

First Breath Prenatal Smoking Cessation Pilot Study: Preliminary Findings

Lisette Jehn, MS; Nicole Lokker, BS; Debra Matitz; Bruce Christiansen, PhD

ABSTRACT

Despite the many dangers associated with smoking during pregnancy, it remains a salient public health problem for Wisconsin women. The *First Breath* pilot program was developed in an attempt to reduce rates of smoking during pregnancy among low-income women. Preliminary results suggest that the *First Breath* counseling-based approach is effective, with a quit rate of 43.8% among *First Breath* enrollees at 1 month postpartum. Women receiving *First Breath* cessation counseling also had higher quit rates at every measurement period versus women in a comparison group who were receiving whatever cessation care was available in their county in the absence of *First Breath*. The *First Breath* pilot study has demonstrated success in helping pregnant women quit smoking and in creating a model for integration of cessation services into prenatal health care service provision. It is through this success that *First Breath* is expanding beyond the pilot study stage to a statewide program in 2003.

INTRODUCTION

It is widely known that smoking during pregnancy results in a variety of deleterious effects for the growing fetus and the mother. Compared to nonsmokers, women who smoke during pregnancy have a 1.8 times greater risk for ectopic pregnancy, a 3.4 times greater risk for miscarriage, and a 1.4 times greater risk for stillbirth.¹⁻⁴ The risk for low birth weight and small for gestational age increases up to 3.5 and 10 times, respectively, when a mother smokes during pregnancy.⁵ In addition, prenatal smoking contributes to 8.4% of infant deaths, 23% of Sudden Infant Death Syndrome (SIDS) deaths, and up to 14% of preterm deliveries.⁶⁻⁸

Ms Jehn is the *First Breath* Program Coordinator and Ms Lokker is the *First Breath* Program Assistant, both at the Wisconsin Women's Health Foundation. Ms Matitz is a Consultant and Dr Christiansen is a Managing Consultant, both at APS Healthcare, Inc. Address correspondence to Lisette Jehn, Wisconsin Women's Health Foundation, 2503 Todd Dr, Madison, Wis 53713; 608.251.1675. Funding for the *First Breath* pilot study was provided by the Wisconsin Tobacco Control Board.

Despite these detrimental health effects, 15.8% of pregnant women in Wisconsin reported smoking during pregnancy in 2001 compared to a national average of 12.0%.^{9,10} Research has shown that socioeconomic and ethnic disparities exist pertaining to prenatal smoking in Wisconsin. For example, 27% of Wisconsin women enrolled in the Special Supplementary Nutrition Program for Women, Infants, and Children (WIC) reported prenatal smoking in 2000.¹¹ Additionally, in a chart audit of Medicaid recipients enrolled in an HMO, 38% of pregnant women were smokers.¹² To put those numbers in a different perspective, of those women who in 2000 reported on the birth certificate that they smoked during pregnancy, 63% were Medicaid recipients.¹³ In addition, pregnant women of Hispanic origin, American Indian women, and African American women in Wisconsin smoke up to 3 times more than their national counterparts while non-Hispanic white women in Wisconsin smoke at only 1.2 times as much as their national counterparts.¹⁴

In Wisconsin, about 11,600 births are affected by smoking each year with a related health cost of \$13.2 million per year.¹⁵ State of Wisconsin Medicaid fee-for-service data show that in 2001 the average cost of caring for very low birth weight infants for the first 6 months of life was \$135,700 per child.¹² Although the costs associated with smoking during pregnancy are quite sobering, the potential savings associated with smoking cessation are also considerable. One study estimates that a cost savings of between \$1142 and \$1358 per pregnancy can be achieved for each pregnant smoker who quits.¹⁶

These high rates of maternal smoking in Wisconsin and their associated costs demonstrate the great need for prenatal smoking cessation services. In an effort to address that need, the *First Breath* pilot program was established late in 2000 by the Wisconsin Women's Health Foundation. *First Breath* was developed with four objectives: (1) to increase the number of pregnant women who quit smoking, (2) to reduce smoking among pregnant women who are not able to quit, (3) to improve the health of newborns, and (4) to decrease the

Table 1. Description of *First Breath* clients at enrollment

Characteristic	Percent of Enrollees
Age	
15-17 years	3%
18-20 years	25%
21-25 years	46%
26-30 years	16%
31+ years	10%
Race	
American Indian	13%
Asian	2%
Black or African American	12%
Hispanic	1%
Multi-racial	3%
White, non-Hispanic	69%
Education	
Non-high school graduate	40%
High school graduate or GED	52%
2-year degree	5%
4-year degree	2%
Post-graduate	1%
Marital Status	
Married	19%
Single	81%
Insurance Status	
Medicaid/BadgerCare recipient	93%
Number of Previous Pregnancies	
0	44%
1 or more	56%
Employment Status	
Employed	46%
Unemployed	54%

rate of relapse among mothers after they deliver. The *First Breath* pilot program was a counseling-based initiative that targeted low-income pregnant smokers receiving prenatal care through WIC and Prenatal Care Coordination (PNCC) programs. *First Breath* enrollees were drawn from pregnant women receiving prenatal services at 15 pilot sites around the state. Clinicians at those sites were trained in smoking cessation counseling and addressed smoking at every prenatal visit with *First Breath* clients.

Enrollment in the pilot phase of *First Breath* concluded in December 2002 and preliminary results are presented in this paper. *First Breath* was successfully implemented into multiple existing prenatal care frameworks and the program has served as a model to reach low-income pregnant smokers. Because of encouraging pilot study results, *First Breath* is currently expanding as a statewide program open to all prenatal care providers.

METHODS

Process Evaluation

An ongoing process evaluation is being conducted to

describe the women enrolled in *First Breath* and the smoking cessation efforts that are taking place. These data are generated by the 15 *First Breath* pilot study sites and through telephone interviews with enrolled women. Women eligible to participate in the pilot study were in their first or second trimesters at the time of enrollment, identified themselves as smokers, and were WIC and/or PNCC participants. Following client recruitment and informed consent, the smoking status of each client was established. Additional information was gathered through telephone interviews by an independent organization shortly after client enrollment. Smoking status was established through interviews at four other points in time: (1) at least 3 months after the initial interview but before delivery (usually in the third trimester), (2) as soon after delivery as possible, (3) 6 months after delivery, and (4) 12 months after delivery. This information was submitted to a third party independent evaluation team. To assure client privacy, data for each client were linked across time with a unique project-generated identification number.

Outcome Evaluation

The impact of *First Breath* on enrolled clients is measured in two ways. First, self-reported smoking status collected by site clinicians and telephone interviews is tracked across time. Second, self-reported smoking status of enrolled clients is being compared with the smoking status of women in a comparison group. Potential comparison women were identified as those women enrolled in the Wisconsin Medicaid Program receiving prenatal care from a PNCC provider in a geographic region that had no *First Breath* pilot site. Care at a PNCC program was established by receipt of a claim for reimbursement. Limitations with this recruitment are detailed later in this report.

RESULTS

Process Evaluation

Four hundred twenty-two women were enrolled in the *First Breath* pilot study between March 1, 2001 and December 31, 2002. Of those women, 88 were lost to follow-up and 334 remain as active enrollees. Data collection is complete (including the final interview 12 months after delivery) for 10 women who were enrolled early in 2000. Data are still being collected on 324 since they are still pregnant, or their delivery dates have been within the last year.

Table 1 provides a description of our target population for this study by presenting selected characteristics of *First Breath* enrollees. In general, most *First Breath* enrollees were non-Hispanic white (69%), had an aver-

age age of 23.4 years, were unmarried (81%), had a high school education or less, were not employed (54%) and were Medicaid or BadgerCare recipients (93.2%). Over half of enrollees had previous pregnancies and 53% of those women smoked during their last pregnancy.

First Breath participants varied in their attitudes toward smoking and in their previous quit attempts. Of our *First Breath* enrollees, 76% planned to quit smoking permanently when starting our program, 16.4% weren't sure if they would quit, 5.5% intended to quit only until their baby was born, and 1.6% didn't want to quit at all. *First Breath* clients averaged 3.0 previous quit attempts per woman, and 79% of clients reported regular exposure to second-hand smoke (SHS). Although a majority (67.3%) of clients acknowledged the dangers of SHS, 16.9% of clients thought SHS was "almost as harmful as when I smoke," 13.1% thought SHS was "not as harmful as when I smoke," 2.2% thought SHS was "not very harmful," and 0.5% thought SHS was "not harmful at all."

Smoking Cessation Among First Breath Clients

Figures 1 and 2 present enrolled clients self-reports of smoking during the week prior to each telephone interview throughout the prenatal and postpartum periods. Smoking cessation rose throughout the prenatal period and peaked at 43.8% at 1 month postpartum. Consistent with the literature, there was considerable relapse after delivery, and only 20% of women were still not smoking 1 year later.¹⁷⁻¹⁹ However, this relapse rate of 46% over 1 year is based on a small number of women and will probably change as more women reach the 1-year post-partum mark.

Smoking Cessation Outcomes, First Breath Clients vs. Comparison Group

Figure 3 presents the percent of women who quit smoking across time for both the *First Breath* client group and the comparison group. The quit rate among enrolled *First Breath* clients is greater than the quit rate among comparison women at every measurement (prenatal and postpartum). As mentioned above, data collection for both groups is continuing, but the preliminary data show a statistically significant difference in quit rate at the 1 month postpartum measurement ($X^2=6.97$, $df=1$, $p<01$).

DISCUSSION

Although the *First Breath* pilot study analysis is not yet complete and data collection will continue into 2004, preliminary results show that the *First Breath* program helps low-income women quit or reduce smoking more

so than their comparison group cohorts. This analysis measures the impact of adding *First Breath* to currently available prenatal resources and suggests that the *First Breath* program is a sound addition to existing prenatal care in Wisconsin. *First Breath* has become a successful model for implementation of prenatal smoking cessation services. By establishing pilot study sites in Wisconsin's public and tribal health systems, the program reached some of Wisconsin's most needy and typically underserved low-income women. *First Breath* was easily and cost-effectively integrated into existing prenatal care frameworks. Results from the *First Breath* pilot study indicate that short 5 to 10 minute interventions with a pregnant smoker can impact her quit attempt dramatically. By integrating more focused cessation counseling into an existing prenatal care structure, clients experience increased access to care at their convenience.

We are also encouraged by preliminary results regarding clients' perceptions and approach to quitting smoking. For example, nearly two-thirds of clients identified *First Breath's* focus on social support as an aspect of service that is helpful to them in their quit attempt. Another promising result is that a majority of clients already understood that smoking is harmful to their child when they began *First Breath*. Therefore, although sharing information about the health effects of smoking is an important aspect of smoking cessation, it is not what clinicians need to spend the majority of their time discussing with clients.

Preliminary results are consistent with other research reporting a considerable relapse in smoking after delivery. The ability for *First Breath* to address postpartum relapse is limited to 60 days post-delivery due to current PNCC regulations. To address this issue, *First Breath* developed a relationship with the Wisconsin Tobacco Quit Line, which has agreed to provide telephone cessation counseling postpartum in the statewide program in 2003 and beyond. Nonetheless, other options to help reduce postpartum relapse will be explored and implemented in the statewide *First Breath* program.

There were some limitations in this research. First, there were some missing data for those women tracked 12 months post-delivery. For example, a common quality of care issue is that some women do not seek prenatal care until well into their pregnancy and some *First Breath* clients delivered their babies before 3 months elapsed between the initial telephone interview and the time for a second prenatal interview. Thus, for some women the latter prenatal measurement was missing.

Figure 1. Number of cigarettes smoked per day among *First Breath* enrollees at prenatal data collection points

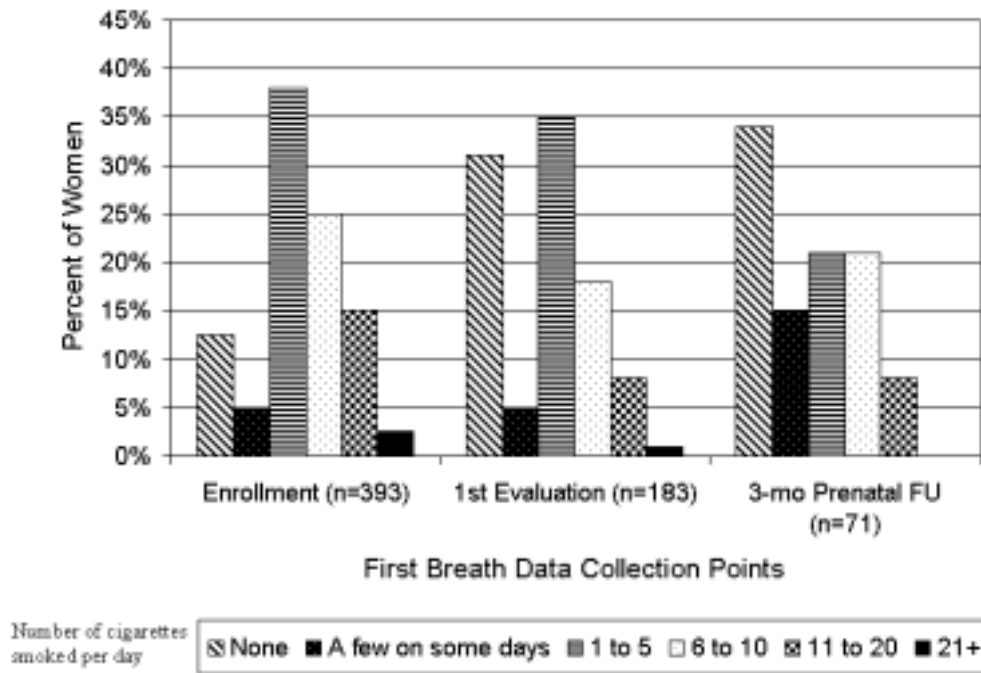


Figure 2. Number of cigarettes smoked per day among *First Breath* enrollees at postpartum data collection points

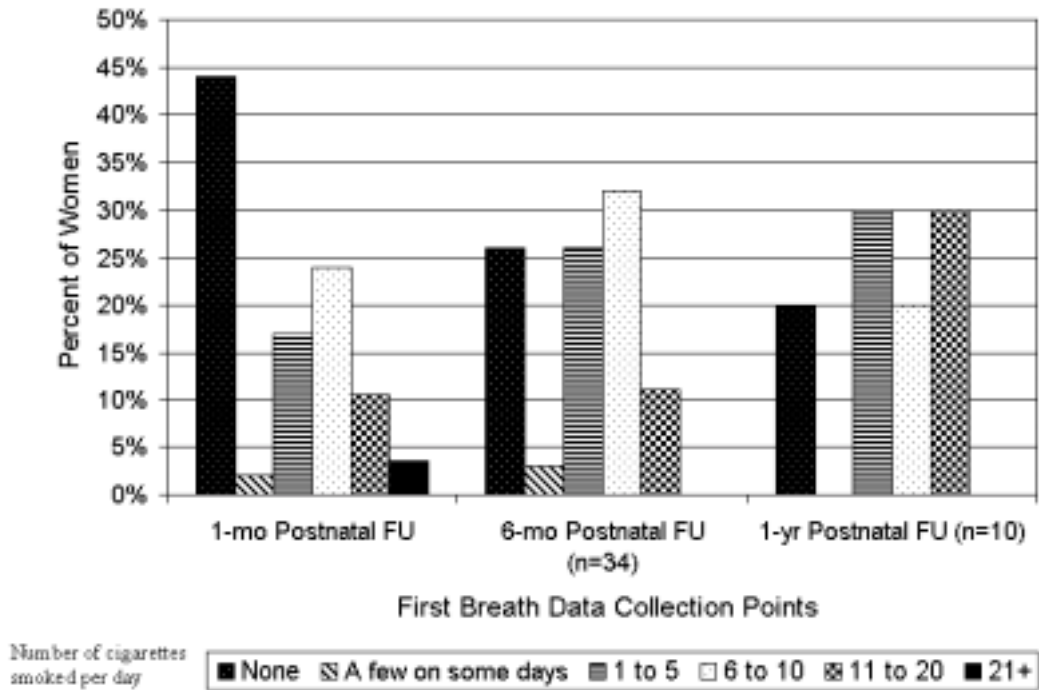
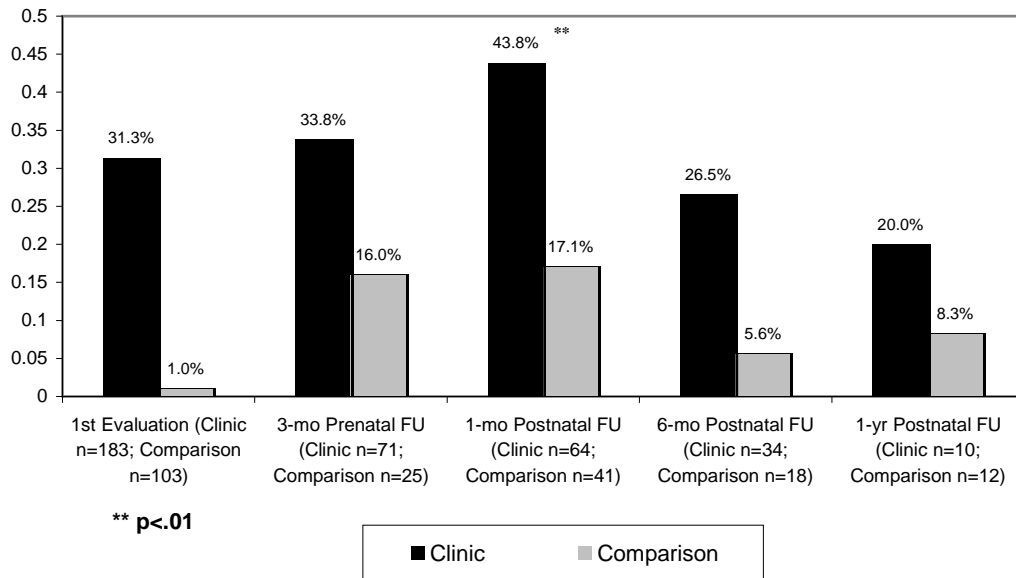


Figure 3. Quit rate - *First Breath* clients vs. comparison women



First Breath clients lost to follow-up is another limitation. It is difficult to follow low-income individuals across time, due to frequent moves and loss of reliable telephone access. Of the 88 *First Breath* clients lost to follow-up, 34 (38.6%) discontinued receiving prenatal care from the pilot site altogether, 29 (33.0%) were no longer followed because they experienced a miscarriage or still birth, 12 (13.6%) proved impossible to contact by telephone, 9 (10.2%) were no longer contacted when two pilot sites discontinued their involvement in *First Breath* in the end of 2001, and 4 (4.5%) chose to discontinue their enrollment in the *First Breath* program but continued to receive prenatal care at the pilot site.

Finally, it proved difficult to recruit low-income pregnant women willing to serve as part of a comparison group. From Medicaid records, 3272 potential comparison women were identified; 2237 women (68%) proved impossible to contact. An additional 444 women (14%) were not currently pregnant; most had already given birth. Another 268 women (8%) were not enrolled because they were already in their third trimester and past the eligibility window for *First Breath*. Lastly, there was a language barrier in 31 cases (1%). Of the remaining 292 women, 190 (6%) claimed not to smoke. Of the remaining 102 women who were pregnant and smoking, 32 (1%) declined participation. Thus, 70 (2%) of the originally identified 3272 women were successfully recruited for the comparison group.

CONCLUSIONS

The *First Breath* pilot program has demonstrated preliminary success in helping pregnant women quit smoking and in creating a model for integration of cessation services into prenatal health care service provision. The *First Breath* focus on support and counseling-based intervention has been easily implemented in pilot sites and has been well-received by clients. Through the pilot study process, we have found that although our target population faces many challenges and barriers, success in smoking cessation is possible. With feedback from clients and clinicians across the state, we continue to work to improve our programmatic techniques and include counseling strategies that make quitting smoking realistic for our clients. It is with our encouraging preliminary results that we move forward as a statewide program, hoping to serve more areas of the state and further impact the health of Wisconsin's women and children.

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