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Children with Chronic Lung Disease: Facilitating Smoking Cessation for their Caregivers

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Abstract

BACKGROUND & OBJECTIVES—Through a QI project at a tertiary referral pediatric pulmonary center, our objective was to establish a methodical approach to identify and engage smoking parents of children with chronic lung disease in a smoking cessation program. We hypothesized that smoking caregivers of children with chronic lung disease would be more motivated to enroll in a smoking cessation program when referred from tertiary pediatric pulmonary center.

METHODS—We assessed smoking habits and interest in quitting of parents with surveys. Parents ready to quit within 30 days were referred to the Florida Quitline from clinic. Pulmonary function tests, exacerbations, hospitalizations and need for prednisone or antibiotics were obtained from the patient charts and surveys. Follow-up two to six months later assessed the quit rate and child's clinical well-being and lung function.

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Aleksandra Bacewicz has NO conflicts.

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Contributors Statement Page

Aleksandra Bacewicz, MPH: Ms. Bacewicz conceptualized and designed the study, collected data for the study, drafted the introduction and discussion of the initial manuscript, and approved the final manuscript as submitted.

Wei Wang, MS: Ms. Wang collected and analyzed data for the study, drafted the results section of the initial manuscript and approved the final manuscript as submitted.

Judy Ashouri, MPH: Ms. Ashouri collected and analyzed data for the study, drafted the methods section of the initial manuscript, and approved the final manuscript as submitted.

Mai K. ElMallah, MD: Dr. ElMallah conceptualized and designed the study, supervised data collection, analyzed data for the study, reviewed and revised the manuscript, and approved the final manuscript as submitted.

RESULTS—A standard mechanism to identify caregivers who smoked was established by engaging our medical assistants through a prompt in our EMR system. Out of those caregivers who were identified as smokers and accompanied their children to clinic, 52% were interested in a referral to the Florida Quitline. Out of those, only 12% successfully completed the program and ceased to smoke. The Florida Quitline was unable to reach the majority of parents who were referred to them.

CONCLUSIONS—The majority of those referred to the Quitline were not successfully contacted or enrolled in the program. The current procedure for referring and enrolling individuals to the Quitline is not effective for our population, but compares to the national average.

Keywords

Second Hand Smoke; Quitline; Smoking Cessation; Pediatric chronic lung disease

INTRODUCTION

In the United States, approximately 54% of children aged 3–11 and 47% of those aged 12–19 years are exposed to secondhand smoke (SHS) (1). SHS exposure negatively impacts respiratory health in healthy children and in children with chronic pulmonary diseases, such as asthma and cystic fibrosis (2–5). For example, passive exposure to tobacco smoke adversely affects the growth and health of children with cystic fibrosis (CF) (5). In addition, SHS exposure is a main risk factor for poor lung function, long term negative sequelae on lung function, and a significant increase in the number of pulmonary exacerbations and pulmonary-related hospitalizations in children with CF (2–4, 6). Maternal smoking during pregnancy is associated with a significantly lower forced expiratory volume in one second (FEV1), height and weight percentile relative to children whose mothers did not smoke (7). Moreover, in asthmatic pediatric patients, exposure to SHS often results in poorly controlled asthma with increases in school absence, emergency care, and hospitalizations (8). SHS also increases wheezing and wheezing-related emergency department visits (9).

Young children with asthma or CF are especially at high risk for SHS exposure within their homes, as up to 90% of their time is spent at home. In addition, parents who smoke one pack per day spend roughly \$2000 per year on cigarettes, worsening the cycle of poverty for families. Moreover, parental smoking increases the chance that children will become smokers, and earlier parental quitting is associated with a decreased risk of smoking in adolescence (10).

Pediatric health care providers play a key role in addressing SHS exposure in a child's environment and its relation to their respiratory problems, and caregivers find it easier to quit when encouraged by a health care provider (11). There is currently no program in place at the Pediatric Pulmonary Clinic at UFHealth to encourage caregiver enrollment in a smoking cessation program. Therefore, we implemented a quality improvement (QI) project to establish a protocol to easily identify and enroll smoking caregivers in the Tobacco Free Florida program. The smoking cessation programs of Tobacco Free Florida are accessible and flexible with many smoking cessation options including internet resources, a representative on the phone, or face-to-face. Although recent studies have found that

referring parents to the Quitline, or enrolling them directly from a busy primary pediatric setting have been disappointing (12–15), others have shown that when a child is hospitalized with a respiratory illness, parents are more likely to enroll in a smoking cessation program (16). Thus, we hypothesized that in a tertiary care pediatric pulmonary center where children are referred after prolonged bouts of respiratory problems or because of chronic lung diseases, motivation for participation in smoking cessation programs would be greater. The aims of our study were twofold: 1) to implement and establish an easy referral method to a smoking cessation program in a tertiary pediatric pulmonary clinic, and 2) encourage and assist parents of children with chronic lung disease to enroll in a smoking cessation program.

PATIENTS & METHODS

The study was approved by the University of Florida Institutional Review Board (IRB) and conducted between March 2013 and August 2013 in the Pediatric Pulmonary Clinic at UFHealth, a tertiary care clinic serving the northeastern part of Florida. The clinic averages 3000 visits per year with 66% of our population insured by Medicaid. Study participants were selected among caregivers of patients who sought health care at the UFHealth Pediatric Pulmonary Clinic. Patients included those with a primary diagnosis of asthma, cystic fibrosis, or other pulmonary disease. Caregivers who accompanied the patient to the clinic visit were asked for consent. They were then asked to complete a questionnaire during the visit, which included questions regarding their current smoking habits, interest in quitting, interest in referral to the Florida Tobacco Free Quitline, as well as questions regarding the patient's recent pulmonary health status (ex. asthma exacerbations, need for prednisone, need for antibiotics). Those who stated they (or another member of the household) smoked were given a brochure for the Florida Tobacco Free Quitline and if they expressed the desire to quit within the next 30 days, were asked to fill out a referral form. Completed referral forms were faxed from the clinic to the Quitline, who then contacted the caregiver regarding smoking cessation services. Participants who returned for a subsequent clinic visit were given a follow-up survey two months after administration of the initial survey regarding current smoking habits, enrollment in a smoking cessation program, as well as the same questions regarding the patient's current pulmonary health status that were on the initial survey. If the caregiver who came to the first visit did not attend the follow-up visit, the caregiver who initially filled out the survey was contacted via phone. Survey data was assessed using statistical methods to determine baseline characteristics and to look for changes in interest in quitting, smoking cessation effectiveness, and potential effects of smoking cessation on the pulmonary health status of the patient. In addition, we called participants who had been referred to the Quitline and had not returned to clinic within the two month follow-up period to survey current smoking habits, their feelings on the Quitline and its effectiveness, and assess any barriers to enrollment and smoking cessation. Baseline measures collected during the initial session included gender, age, race, smoking history, readiness to change, and smoking behavior around the child.

A modified version of the CEASE smoking cessation protocol was utilized for our project. The original CEASE method is based on the 5 A's of smoking cessation (Ask, Advise, Assess, Assist, and Arrange), in which the health care provider asks about the smoking status of the participant, advises the participant with a statement such as "I strongly advise

you to quit smoking and establish a smoke free home and care, and I can help you,” assess the participant’s readiness to quit, provides brief counseling and medication prescription, and then refers the patient to the Try-To-Stop-Tobacco Resource center (17). Similar to the original CEASE, the version used in our study consisted of the study staff asking if anyone who lives in the home or cares for the child smokes. Study staff then administered a survey that assessed readiness to quit and interest in smoking cessation help. In our survey, we asked additional questions regarding the caregiver and patient’s ages, and recent exacerbations of the patient’s pulmonary illness. As in CEASE, participants were asked if they would like to be referred to the Tobacco Free Florida Quitline. If they consented, the completed applications were faxed to the Quitline. The major differences between the method used in this study and the original CEASE were that we did not offer counseling or medication on site.

Statistics

Descriptive statistics were performed on smokers and non-smokers. Comparison of child and caregivers ages, FEV1, hospitalizations and missed school days between smokers and non-smokers was performed using a Student’s t-test.

RESULTS

Participants in the study were 188 parents or guardians of children with chronic lung disease participated, out of 204 surveyed. Out of the 188 parents who participated in the survey, 62 (33%) had reported that their child lives with someone who smokes tobacco. There were no significant differences in hospital days, exacerbations and days of school missed in CF or asthmatic children exposed to SHS and those not exposed (Table 1). Out of the 62 children who live with someone who smokes, 38 (62%) live with one smoking person in the household, and the majority of the smokers only smoke outside (64%). 70% of the smokers accompanied their child to the clinic, and therefore, were able to be offered the Quitline services. In total, 22 of these caregivers (52%) expressed desire to be referred to the Florida Quitline program through fax. Table 2 lists characteristics of children whose caregivers enrolled in the study and Table 3 lists characteristics of the caregivers enrolled.

Out of 22 referrals, 10 (45%) got in contact with a Quitline representative on the phone, and 5 (23%) decided to enroll in the program after speaking to a Quitline representative. Of the 5 who chose to not participate in the program after phone contact with the Quitline representative, 2 felt it was too much of a time commitment, 2 never received further instructions from Quitline after agreeing to enroll, and 1 failed to get in touch with a Spanish speaker.

Only five caregivers enrolled in the program: one chose the web only option, while the other four enrolled in the multiple-call counseling option with a 30 day free supply of nicotine patches. Only one out of the five expressed satisfactions with Quitline, this participant was enrolled in the multiple-call counseling option. Four out of five enrolled participants were dissatisfied with the program. Reasons for dissatisfaction include short supply of limited nicotine patches (2), poor communication with the phone representative (1), and difficulty navigating the website (1).

Out of the 24 referred participants through fax, three (12%) have successfully ceased smoking since their previous clinic visit- one with the help of the program, two on their own. Two smokers are in the process of quitting without the help of the program. Thus, of the total 62 smokers surveyed, five (8.01%) have enrolled in the smoking cessation program, and three (4.84%) have successfully ceased smoking since their last clinic visit.

DISCUSSION

This study demonstrates that it is feasible to establish a program of identification and referral to a Quitline program in a busy tertiary pediatric pulmonary clinic. The intervention was seamlessly incorporated into each visit, taking advantage of the time before the provider and medical personnel come to treat the pediatric patient. However, the difficulty in enrolling parents of children with chronic lung disease in smoking cessation programs was underscored, despite direct referral to a Quitline from the pediatric pulmonary clinic. This study was implemented in a tertiary pediatric pulmonary clinic where children are referred for chronic lung disease, including asthma and cystic fibrosis. Although the framework of our study was roughly based off of the CEASE approach, the study modified the language and method of inquiring about smoking. The baseline characteristics of our sample highlight the underserved nature of the population. The expense of purchasing cigarettes, which can add up to \$2000 per year, may be a factor in keeping these families in poverty. Additionally, parental smoking increases the chance that children will become smokers, and earlier parental quitting is associated with a decreased risk of smoking in adolescence (18). In general, these parents had low incomes, and the majority of their children had public health insurance, so the economic burden on these families is extensive.

We used a proactive referral to the Florida Quitline rather than giving parents instructions to call the Quitline. Simply giving instructions to call the Quitline has in the past yielded very low rates of calling (17). After being provided with contact information, the Quitline would attempt to contact the individual through his or her preferred mode of contact up to four times. Despite the contact attempts, many parents were unreachable, and a few parents who were successfully contacted initially cited poor communication between themselves and the Quitline. These results underscore not only the disconnect between agreeing to participate in smoking cessation at the clinic and then actually enrolling, but also the multiple barriers there are to enrolling on the end of both the parents and the Quitline. Based on our results, the continuity of agreeing to smoking cessation and enrollment in a program needs to be reinforced, preferably on-site. A more streamlined approach to enrolling parents in these programs should be implemented, allowing parents to speak with a smoking cessation program representative at the time of their child's visit. This would ensure that the provider could direct the parent to a knowledgeable representative who would discuss the options face to face with parents, and enroll them immediately in the program.

Additionally, the importance of aiding the parent in smoking cessation through pharmacotherapy cannot be underestimated (16). The Florida Quitline can provide a 30-day free supply of Nicotine Replacement Therapy (NRT) in conjunction with various counseling options to ease the parents into reducing and ultimately eliminating their smoking. Provision of NRTs has been shown to nearly double the rates of smoking cessation as compared to

counseling alone (18). We believe that offering NRT at the time of enrollment would have increased the number of parents who enrolled or continued in a smoking cessation program, as this has recently been shown to be more effective (11). However, our providers do not offer NRTs to parents or guardians, although they can recommend or discuss them. We believe a program should be implemented where these NRTs are readily available at clinic so that every interested parent for whom NRT is indicated can be offered four weeks of free therapy, to increase their chances of smoking cessation, in conjunction with the provision of a proactive referral to the Florida Smoker's Quitline for ongoing telephone counseling (18, 19).

This pilot study was a quality improvement (QI) project for the clinic, harping on the importance of approaching parents about their smoking habits, even if no signs of smoking were observed. All medical staff at the clinic were encouraging of the project's purpose and supportive of having smoking cessation become a habitual topic to be brought up at the child's visits. By bringing this intervention into the beginning of each clinic visit, parents and caregivers of children with pediatric pulmonary disease were made aware of the relevance of smoking to not only their children's health, but also their own. The study resulted in documented and methodical steps in assisting parents of pediatric patients in smoking cessation. The study also introduced the repeated inquiries concerning smoking into regular pediatric pulmonary visits, as a routine aspect of care.

The study was limited in its design as a simple pre and post survey, as a randomized trial would not have fit the goals of getting all interested parents enrolled in smoking cessation. However, the study also involved a group of non-smoking parents, to compare pulmonary function results of the children in this group to those of the smoking group. Some comparisons between the two groups were drawn, but the focus of the study to emphasize smoking cessation as a regular part of clinic care was accomplished. There was a low response rate to the initial consent to the study by smokers and additional loss to follow-up after individuals' referral forms were faxed over to the Quitline. However, 12% of the individuals successfully enrolled in the Quitline were able to quit smoking during the study period—worthy results even for a small sample size. The small sample size makes it difficult to draw profound conclusions from the data, but serves to underscore the obstacles that need special attention in a primarily low-income population of individuals who also smoke, and the responsibilities of pediatric providers in making these resources more easily accessible to these families.

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Abbreviations

SHS Second Hand Smoke

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TABLE 1

Impact of Smoking in Asthma and CF Patients

	Asthma (123)		CF (30)	
	Smoker (39)	Nonsmoker (84)	Smoker (11)	Nonsmoker (19)
Average # of hospital visits	0.233 +/- 0.508	0.367 +/- 1.13	0.45 +/- 0.5	0.63 +/- 1.04
Average # of school missed	3.78 +/- 8.15	2.34 +/- 3.88	1.78 +/- 4.34	0.64 +/- 1.39
Average FEV1 (%predicted)	97 +/- 12	97 +/- 18	80 +/- 35	85 +/- 23

TABLE 2Characteristics of Children with Referred Smoking Parent

	Total N = 22 (%)
Female	10 (45)
Male	12 (55)
Age (y; mean $\pm$ 1 SD)	7.4 $\pm$ 5.8 (range 4 months to 20 y)
<1	3 (14)
1–5	8 (36)
>5	11 (50)
Admitting diagnosis*	
Asthma	15 (68)
CF	3 (14)
Other	4 (18)
Insurance status	
Public	18 (82)
Private	3 (14)
Unknown	1 (4)

TABLE 3Characteristics of Referred and Enrolled Smoking Parent

	Referred N = 22 (%)	Enrolled N = 7 (%)
Female	17 (77)	4 (57)
Male	5 (23)	3 (43)
Age (y; mean $\pm$ 1 SD)	36.3 $\pm$ 12.3 (range 21yr to 53yr)	39.4 $\pm$ 8.4 (range 26 yr to 53 yr)
30	7 (32)	2 (29))
>30	15 (68)	5 (71)