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Intervention With Parental Smokers in an Outpatient Pediatric Clinic Using Counseling and Nicotine Replacement

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ABSTRACT. *Objective.* To evaluate the feasibility of implementing a smoking cessation intervention for parents at the time of the pediatric visit.

Methods. A prospective cohort of smoking parents whose child was seen in an outpatient pediatric practice was offered the Stop Tobacco Outreach Program, which includes 3 brief counseling sessions, written materials, free nicotine replacement therapy (NRT), proactive referral to a free state telephone quitline, and fax referral to the parents' primary clinician. The primary outcome was completion of all three counseling sessions. Other outcomes were quit attempts, cessation, NRT use, state quitline use, and household smoking assessed at 2-month follow-up.

Results. One hundred fifty-eight smoking parents met eligibility criteria and 100 (63%) enrolled in the study. Of the 100 enrollees, 81% completed all three counseling sessions and 78% accepted free NRT at the time of enrollment. At 2-month follow-up, of the 100 enrollees, 56% reported making a quit attempt of ≥ 24 hours, 18% reported 7-day tobacco abstinence, 34% used NRT, and 42% received additional counseling from the state telephone quitline. The mean number of cigarettes smoked inside the home and car declined over 2 months (home, 5.1 vs 1.4; and car, 2.5 vs 1.4).

Conclusions. This study demonstrates the feasibility of engaging parents in a smoking cessation intervention at the time of a child's clinic visit. This approach may be an effective way to reach smokers who otherwise are unlikely to access smoking cessation interventions. High rates of program enrollment, use of NRT, and completion of telephone counseling in this study support the hypothesis that a child's clinic visit is a teachable moment to address parental smoking cessation. *Pediatrics* 2003; 112:1127–1133; *parent, smoking, tobacco, smoking cessation, tobacco control, proactive, telephone counseling, nicotine replacement therapy, pediatrics, outpatient, clinic, environmental tobacco smoke, secondhand smoke, respiratory illness, asthma.*

ABBREVIATIONS. ETS, environmental tobacco smoke; PCP, primary care provider; S.T.O.P., Stop Tobacco Outreach Program; NRT, nicotine replacement therapy.

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More than 40% of children in the United States are exposed to environmental tobacco smoke (ETS) at home,¹ placing these children at increased risk for asthma, respiratory tract infections, decreased lung growth, decreased exercise tolerance, and sudden infant death syndrome.^{2–5} Exposure to environmental tobacco smoke places spouses at risk for myocardial infarction, lung cancer, and, in exposed women, poorer pregnancy outcomes.^{6–10} Parental smokers themselves have a high risk of smoking-attributable morbidity and mortality and gain tremendous health benefit from quitting at a young age.^{11,12} Parents who smoke 1 pack per day spend approximately \$2000 per year on cigarettes, worsening the cycle of poverty for families.¹³ Parental smoking increases the chance that children will become smokers, and earlier parental quitting is associated with a decreased risk of smoking in adolescence.^{14,15}

The health care system is a key channel for delivering tobacco control interventions. Much research has been done on enhancing the provision of evidence-based tobacco control in the adult hospital and primary care settings.^{16–21} Identifying acceptable opportunities to intervene with parents who smoke is a challenge. Young adult parents may lack health insurance and often do not have a primary care provider (PCP).^{22,23} Parental smokers often see their child's health care provider much more frequently than their own, because children have an average of >4 pediatric visits per year, and 10 visits in the first 2 years of life.^{24,25} Therefore, pediatricians are in a key position to influence parental smoking behavior in a repeated and consistent manner.

Several randomized, controlled trials, focusing entirely on cessation, have tested the efficacy of counseling parents in the outpatient setting. These trials have shown either small but significant increases in cessation rates compared with controls^{26,27} or no effect.²⁸ Other counseling interventions for parental smokers during the postpartum period,^{29–31} among parents of children with asthma,^{32–35} or in primary care settings^{36–38} have shown some successes with ETS reduction but not with parental cessation.

We previously had demonstrated the feasibility of engaging parents in a comprehensive smoking cessation intervention that included tobacco-dependence medications at the time of child hospitalization for respiratory tract illness.^{23,39} We hypothesized that a similar opportunity existed in outpatient pediatrics

to provide tobacco-dependence medications coupled with enrollment in telephone counseling for parents at the time of their child's outpatient pediatric visit. No previous studies have examined the delivery of proactive telephone counseling and nicotine replacement for parental smokers identified in the outpatient pediatric setting. This article describes a prospective cohort study to test the feasibility and short-term efficacy of a comprehensive parental smoking-cessation program for the outpatient pediatric clinic. Other outcomes included smoking behavior inside the home and car, attitudes about the dangers of ETS exposure, and parent satisfaction with the program.

METHODS

Sample

We drew a consecutive sample from all parents of children with any potentially smoking-exacerbated or smoking-attributable conditions seen at the Boston Children's Hospital outpatient clinic (Pediatric Health Associates) from December 1, 2000 to March 9, 2001. Eligible parents were current smokers who had a child with a potentially smoking-exacerbated or smoking-attributable illness who was there for a clinic visit of any type, had a telephone at home, and spoke English. We identified potentially eligible parents through parent interview in the clinic waiting room by using the question, "Does either parent or any member of the household smoke cigarettes?" Only parents who smoked cigarettes and accompanied the child to the visit were eligible for participation in the study. If the accompanying parent or guardian of the child smoked cigarettes, we asked if the child had any of the following conditions: asthma, wheezing, cough, bronchiolitis, pneumonia, other respiratory tract illness, cold, runny nose, allergies, or ear ache. In situations where the parent arrived with more than 1 child, we collected data about the child with one of the above-mentioned conditions. When more than 1 child had one of the above conditions, we collected data on one of the eligible children selected at random. Eligible parents were offered the chance to participate in a free smoking-cessation program.

Intervention

The intervention was based on pilot work in the inpatient setting showing that initial counseling in the hospital and follow-up telephone interventions were acceptable to parents and feasible at the time of a child's hospitalization.^{23,39} All parents who met eligibility criteria and agreed to participate received a modified version of the Stop Tobacco Outreach Program (S.T.O.P.) intervention. The intervention included an initial 10-minute face-to-face counseling session conducted in the clinic, provision of specialized written materials, 2 weeks of free nicotine replacement therapy (NRT; parent's choice of gum or patch), 2 follow-up telephone counseling calls, a note faxed to the parent's PCP, and proactive referral to the Massachusetts Smoker's Quitline⁴⁰ for ongoing telephone counseling. We modified S.T.O.P. in 2 ways based on parental feedback and results of our inpatient study. First, we dispensed 2 weeks of NRT rather than a 1-week course. Second, we used a proactive referral to the Massachusetts Quitline rather than giving instructions to call the Quitline. Simply giving instructions to call the Quitline yielded very low rates of calling.²³

The counseling session included the techniques of motivational interviewing, a general approach that uses the subject's own attitudes and beliefs about harmful behaviors to motivate behavioral change.⁴¹ The materials provided at the initial interview session were from the S.T.O.P. library. The library consists of 25 separate 1- to 2-page sheets of information designed to respond to the specific concerns raised by parents during the interview. Each parent received a maximum of 5 sheets from the library on topics that came up during the initial interview, including skills and resources needed to quit. In general, when a parent had a specific concern about smoking, a sheet addressing that concern was provided. Examples of frequently used sheets from the S.T.O.P. library include "the dangers of secondhand smoke," "smoking cost calculator," "ingredients of cigarettes," and "health benefits of quitting time-line."

Two 15-minute follow-up counseling calls were made 5 and 10 days after the initial interview by the same counselor who had provided the initial motivational interview. Five attempts were made to contact the participant. The purpose of these calls was to monitor the participant's progress toward quitting, to conduct an additional brief motivational interview, and to encourage the parent to continue working toward the goal of quitting.

A note was sent by fax to the parent's PCP. This note described the parent's enrollment in the S.T.O.P. initiative and asked the provider to schedule an appointment with the parent to discuss his or her smoking. The note indicated the parents' stage of readiness to change and his or her smoking behavior, and it briefly described the types of messages that are important to reinforce for that stage.⁴² The note also described the need to discuss prescription pharmacotherapy with the parent. The major costs to run a program similar to this S.T.O.P. initiative would include approximately 1 hour of counselor time per patient, duplicating materials, and 2 weeks of NRT if not covered by the parent's insurance company.

Measures

The primary aim of the study was to test the feasibility of enrolling parental smokers in a cessation program at the time of a child's visit to the primary care clinic. The primary outcome was completion of the 3 counseling sessions as assessed from the counselor's records. Secondary outcome measures assessed at 2-month follow-up were parent's self-reports of quit attempts lasting 24 hours, tobacco abstinence for the past 7 days, smoking behavior inside the home and car, attitudes about the dangers of child ETS exposure, and satisfaction. Baseline measures collected during the initial session before counseling included gender, age, race, education, smoking history, degree of nicotine dependence,⁴³ readiness to change,⁴² smoking behavior inside the home and car, and attitudes about the dangers of child ETS exposure. All questions used in this study were used previously in our inpatient study.²³ The 4 questions used to assess smoking behaviors inside the home and car have not been validated, but substantial agreement was found between reported maternal recollection of ETS exposure in the home during the past week and a biochemical indicator of passive smoking.⁴⁴ The 1-month period for parental recall used here was also used in a large ETS-reduction study to assess tobacco control practices during this longer period.³⁷ We are not aware of any reliability and validity testing for questions that use a 1-month recall period. The questions used to assess attitudes about parental ETS exposure were adapted from a set of questions originally used in a previous study to assess outcome and efficacy expectations around parental ETS exposure and were tested for reliability only in that context.⁴⁵

At 2-month follow-up, a research assistant who was unknown to the participants, contacted each participant by telephone and completed a scripted interview to assess secondary outcome measures. Participants were considered lost to follow-up after 5 failed attempts to contact the subject during a 2-week period.

Data Analysis

SAS Version 8.0 (SAS Institute, Cary, NC) was used for all analyses. The primary outcome was the rate of completing the 3 counseling sessions among enrolled parents. Bivariate analyses (χ^2 and Fisher exact test) were used to compare both completion of the program and tobacco abstinence in subgroups of participants categorized by readiness to change and by demographic variables (gender, age category, race, and education). For calculations of smoking cessation rates and 24-hour quit attempts, participants lost to follow-up were considered smokers who did not make a quit attempt. Behavioral outcomes were compared with baseline values with use of a repeated measures, paired comparison test (McNemar's). Means for participant attitudes about child ETS exposure were calculated at baseline and 2-month follow-up. Scores were not normally distributed; therefore, the nonparametric Wilcoxon signed-rank test was used.⁴⁶ Mean satisfaction with the program was calculated. The Boston Children's Hospital Committee on Clinical Investigation (Institutional Review Board) reviewed and approved this study. Informed consent was obtained from all study subjects.

RESULTS

Of 1102 parents screened, 158 (14%) were smokers who met eligibility criteria and were offered the program. The 14% is probably an accurate assessment of current smoking rates in this Massachusetts clinic population, given that more than half of the parents are Latino and Asian women who are reported to have much lower rates of smoking than the general population.⁴⁷ All children of smokers had a “potentially smoking-exacerbated or smoking-attributable condition,” and therefore no parents were excluded on that basis. Of the 158 parents, 100 (63%) consented to the study and enrolled. Table 1 presents characteristics of the 100 children of these 100 enrolled parents. About half of the children had current symptoms of wheezing or a past history of asthma. The majority had public insurance (77%). Table 2 presents characteristics of the 100 enrolled parents at baseline. The majority of the sample was black, reflecting the demographic make-up of smokers in the outpatient clinic. Only 19% had ever participated in any smoking-cessation program despite having smoked for an average of 14 years. Half of parental smokers believed that their own smoking was related to the child’s current illness, and the majority was in the preparation stage of readiness to change.

Table 3 presents use of the various program components. Eighty-one percent of enrollees completed all three counseling sessions and 78% received a 2-week course of free NRT, as assessed from the counselor’s logbook. Seventy-eight percent of enrollees had a PCP and 68% agreed to have a letter faxed to that PCP. Use of other program components was assessed at a 2-month follow-up in the 65 participants who could be reached. Complete follow-up surveys were obtained for 63 participants. Of the 35 without 2-month follow-up, 21 could not be reached at the given phone number, 10 had disconnected phone lines, and 4 were contacted but refused the interview. Baseline characteristics of smokers followed up at 2 months ($N = 65$) were not significantly different from those not followed up at 2 months

TABLE 1. Characteristics of Children With Enrolled Smoking Parent

Characteristic	$N = 100$ (%)
Age, y (mean \pm 1 SD)	5.6 \pm 3.8
<1	11
1–4	36
5–10	37
11–15	16
Visit type	
Well-child visit	53
Urgent care visit	47
Diagnosis*	
Current wheezing or past history of asthma	45
Cold, runny nose, or upper respiratory tract infection	17
Other smoking-attributable illnesses	38
Insurance status	
Public	77
Private	23

* Only parents of children with smoking-attributable illness were eligible to participate in the study. Other categories included pneumonia, bronchiolitis, otitis media, cystic fibrosis, and allergies.

TABLE 2. Characteristics of Enrolled Parental Smokers at Baseline

Characteristic	$N = 100$ (%)
Female	82 (77 mothers)
Male	18 (15 fathers)
Age, y (mean \pm 1 SD)	33 \pm 8
18–24	13
25–35	53
>35	34
Education	
Less than high school	14
High school graduate	49
Some college	24
College graduate	13
Race and ethnicity	
Black	60
White	16
Hispanic	12
Other	12
Smoking history	
Years smoked (mean \pm 1 SD)	14 \pm 9
Daily cigarette consumption (mean \pm 1 SD)	10 \pm 6
First cigarette within 30 min of awakening	57
Quit attempt in past year (24 h)	66
Prior ever use of tobacco-dependence medication	31
Patch	18
Gum	15
Bupropion (Zyban)	10
Prior ever use of smoking-cessation program (any)	19
Group	12
Individual	8
Telephone counseling	3
Previous tobacco counseling by provider	
Parent’s PCP (ever)	59
Child’s PCP (ever)	20
Stage of change*	
Precontemplation	4
Contemplation	27
Preparation	69

* Stages of change for current smokers include “precontemplation” (those not ready to quit in the next 6 months), “contemplation” (those thinking about quitting in the next 6 months), and “preparation” (those seriously planning to quit in the next 30 days).

($N = 35$; all $P > .05$). Of the 78 parents with a PCP, one-third saw their PCP to discuss smoking by the 2-month follow-up. More than one third of those enrolled used NRT, 44% of those who had received it, and 42% received additional counseling from the free state quitline after the 2 counselor-delivered telephone counseling sessions. Among the 38% of parents who reported use of NRT or bupropion during the study, 61% had not previously used any tobacco-dependence medication.

Fifty-six parents reported making a quit attempt that lasted 24 hours in the 2 months after enrollment. This number is 86% of those reached at 2 months. Eighteen parents reported 7-day abstinence at 2-month follow-up (18% of all 100 enrolled parents and 28% of parents reached for 2-month follow-up).

Tables 4 and 5 present behavior and attitudes about smoking in the home and car at baseline and 2-month follow-up. Parents reported smoking fewer cigarettes in the home and car at 2-month follow-up ($P < .001$). Parental attitudes about the harms of

TABLE 3. Use of Program Components

Characteristic	N = 100 (%)
Completed all counseling sessions*	81
Nicotine-replacement therapy	
Accepted NRT at time of enrollment	78
Patch	51
Gum	27
Used NRT (after enrollment)	34
Purchased additional NRT (after enrollment)	8
Reported use of bupropion (since enrollment)	4
PCP referral	
Parent has PCP	78
Agreed to have letter faxed to PCP	68
Saw PCP by 2-month follow-up (to discuss smoking)	26
Agreed to have letter faxed to child's PCP	92
Saw child's PCP by 2-month follow-up	32
Permission given for proactive quitline referral	60
Received counseling from the quitline	42

* Completion defined as participation in all three counseling sessions.

passive smoke exposure in the home and in the car increased significantly. These changes remained significant when we analyzed only those parents who continued to smoke.

Program completion did not vary by readiness to change or by gender, age, race, and education. However, 2-month tobacco abstinence did vary by the stage of readiness to change; 89% of the 18 quitters were in the preparation stage at baseline, whereas 2 quitters (11%) were in the contemplation stage ($P = .02$).

At 2-month follow-up, the majority of parents (89%) thought that the program was useful "a lot" or to "a great extent," whereas another 11% thought that the program was "somewhat" useful. However, 100% of parents thought that all parents who smoke should be offered this program.

DISCUSSION

This study demonstrates the feasibility of engaging parents in a comprehensive smoking cessation intervention that meets U.S. Public Health Service clinical guidelines for tobacco treatment.¹⁶ The intervention included in person and telephone counseling, the provision of free NRT, and proactive referral to a free state quitline at the time of their child's clinic visit. A majority of parents who were offered the program enrolled in it and 81% of enrollees completed two follow-up telephone counseling sessions that were offered. Completion of the program did not vary by gender, age, race, education, or stage of change, indicating broad appeal for this approach. The parental enrollment and counseling completion rates in this study were similar to the rates achieved in our prior inpatient study performed at the time of child hospitalization for respiratory tract illness.²³ However, in that previous study, only 7% of parents called a free quitline after the scheduled telephone counseling sessions had been completed.²³ Here, using a proactive referral strategy, we had a sixfold increase in those receiving counseling from that same quitline.

The program reached smokers who previously

had not used smoking-cessation programs. Despite averaging >14 years of smoking, fewer than 1 in 5 enrollees had previously participated in any smoking-cessation program and fewer than 1 in 3 had used NRT previously. The majority of the 34% who used NRT in this study had never used any tobacco-dependence medication before. In general, these parents had low incomes, and the majority of their children had public health insurance. The baseline characteristics of our sample highlight the underserved nature of the population and may help explain the low rates of previous cessation program and NRT medication use. Offering these services in the context of a pediatric office visit may be an effective way to reach this group of smokers with poor access to cessation services.

The program may have been successful in changing parental smoking behavior. At 2-month follow-up, more than half of the parents reported making a quit attempt that lasted at least 24 hours and about 1 in 5 reported tobacco abstinence. Participants in this study likely exceeded the background quit rate of U.S. smokers (2% to 3% per year),⁴⁸ but the absence of a control group makes it impossible to be certain that cessation rates exceeded those attainable without a program. In another study, background quit rates appeared to be lower for parents (2% to 3%) than for smokers in the general population (5% to 7%).⁴⁹ It is possible that parents who bring their child to the clinic will stop on their own without any intervention, although this has not been our experience. The short follow-up period also argues against even a strong secular trend explaining these results. The most likely possibility is that the program increased cessation attempts and short-term tobacco abstinence.

Exposure of children to secondhand smoke was often covered during the counseling sessions. At follow-up, parents reported smoking significantly fewer cigarettes in the house and car. Recent studies suggest that parental report of their own smoking as a source of children's exposure correlates well with biological measures of smoke exposure, suggesting that providers can obtain important and accurate information about the harmful exposure of children.⁵⁰⁻⁵² Significant attitude change occurred in terms of the harms associated with ETS exposure, irrespective of parental smoking status. Ceiling effects might explain lack of change for parental attitudes about "others' smoking while close to your child" and "tobacco smoke exposure in public places."

The percentage of parental smokers who were at an advanced stage of readiness to quit exceeded rates in the general population of smokers.⁵³ There are several possible explanations for this finding. A child's clinic visit might increase parental readiness to quit because of a desire not to harm the child. All parents in the study had a child with at least one symptom or condition that was referable to the parent's smoking. Alternatively, we sampled a population who might be afraid of removal of children from the home by the Department of Social Services and, therefore, may be more likely to state that they are

TABLE 4. Parental Smoking in the Home and Car at Baseline and Follow-up

	Baseline* N = 63	Two-Month Follow-up N = 63	P‡
No. of cigarettes inside home per day			
Weekday (± 1 SD)	5.1 (4.9)	1.4 (3.6)	<.001
Weekend (± 1 SD)	5.8 (5.6)	1.5 (3.2)	<.001
	N = 40 with cars	N = 40 with cars	
No. of cigarettes in car per day			
Weekday (± 1 SD)	2.5 (2.9)	1.4 (2.8)	<.001
Weekend (± 1 SD)	2.3 (2.7)	1.6 (2.9)	<.001

* This column represents the mean baseline response of those parents who were followed-up at 2 months.

‡ McNemar test used for these nonparametric paired comparisons.

TABLE 5. Parental Smokers' Attitudes

Attitudes	Baseline* (N = 63)	Follow-up (N = 63)	P‡
How much does smoking in the car affect health of children? (1 = not at all, 5 = great extent)	4.54	4.76	.015
How much does smoke in the household affect health of children? (1 = not at all, 5 = great extent)	4.35	4.65	<.001
How important is it that people not smoke in the some room as your child? (1 = not at all; 5 = great extent)	4.68	4.89	.015
How important is it that people not smoke in the same car as child? (1 = not at all, 5 = great extent)	4.60	4.90	.001
How important is it that people not smoke in the same house or apartment as your child?	4.29	4.79	<.001
How important is it that people not smoke while holding or sitting close to your child?	4.78	4.94	.056
How important is it to keep child away from cigarette smoke in public places such as restaurants and shopping malls (1 = not at all; 5 = great extent)	4.48	4.62	.178

* This column represents the mean baseline response of those parents who were followed-up at 2 months.

‡ Wilcoxon signed-rank test was used for "Attitudes" because scores are not normally distributed and small sample size prohibits parametric comparison.

ready to quit due to a social desirability bias. Last, some of the parents may have wanted the free NRT and overstated their readiness to quit, not realizing that it was offered to every parent for free, irrespective of stage of readiness.

This research extends previous work on parental smoking cessation and ETS reduction.^{23,26–38,54,55} Previous studies in a variety of settings using primarily counseling and provision of written materials to effect parental cessation have had some success,^{26,27} no effect,^{28,31,38} or were inconclusive due to the lack of a control group.^{54,55} Recent studies using counseling and provision of written materials have proven successful in reducing ETS exposure of children.^{32,33,36,37}

This is the first study to provide NRT directly to smoking parents in the outpatient pediatric setting. We reported no adverse events related to the use of this approach. We received no complaints from parents' PCPs about distribution of this over-the-counter medication to their patients without prior consent. This parental smoking cessation study is also the first to couple counseling with NRT, proactive telephone quitline enrollment, and referral to the parent's primary care physician. This more comprehensive strategy is currently supported by compelling evidence that NRT, centralized quitlines, and primary care advice to quit have been shown to independently increase quit rates in adults.^{16,56–60}

In addition to the lack of a control group, this study has other limitations. We assessed smoking status by self-report. Self-reported quit rates are accurate in some studies but may not be reliable in situations where study subjects received substantial interventions.⁶¹ The interview format may have increased the likelihood of socially desirable answers, and parents may have learned the politically correct answers over time. However, the majority of parents admitted to smoking inside the home, which indicates an opportunity to give socially undesirable answers. This clinic is not representative of all clinics that care for children; the low levels of education, high levels of public insurance, and racial diversity are more than in other parental tobacco control studies.^{34,36}

This study demonstrates the feasibility of engaging parents who smoke in smoking cessation interventions at the time of their child's outpatient clinic visit. The high disease burden of tobacco use and the low prior use of medications and counseling in this population highlight the need for exploring all promising options to reach these young adult parental smokers. Significant rates of enrollment, completion of counseling, use of NRT, and subsequent connection to ongoing counseling in this study suggest that the pediatric clinic may provide a key opportunity to address parental smoking by methods that have proven effective in other settings.

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NOW THAT THE U.S. HAS AN 80-HOUR WEEK FOR TRAINEE DOCTORS

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A more dramatic change will occur in a year's time when the EU working-time directive is finally extended to include junior doctors. The NHS has until 2009 to cut the maximum working week to 48 hours. But from August 2004, on-call time will be counted as working hours, so the reduction in medical cover will be substantial.”

Economist. July 19, 2003

Noted by JFL, MD

Intervention With Parental Smokers in an Outpatient Pediatric Clinic Using Counseling and Nicotine Replacement

Jonathan P. Winickoff, Valerie J. Buckley, Judith S. Palfrey, James M. Perrin and Nancy A. Rigotti

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