitting smoking was

assessed at the beginning of each call. If women indicated they had no immediate interest in quitting, the call focused on building and strengthening motivation to quit using the principles of motivational interviewing (Miller & Rollnick, 1991). For example, the counselor attempted to elicit women's personal concerns about smoking and quitting and provide individualized feedback based on these concerns. Whenever appropriate to the discussion, women were reminded of the association between smoking and cervical cancer risk and the beneficial effects of quitting on existing cervical lesions (Szarewski et al., 1996); however, the extent of this discussion varied across women based on their interest in this information. The discussion also focused on other health issues, financial issues, or other salient concerns for each woman. The counselors' intent was to develop a discrepancy between each woman's smoking and her own personal goals. Counselors were trained to be empathic, to handle resistance without confrontation, and to foster the therapeutic relationship by providing positive affirmation (Miller & Rollnick, 1991).

If women indicated they were ready to quit, the discussion focused on action plans for quitting. This included advice on setting a quit date; discussion of how to prepare for quitting; and a discussion of other treatment options including the Free & Clear program, pharmacotherapy, and community resources for quitting. Women were encouraged to use all available, appropriate treatment options in addition to the counseling provided in the present study. If women had already quit smoking, counselors focused on relapse prevention strategies. Following each call, women were sent a brief note recapping major discussion points and reinforcing positive changes. The timing of the next call was negotiated with each woman at the end of the call. For example, if women were not ready to quit, counselors might suggest a follow-up in approximately 3–6 weeks, depending on the woman's availability. More frequent calls were negotiated with women who were ready and preparing to quit, with an attempt to focus calls around women's planned quit dates.

Three female counselors delivered the intervention, although one had contact with only two participants. All counselors were trained in motivational interviewing and smoking cessation treatment prior to making calls. Counselors were debriefed during weekly supervision with the principal investigator. Counselors documented the discussion content, duration, and number of attempts needed to complete each call.

Participants were surveyed by phone at baseline, 6 months postenrollment, and 12 months postenrollment. Interviewers were blinded to participants' randomization status. Follow-up retention was high (96% at the 6-month evaluation, 95% at the 12-month evaluation).

To encourage accurate self-reports of smoking status, we used a modified bogus pipeline. That is, at each follow-up all women were told that they might be asked to provide a saliva or breath sample to confirm their smoking status; however, because of cost considerations, biochemical confirmation of abstinence was obtained only at the 12-month follow-up from nonsmokers. Women were given the option of providing a breath sample in person or returning a salivary cotinine test strip by mail.

Women received a US$10 gift certificate for each survey they completed and a US$20 gift certificate for completing the biochemical confirmation process.

The sample size provided 80% power to detect an 11% difference in abstinence between the treatment groups at 1 year. Prior research in this health care organization found that proactively mailing a self-help booklet to smokers resulted in a 7% point-prevalence abstinence rate at 12 months (Curry et al., 1995). Given the combination of self-help materials, phone counseling, and referrals for pharmacological therapy, as well as additional counseling for MEC participants, we anticipated an 18% abstinence rate in the treatment group.

Measures

The baseline survey included women's demographic characteristics, smoking history (cigarettes per day, years smoked, prior quit attempts, use of prior cessation services), nicotine dependence as assessed by the Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991), self-efficacy for quitting as characterized by the Confidence Questionnaire, Form S (Baer & Lichtenstein, 1988), and stage of change (DiClemente et al., 1991). Follow-up data came from participant surveys and automated data and included these items: Treatment participation (percentage of eligible women contacted who enrolled in the study, the number of counseling calls MEC participants completed, and the average duration of the counseling contacts); quit attempts; 7-day point-prevalence abstinence (no smoking, even a puff, in the last 7 days); and use of adjunct cessation treatment during the study period. Use of pharmacotherapy (nicotine replacement products or bupropion) was assessed by self-report. Enrollment in the Free & Clear program was determined via automated enrollment data.

Data analyses

Baseline characteristics were compared by intervention group using chi-squares for discrete variables

and *t* tests for continuous variables. Analysis of variance was used to test the association between baseline stage of change and number of counseling calls completed. Chi-square analyses were used to compare groups' use of concomitant cessation aids and quit attempts. Abstinence was analyzed using an intent-to-treat methodology. Participants with missing smoking status data were counted as smokers. Abstinence rates by group were determined with chi-square analyses. Logistic regression was used to determine odds ratios and confidence intervals for abstinence effects. Because groups differed in the number of cigarettes smoked at baseline and we expected the intervention would have a differential impact based on participants' readiness to quit, adjusted analyses were conducted that controlled for baseline smoking rate (average cigarettes per day) and baseline stage of change as covariates. Stage of change was entered as a categorical variable with each stage represented as an indicator variable and the preparation stage as the referent. Complete case analyses of abstinence outcomes were also examined. The results were similar to those in the intent-to-treat analyses and are not presented.

Results

Proactive recruitment

A breakdown of the recruitment process is presented in Figure 1. Introductory letters were mailed to 1,610 women. A total of 848 women were screened ineligible. Two-thirds of these ($n=561$) were nonsmokers. Some 173 women refused to be screened and had unknown smoking status; 348 women were screened and eligible to participate. Of these, 54 (15.5%) declined participation, and 19 (5.5%) expressed interest but could not complete the enrollment process at the time of the screening and could not be reached again to complete the baseline survey. A total of 275 (79% of those eligible) were enrolled.

The number of nonsmokers in the sample who were invited to participate was high because we included women who were known to be current smokers and those whose current smoking status was unknown. For the purposes of the present study, unknown tobacco status reflected an absence of smoking status documentation in the past year, regardless of prior smoking status documentation. We could have limited the sample to only known recent smokers and increased the efficiency of the recruitment, but we chose to include women with unknown status to ensure that we reached as many smokers as possible.

Participants

Participant characteristics are presented in Table 1. Women were predominantly young and White, and nearly half were married or living with a partner. Some 45.4% had a high school education or less, 83.3% were employed, and the average household income was less than $35,000. According to GHC records, 14.5% were covered by Medicaid. We found no significant differences between treatment groups in demographic characteristics.

Participants smoked 14.3 cigarettes/day on average. UC participants smoked slightly fewer cigarettes per day than did MEC participants (13.5 vs. 15.1, $p=.05$). Mean FTND score was 3.5, indicating low nicotine dependence (Fagerström, Heatherton, & Kozlowski, 1990). Approximately half (55.6%) reported a quit attempt in the past year, but half (51.3%) denied ever using any form of cessation assistance.

One-third (31.3%) of women were seriously considering quitting in the next 30 days at enrollment

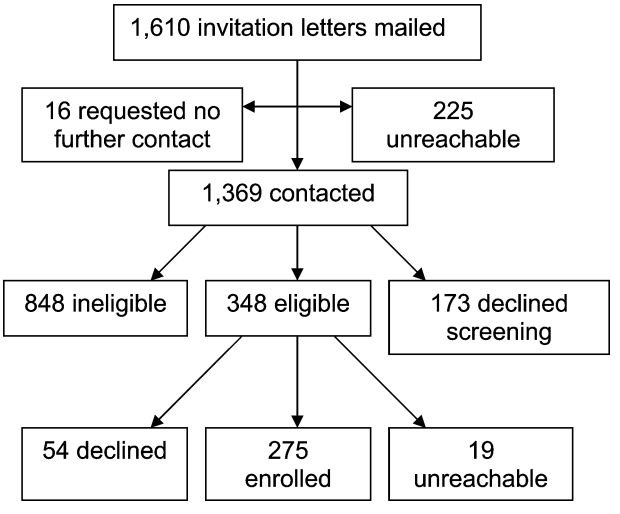

Figure 1. Overview of enrollment activities.

Table 1. Participant characteristics at baseline.

Characteristic	All (n=275)		Usual care control (n=137)		Motivationally enhanced phone counseling (n=138)	
	Number of subjects	%	Number of subjects	%	Number of subjects	%
Married/living with partner	133	48.4	73	53.3	60	43.5
Employed	229	83.3	111	81.0	118	85.5
⩽High school/GED	125	45.4	67	48.9	58	42.0
Household income <US$35 000	168	61.1	86	62.8	82	59.3
Medicaid coverage	40	14.5	20	14.6	20	14.5
Race/ethnicity						
White	225	81.8	110	80.4	115	83.2
Black	13	4.7	8	5.8	5	3.6
Asian/Pacific Islander	11	4.0	6	4.4	5	3.6
Native American/Eskimo/Aleut	5	1.8	4	2.9	1	0.7
Hispanic	4	1.5	2	1.5	2	1.4
Other	17	6.2	7	5.1	10	7.2
Stage of change						
Precontemplation	43	15.6	22	16.1	21	15.2
Contemplation	143	52.0	66	48.2	77	55.8
Preparation	86	31.3	46	33.6	40	29.0
No prior cessation treatment	141	51.3	77	56.2	64	46.7
	Mean (*SD*)		Mean (*SD*)		Mean (*SD*)	
Age (years)	32.7 (11.7)		32.7 (11.4)		32.7 (12.1)	
Cigarettes per day*	14.3 (6.8)		13.5 (6.2)		15.1 (7.3)	
Mean FTND score[a]	3.5 (2.2)		3.3 (2.2)		3.7 (2.3)	
Quit attempts in past year	1.9 (4.9)		1.9 (4.9)		2.0 (5.0)	
Self-efficacy for quitting[b]	5.2 (1.6)		5.2 (1.6)		5.1 (1.7)	

[a]Fagerstrom Test of Nicotine Dependence. Scores range from 0 to 10.
[b]Confidence Questionnaire–Form S. Scores range from 0 to 10.
*p=.05.

and had made a quit attempt in the past year (i.e., preparation stage; DiClemente et al., 1991). Half were considering quitting in the next 6 months but not in the next month (contemplation stage), and 15.6% had no intention to quit smoking (precontemplation stage). We found no significant difference in stage of change across treatment groups.

Participation with the intervention

Participation with the counseling calls was high. A total of 82% of women completed all four calls, and 90% completed three or four calls. There was no difference in call participation by baseline stage of change (precontemplation: M=3.7 calls; contemplation: M=3.6 calls; preparation: M=3.6 calls); $F(2, 135)=.09$, $p=.91$.

Mean call duration was nearly 16 min. On average, it took approximately four attempts to complete each call. Over the course of the intervention, only two participants actively refused to receive counseling calls.

Use of concomitant cessation aids

We examined the impact of the intervention on participants' use of concomitant cessation services. Both treatment groups were referred to Free & Clear following study enrollment; however, significantly more MEC participants enrolled in this program during the 1-year study period (18.8% vs. 8.0%, $p=.009$). A substantial proportion of both groups reported use of nicotine replacement or bupropion during the study period (36.2% MEC vs. 28.3% UC, $p=.18$). Use of "other" cessation aids also was common (10.9% MEC vs. 7.3% UC, $p=.30$). This category reflected any medications or products other than nicotine replacement or bupropion that participants reported using to quit smoking.

Quit attempts

The majority of smokers in both treatment groups reported at least one serious quit attempt (i.e., no smoking for at least 24 hr) during the study period (82.1% MEC vs. 77.5% UC, $p=.36$).

Biochemical verification

At the 12-month follow-up, 52 women who reported abstinence (27 UC, 25 MEC) were asked to provide biochemical confirmation; five completed in-person carbon monoxide (CO) assessment, 35 returned a saliva test strip by mail, and 12 failed to provide biochemical confirmation (7 UC, 5 MEC). All CO values were below 10 ppm and indicative of nonsmoking. Some 26 participants had a saliva test strip value of 0 (⩽10 cotinine equivalents ng/ml), four had

Table 2. Biochemical verification of abstinence self-report at 12 months.

	Usual care control	Motivationally enhanced phone counseling	Total
Number requested[a]	27	25	52
Number not returned	7	5	12
Carbon monoxide (CO) <10 ppm	1	4	5
Cotinine test strip value=0	15	11	26
Cotinine test strip value=1	1	3	4
Cotinine test strip value=2	4	1	5

[a]Number of CO samples or cotinine saliva test strips requested.

Table 3. Abstinence outcomes for complete sample.

		Usual care control (n=137)	Motivationally enhanced phone counseling (n=138)	Odds ratio (95% confidence interval)	
				Unadjusted	Adjusted[a]
6-month follow-up	7-day PPA[b]	12.4%	19.6%	1.72 (0.89–3.32)	2.08 (1.04–4.12)
12-month follow-up	7-day PPA	19.7%	18.1%	0.90 (0.49–1.65)	0.90 (0.49–1.67)
Repeated PPA[c]		10.2%	10.9%	1.07 (0.50–2.31)	1.08 (0.49–2.36)

[a]Analyses adjusted for baseline cigarettes per day and stage of change.
[b]Point-prevalence abstinence (PPA) with missing data counted as smokers.
[c]Seven-day PPA at 6- and 12-month follow-ups.

a value of 1 (10–30 cotinine equivalents ng/ml), and five had a value of 2 (30–100 cotinine equivalents ng/ml). The test strip manufacturer's recommended cutpoint for nonsmoking ($\leqslant$10 cotinine equivalents ng/ml) is more conservative than that which is widely accepted for abstinence (<20 ng/ml; SRNT Subcommittee on Biochemical Verification, 2002). As a result, a cutpoint of 0 may under-represent nonsmokers and a cutpoint of 1 may over-represent nonsmokers. We examined biochemically confirmed abstinence using both 0 and 1 as cutpoints for abstinence and counting missing data as smokers. The magnitude of abstinence in each group was affected, but the relative difference was not (data not shown). A breakdown of CO and saliva test strip values by treatment group is presented in Table 2.

Abstinence

Abstinence was examined by group at 6- and 12-month follow-up (Table 3). At 6 months, more MEC participants than UC participants reported that they had not smoked in the past 7 days (19.6% vs. 12.4%, adjusted OR=2.08, 95% CI=1.04–4.12, p<.05). There were no significant group differences at 12-month follow-up or in the proportion of smokers who reported abstinence at both 6 and 12 months.

Being motivated to quit smoking was not a criterion for study enrollment. Thus we examined abstinence among baseline contemplators and preparers (n=229) to determine if the intervention was any more effective among those participants who stated they were interested in quitting during the 6-month intervention period. The results were similar to those of the overall sample. Significantly more MEC participants quit smoking at 6 months (23.1% vs. 12.5%, OR=2.42, 95% CI=1.17–5.00, p<.05), but no other group differences were found (Table 4).

Post-hoc analyses

Participants in both treatment groups were eligible for and enrolled in GHC's Free & Clear smoking cessation program. We were interested post-hoc in whether the effectiveness of this program was affected by the study intervention. Among women who enrolled in Free & Clear (26 MEC, 11 UC), more MEC participants reported abstinence at 6-month (30.8% vs. 9.1%, p=.16) and 12-month follow-up (38.5% vs. 9.1%, p=.07). When the sample was restricted to baseline contemplators and preparers (23 MEC, 8 UC Free & Clear participants), a similar trend was observed at 6 months (34.8% vs. 0%, p=.05) and 12 months (39.1% vs. 12.5%, p=.19).

Discussion

This randomized controlled trial examined the acceptability and effectiveness of a proactive smoking cessation intervention targeted to women at elevated risk for cervical cancer. The intervention combined brief motivational and action-oriented counseling. It was designed to be applicable to all women, regardless of their interest in quitting, to be consistent with the PHS clinical practice guideline recommendations, and to augment existing treatment efforts within the health care organization and community.

As in the McBride et al. (1999) study, which intervened with women following pap exams, female

Table 4. Abstinence outcomes for baseline contemplators and preparers.

		Usual care control (n=112)	Motivationally enhanced phone counseling (n=117)	Odds ratio (95% confidence interval)	
				Unadjusted	Adjusted[a]
6-month follow-up	7-day PPA[b]	12.5%	23.1%	2.10 (1.04–4.26)	2.42 (1.17–5.00)
12-month follow-up	7-day PPA	21.4%	19.7%	0.90 (0.47–1.70)	0.92 (0.48–1.77)
Repeated PPA[c]		11.6%	12.8%	1.12 (0.51–2.47)	1.16 (0.52–2.58)

[a]Analyses adjusted for baseline cigarettes per day and stage of change.
[b]Point-prevalence abstinence (PPA) with missing data counted as smokers.
[c]Seven-day PPA at 6- and 12-month follow-ups.

smokers were receptive to the proactive intervention. Nearly 80% of eligible women enrolled, 90% of MEC participants took at least three calls, contacts averaged approximately 16 min each, and there was no difference in participation by baseline stage of change. This success is likely related to several factors. First, women were explicitly told that they did not have to want to quit smoking to participate. They only had to agree to speak with a counselor about their smoking habits. Next, the content of the calls was tailored to each participant's interest in quitting. Tailored interventions are more engaging and are perceived as more relevant and credible to participants (Kreuter, Strecher, & Glassman, 1999; Skinner, Campbell, Rimer, Curry, & Prochaska, 1999). The timing of the calls was flexible, so that they could be easily tailored to a woman's interest and availability. Finally, women may have been receptive to the calls because we reached them at a salient moment, shortly after an abnormal pap exam or a colposcopy. The influence of this timing can be debated because we did not assess the impact of these health events on participants' personal risk perceptions, emotions, self-concept, or social role—constructs that have been suggested as key in defining whether an event rises to the level of a true teachable moment (McBride et al., 2003), but there is reason to believe that the intervention had heightened salience. In prior research, educating women about the link between smoking and cervical cancer has been associated with increased readiness to quit (Hall et al., 2003, 2004). A similar impact in this sample could explain women's receptivity to the intervention.

The intervention engaged a different population of smokers than those who tend to independently seek treatment. Smokers who typically enroll in phone counseling programs are ready to quit smoking in the next month, middle-aged, moderate-to-heavy smokers, with a history of numerous prior quit attempts (Bush, Zbikowski, McClure, Mahoney, & McAfee, 2003; Prout et al., 2002; Zhu et al., 2002). In contrast, women in the present study were typically young, light-to-moderate smokers, two-thirds of whom had no immediate intention to quit (precontemplation or contemplation stage of change), and over half of whom had never used any form of cessation assistance. This difference can be partly attributed to our target population. Women receiving routine gynecological exams tend to be younger. However, even among this group we reached lighter smokers and those with no immediate intention to quit (68% of participants). In short, we engaged smokers who were probably unlikely to seek cessation services on their own.

The intervention was designed as a standalone intervention, but women were encouraged to use any concomitant counseling or pharmacotherapy available to them. A substantial proportion of both groups used pharmacotherapy during the study period, but more MEC participants enrolled in GHC's Free & Clear program. Post-hoc analyses suggest the Free & Clear program was more effective among MEC than UC participants, but these results should be viewed with caution because of the small sample sizes.

According to a recent survey of managed care organizations, the majority now offer some form of counseling for smoking cessation (McPhillips-Tangum, Bocchino, Carreon, Erceg, & Rehm, 2004). Since most patients who are referred for cessation treatment fail to follow though with treatment (Lichtenstein & Hollis, 1992; McIntosh, Ossip-Klein, Spada, & Burton, 2000; Thompson et al., 1988), proactive enrollment may be a useful strategy to increase uptake of services in medical settings. Three-quarters of health plans surveyed report that they can identify smokers through means such as enrollment data, health risk appraisals, or telephone surveys (McPhillips-Tangum et al., 2004). These resources offer the potential for creating smoking registries through which treatment can be offered proactively.

Abstinence outcomes were examined at short-term (6 months postbaseline) and long-term (12 months postbaseline) time points. Similar to the findings in McBride et al. (1999), women in the counseling group were slightly, but not significantly, more likely to make a quit attempt during the study period than were UC participants. Unlike that study, however, counseling participants in the present study were

significantly more likely to be abstinent at 6 months. This could be related to the more intensive intervention, which combined four counseling calls with encouragement to use concomitant cessation aids available to women through the health care organization or the community.

The results were the same for the overall sample as for a limited subsample of those who expressed interest in quitting within the next 6 months at study enrollment. In both cases, MEC participants were at least twice as likely as UC participants to quit smoking in the short term. Because of the low demand characteristics of the intervention and the use of a modified bogus pipeline (i.e., participants were told that their smoking status might be biochemically verified), we have reasonable confidence in the veracity of these results.

Treatment effects were washed out by increased abstinence in the UC group at 12 months. The exact cause of this is unclear. One possible explanation is the growing availability of cessation resources in the community. The majority of UC participants were interested in quitting at some point during the study period, 78% made a quit attempt, 28% used pharmacotherapy, and 8% enrolled in Free & Clear. During the study period, Washington state also implemented a free quitline, which was widely advertised. We did not assess use of this program directly, but 7% of UC group members reported use of a cessation aid other than Free & Clear and pharmacotherapy. It is possible that the growing availability of accessible treatments and public awareness of these options contributed to a secular trend of increased abstinence. Another factor could be the intensity of UC smoking intervention offered to all smokers at GHC. Standard clinical care dictates that all smokers be identified, advised to quit, and offered a referral to the Free & Clear cessation program at each clinical contact. A total of 11 UC participants enrolled in Free & Clear during the study period, and only one of these participants was abstinent at the 12-month follow-up, so it does not appear that this program created a treatment confound. However, we cannot rule out the possibility that the UC offered through this study (i.e., advice to quit linked to cervical cancer risk, self-help materials, and treatment referral) had a synergistic effect with the standard clinical care. In retrospect, a no-treatment control group (i.e., true usual care) may have been a better comparator group in this study.

Several additional caveats and limitations should be noted. First, we termed our control "usual care" because each of the components (advice to quit, self-help, and referral to treatment) reflect what should occur in UC. However, our implementation of these components may have been more intensive than what is typically provided in UC. Second, we were unable to confirm whether we truly reached women during a teachable moment. To enhance compliance with the follow-up surveys, data collection was intentionally kept to a minimum. As a result, however, we cannot address whether the intervention altered women's risk perceptions, emotions, self-concept, or timing of their quit attempts—indicators that the treatment created a true teachable moment. If the association between smoking and cervical cancer risk did increase women's interest in quitting, as has been demonstrated in other studies (Hall et al., 2003, 2004), then the results may not generalize to smokers who are not otherwise at elevated risk for disease. But by the same token, this type of intervention could be even more effective among smokers with an existing smoking-related condition (e.g., heart or lung disease) because of the increased relevance of quitting among these individuals. The relative importance of linking this intervention to a salient health event or condition warrants further consideration.

In sum, the present project demonstrated the feasibility of delivering a proactive, motivationally tailored phone intervention to female smokers at increased risk of cervical cancer in a managed care organization. The program was well received and had a positive impact on cessation in the short term. The future viability of this type of approach will depend on its ability to demonstrate greater long-term abstinence than secular trends. This was not demonstrated in the present study, but the results warrant further exploration of this treatment approach and ways in which the effects can be bolstered over time.

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