QUITTING FOR TWO: 
A REVIEW OF CLINICAL INTERVENTIONS AND BEHAVIORAL STRATEGIES 
FOR PERINATAL SMOKING CESSATION 

By 

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A paper presented to the faculty of The University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Public Health in the Department of Maternal and Child Health. 

Chapel Hill, N.C. 

April 4, 2015 

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Abstract

Tobacco use during pregnancy is one of the leading preventable causes of pregnancy complications and infant morbidity and mortality in the United States. Smoking before or during pregnancy can lead to an ectopic pregnancy, placental abruption, preterm birth, infant low birth weight, and even stillbirth. However, despite public awareness and education regarding the detrimental effects of tobacco use, more than 10 percent of women with a recent live birth reported smoking during pregnancy. Unfortunately, clinicians and health care providers seldom receive adequate and formal training on perinatal tobacco cessation. With minimal skills or knowledge regarding cessation strategies and behavioral counseling, limited progress has been made toward meeting national goals on perinatal tobacco use. This review explores interventions used within clinical settings that are designed to reduce tobacco use in the preconception, prenatal, and postpartum periods. Based on the review, evidence-based tools and resources were developed that can be used by health care providers to help clients quit the use of tobacco.

Introduction

While the United States has seen a sharp decline in tobacco use since 1990, nearly one in five deaths, or an estimated 480,000 deaths annually, are due to tobacco related illnesses.\textsuperscript{1,2} Often referred to as “one of the most preventable causes of disease, disability and death in the nation,”\textsuperscript{1} tobacco use is estimated to have cost the United States 5.1 million years of potential life lost and $96.8 billion in lost productivity per year.\textsuperscript{1} Tobacco use is linked to heart disease, stroke, lung disease, and numerous types of cancer.\textsuperscript{2} In fact, if tobacco use were to become obsolete, it is estimated that one in three cancer-related deaths in the United States could be avoided.\textsuperscript{3} It is important to note that this estimate does not take in account the potential cancer deaths from
environmental tobacco smoke or other types of tobacco use, including cigars, pipes, or smokeless tobacco.³

Each year, approximately 19.8 million women in the United States smoke.¹ Like male smokers, women face unique health risks when using tobacco. While the main causes of smoking-related deaths among women are heart disease and lung cancer, tobacco use also has serious health effects on women’s reproductive health and function.⁴ Women who smoke are at increased risk for breast cancer, cervical cancer, ovarian cancer, infertility, and early menopause.¹,⁴ Women of reproductive age (15-44 years) who smoke and pregnant women who smoke are more likely to suffer from adverse pregnancy complications and poor infant outcomes.¹,⁴

The Pregnancy Risk Assessment Monitoring System (PRAMS), a federal program based out of the Centers for Disease Control and Prevention (CDC) and state health departments, collects data on maternal attitudes and experiences, including tobacco use before, during, and after pregnancy.⁵ According to the 2011 PRAMS, 10.7 percent of women with a recent live birth reported smoking in their third trimester of pregnancy.⁵ These rates vary widely by state, with some states reporting up to 30 percent of women continuing to smoke in the last 3 months of their pregnancy.¹ Researchers note that fewer than half of those smoking during pregnancy report successfully quitting and remaining tobacco-free.¹ It is important to note that data regarding successful cessation of tobacco use during pregnancy is considered to be inaccurate, as self-report systems may lead to an overestimation.¹ Furthermore, compared to non-pregnant women, pregnant women are less likely to disclose their smoking status due to stigmatization.¹

Due to the immense, yet preventable, ramifications of perinatal tobacco use on maternal and child health, three Healthy People 2020 national health objectives were created to address
smoking before and during pregnancy.\textsuperscript{5} These objectives were set forth by the United States Department of Health and Human Services and include reducing the prevalence of female smoking before pregnancy to 14 percent; reducing the prevalence of cigarette smoking among pregnant women to 1.4 percent; and increasing the percentage of pregnant smokers who stop smoking during pregnancy to 30 percent.\textsuperscript{5} Please refer to Table 1 for national smoking rates surrounding pregnancy in relation to the \textit{Healthy People 2020} objectives.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
 & Smoking Before Pregnancy & Smoking During Pregnancy & Quit Rates During Pregnancy \\
\hline
\textbf{Current National Rates\textsuperscript{5,6}} & 23.2\% & 10.7\% & 54.3\% \\
\hline
\textbf{Healthy People 2020 Objectives\textsuperscript{6}} & 14\% & 1.4\% & 30\% \\
\hline
\end{tabular}
\caption{U.S Women With Recent Live Birth Using Tobacco Before and During Pregnancy}
\end{table}

Sources: Healthy People 2020, PRAMS 2011

In addition to \textit{Healthy People 2020}, the Affordable Care Act (ACA) has also made significant changes to prevention in healthcare, requiring all Medicaid programs to cover a comprehensive tobacco cessation benefit, including access to counseling and/or medications, for pregnant women without cost sharing.\textsuperscript{5} Eliminating these out of pocket costs for cessation treatments has been shown to be effective in smoking cessation.\textsuperscript{5}

Due to a renewed focus on perinatal tobacco cessation, understanding best practices and efforts to reduce tobacco use among pregnant and non-pregnant women of reproductive age has become particularly pertinent for clinicians, health care providers, and public health professionals.
EPIDEMIOLOGY OF PERINATAL TOBACCO USE

Smoking Before Pregnancy

According to 2011 PRAMS data, 23 percent of women with a recent live birth reported smoking 3 months before pregnancy.\(^5\) Approximately 55 percent of these women quit during their pregnancy; however, of those women, 40 percent relapsed within 6 months postpartum.\(^5\) Using data from 40 PRAMS sites, the prevalence of women smoking before pregnancy did not change significantly from 2000-2010.\(^5\) In 2010, as a result of cultural and political differences, rates of women with a recent live birth that reported smoking during the 3 months before pregnancy ranged from 11.8 percent in Utah to 46.2 percent in West Virginia.\(^5\) New mothers with the highest prevalence of smoking before pregnancy were aged 20-24 years (34.7%), American Indian/Alaska Native (55.1%), had 12 years of education (32.6%), and had Medicaid coverage (34.4%).\(^5\)

Smoking During Pregnancy

As of 2011, 10.7 percent of women with a recent live birth in the United States reported using tobacco in the last three months of pregnancy.\(^5\) It is important to note that PRAMS data does not capture the prevalence of women who used tobacco during the first and second trimester but who quit before the last 3 months of pregnancy.\(^5\) While aggregated PRAMS data indicates a declining trend in tobacco use during pregnancy, rates during the study period varied significantly between states.\(^5\) States, such as Louisiana, Maine and Mississippi, saw an increase in the percentage of women smoking during pregnancy.\(^5\) Other states, such as Colorado, Minnesota, New Jersey and New York, saw a significant decline in tobacco use during pregnancy.\(^5\) Similarly to smoking before pregnancy, rates of women smoking during pregnancy varied substantially state to state, ranging from 2.3 percent in New York City to 30.5 percent in
West Virginia. New mothers with the highest prevalence of smoking during pregnancy were 20-34 years of age (17.6%), American Indians/Alaska Natives (26%), had less than 12 years of education (17.6%), and had Medicaid coverage during pregnancy or at delivery (34.4%).

As noted earlier, approximately 55 percent of new mothers reported quitting smoking by their last trimester of pregnancy, with quit rates ranging from 34.4 percent in West Virginia to 74.6 percent in New York City. Women most likely to quit smoking during pregnancy were women who were younger than 20 years of age (59.3%), Asian/Pacific Islander (72.0%), had more than 12 years of education (65.7%), and had private insurance coverage during pregnancy or at delivery (68.2%).

**Smoking Postpartum**

During the 2000-2010 study period, PRAMS data showed a significant decrease in the prevalence of women smoking after a live birth. Similarly to women smoking before and during pregnancy, rates ranged from 4.1 percent in New York City to 37.5 percent in West Virginia. In 2010, aggregated data suggests that nearly 16 percent of women report smoking again at approximately 4 months postpartum. Women with the highest prevalence of smoking postpartum were 20–24 years of age (25.5%), American Indian/Alaska Native (40.1%), had 12 years of education (24.5%), and had Medicaid coverage during pregnancy or delivery (24.3%).

**Perinatal Tobacco Cessation Trends**

During the 2000-2010 study period, PRAMS data indicated ‘moderate but significant’ decreases in the prevalence of women smoking during pregnancy and after delivery. However, smoking prevalence among women before pregnancy remained stagnant, and limited progress has been made toward reaching the *Healthy People 2020* objectives in a majority of the PRAMS sites. While this is due to a multitude of complex factors, it is noteworthy to mention that
several states had defunded their tobacco cessation teams during this 2000-2010 period and instead, diverted their tobacco settlement money from tobacco control and treatment to other state activities. 

Researchers suggest that if smoking prevalence continues to decline at its current pace (0.1 percentage per year), national goals for perinatal smoking cessation set forth by Healthy People 2020 will not be met for another 100 years. Consequently, Healthy People 2020 encourages health care providers to approach perinatal smoking using a social determinants framework. By using a social determinants framework, clinicians are better able to recognize how social structural factors contribute to perinatal smoking and in turn, create more comprehensive cessation interventions.

**SOCIAL DETERMINANTS OF HEALTH: WHO IS SMOKING AND WHY?**

Social determinants of health are “conditions in the environment in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.” These conditions, consisting of social, economic, and physical elements, and their available resources can significantly influence health outcomes in communities. Healthy People 2020 has developed a “place-based” organizing framework that identifies five key areas of social determinants: economic stability (e.g. poverty, employment); education (e.g. high school graduation, language and literacy); social and community context (e.g. social cohesion, civic participation); health and health care (e.g. access to health care, health literacy); and neighborhood and built environment (e.g. access to healthy foods, quality of housing).

These five types of social determinants can play a large role in women’s health and pregnancy outcomes. For instance, researchers note that compared to nonsmokers, women who
smoke before, during, or after pregnancy are typically of lower socioeconomic status with 12 or less years of education. These women are also more likely to be unmarried and have an annual income of less than $15,000. Socioeconomic status is noted to directly and indirectly influence major determinants of health, including health-care access and health behavior. Accordingly, women who smoke during their pregnancy are more likely to start prenatal care later, enroll in Medicaid, and receive WIC. Pregnancies are also often unintended and women who smoke are more likely to be first-time mothers.

Smoking around the time of pregnancy is associated with social stress, low social support, material disadvantage and feelings of not being in control. Accordingly, a recent research study found that increased levels of depressive symptoms and stress are highly correlated with perinatal tobacco use among low-income women. Another study found that certain social variables, including limited support from peers and/or living with a partner who smokes, are associated with continued smoking during pregnancy. The same study found that relapsing postpartum is common when applying those same social variables to women who quit during pregnancy.

Ockene et al. note that, “[these women]…portray an interesting constellation of addiction, life worries (including multiple children perhaps), and an environment that essentially reinforces continued smoking.” The authors suggest the smoking is rarely the only health challenge these women face during pregnancy and that women who smoke around the time of pregnancy may be facing other issues of greater urgency, including food and/or housing security, substance abuse, and domestic violence. For instance, one study found that self-reported neighborhood violence had a positive association with tobacco use in early pregnancy. In fact, scholars believe that smoking is increasingly becoming a coping mechanism for women in
resource-strapped social or environmental settings, and stress may be the trigger. These findings suggest that social determinants are critical to cessation interventions and must be taken into account when trying to modify women’s health behaviors. Unfortunately, social determinants affecting women’s smoking habits often go unmeasured or ignored.

**MATERNAL AND INFANT HEALTH RISKS**

Tobacco use during pregnancy is regarded as one of the few preventable causes associated with pregnancy complications and poor birth outcomes. In fact, women who quit smoking by the first trimester are likely to have healthy infants with weight and body measurements that are similar to infants born to women who do not smoke. However, without perinatal smoking cessation, smoking can cause detrimental effects by the third trimester of pregnancy. Thus, having identified perinatal smoking as a major public health problem, scholars have extensively researched maternal and infant health risks associated with tobacco use before, during and after pregnancy.

Smoking prior to pregnancy has been shown to negatively affect women’s reproductive health. Women who smoke prior to pregnancy not only have reduced fertility, but their risk for delayed conception is significantly higher than women who do not smoke. Scholars also warn of heightened risks of pregnancy complications for women smoking during pregnancy. These include but are not limited to placental abruption, anemia, chronic hypertension, and placenta previa.

In addition to pregnancy complications, risks to the fetus include low birth weight, preterm birth, restricted growth, stillbirth, and sudden infant death syndrome (SIDS). Maternal smoking during pregnancy is attributed to an estimated 5-8% of preterm births, 13-19% of infants with low birth weight, 5-7% to preterm related deaths, and 23-24% of SIDS cases. In
fact, infants born to women who smoke during pregnancy are 1.4 to 3 times more likely to die from SIDS than infants born to non-smokers. Exposure to perinatal smoking also increases infants’ risk for impaired lung growth, otitis media, necrotizing enterocolitis, severe asthma, and infectious disease. Secondhand smoke exacerbates these conditions, increasing risk of respiratory infections and ear infections. Finally, a 2011 systematic review notes that perinatal tobacco use is positively associated with congenital malformations, such as heart, musculoskeletal system, and limb reduction defects. Such smoking-related malformations are estimated to have cost the United States $46 million in healthcare expenses.

Cessation of perinatal tobacco use is not only key to improving maternal and child health outcomes and other health outcomes throughout the life course, but it also produces cost savings. For instance, the United States spends nearly $122 million per year ($279 per maternal smoker) in neonatal health care costs alone. By creating interventions to help women to quit, approximately $6 would be saved per dollar invested in a prenatal tobacco cessation program, $4,000 saved for every low birth weight baby prevented, $63,000 for every perinatal death prevention, and $210,000 per SIDS case prevented. Furthermore, by eliminating perinatal tobacco use, it could reduce all infant deaths by 10% and reduce deaths from perinatal conditions by 12%.

**Perinatal Smoking Cessation: Interventions & Behavioral Strategies**

In order to reduce perinatal smoking among women of reproductive age (15-44 years) in the United States, there are several evidence-based interventions and behavior strategies that can be employed. These interventions are put in place to help reduce the health risks to both mother and infant. While there are proven and effective comprehensive tobacco-control strategies, such as cigarette taxes and 100% smoke-free policies, which help reduce smoking prevalence around
the time of pregnancy, this review will focus on clinical interventions targeted toward smoking women of reproductive age during the most critical periods: preconception, prenatal, and postpartum.

**PRECONCEPTION PERIOD**

According to the Centers for Disease Control and Prevention (CDC), preconception health care is defined as “a set of interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management.” Since individuals have unique health needs, preconception care is different for every person and can include men, women and couples of reproductive age. For optimal maternal and infant health outcomes, preconception care would ideally begin before a woman’s first pregnancy. Interventions during this time period help address risks to pregnancy, with the aim of eliminating these risks before conception occurs. Preconception is important because it allows clinicians and providers an opportunity to assess and treat tobacco use before pregnancy, decreasing the likelihood of poor maternal and infant outcomes.

Research indicates the counseling to quit during this preconception period is critical, as 15%–42% of women will quit smoking before initiating prenatal care. Patricia Mullen notes that women of lower socioeconomic status are less likely to quit smoking before prenatal care; however, for every 5-15 minutes of counseling delivered by a trained professional, cessation rates increase by an average of 6-7 percentage points. One such counseling option is referred to as cognitive behavioral therapy, or CBT. CBT is designed to address the attitudes and beliefs about smoking and quitting with the aim of replacing those behaviors with healthier behaviors. The main components of CBT are skills training, cognitive training, and lifestyle rebalancing.
Each of these components is meant to develop coping techniques, self-efficacy and alternative thinking or methods for relaxation.²⁵

The CDC also recommends that clinicians use strong evidence-based guidelines when delivering counseling in preconception care visits. This includes the 5A’s.²³ The 5A’s is a five step approach recommended by the USPHS clinical practice guidelines for all smokers and consists of: ask, advise, assess, assist and arrange.²³ The first step is to ask each patient about their tobacco use.²³ If patients indicate that they smoke, clinicians should advise patients to quit and assess their willingness to quit. The fourth step is to arrange a follow up, and if necessary, assist with their cessation efforts.²³ Assisting includes offering pharmacotherapies or additional counseling.²³ By offering this additional assistance, quit rates have been shown to double in non-pregnant women, with effectiveness increasing when the number of and length of sessions increases.²³

As for FDA-approved medications, there are several available: bupropion, varenicline and nicotine replacement therapies, including the gum, patch, lozenge, inhaler, and nasal spray.²³ Due to the controversy surrounding safe use of pharmacotherapy in pregnancy, it is advised that clinicians offer these medications during the preconception period.²³ For patients unwilling to quit tobacco, the USPHS clinical practice guidelines recommend the 5R’s: relevance, risks, rewards, roadblocks, and repetition.²³ These steps aim to motivate patients by addressing why quitting smoking is relevant, identifying the risks and benefits associated with smoking, identifying the barriers to quitting, and repeating motivational interviewing.²³, ²⁵ Involving partners of future mothers is also important, as there is a strong association with partner smoking and relapse as well as secondhand smoke exposure.²⁴
In addition to providing counseling, the CDC recommends use of a reminder system and telephone quitlines to support the cessation process. Reminder systems alert or remind health care providers to advise smokers in their health care setting and may involve use of electronic medical records (EHR) or a sticker or notification of a patient’s smoking status. State quitlines are also an important and effective means for patients to receive counseling, in which a provider can refer tobacco users to their state quitline by calling 1-800-QUIT NOW. A majority of quitlines provide multiple sessions of counseling, a quit kit, and some state quitlines may even provide over-the-counter medications. Many quitlines have also developed special protocols and guidance for pregnant smokers. These protocols often involve more interventions and aim to address the increased social and economic instability that is common for many pregnant smokers.

According to several studies, many women quit after learning they are pregnant. Quit rates may range from 11% to 28% for women with public insurance to 40% to 65% for women with private insurance. Thus, if tobacco cessation strategies and interventions were placed into preconception care and practice, scholars expect that cessation rates would exceed these current quit rates.

**PRENATAL PERIOD**

The prenatal period refers to the period of time between conception and birth. It is perhaps one of the most critical times for a woman to quit smoking. One of the best practices for smoking cessation in the prenatal period entails counseling, or CBT. Evidence-based approaches used in the preconception period, such as the 5A’s and 5R’s, are also recommended for counseling pregnant women. If behavioral approaches fail, the American College of Obstetricians and Gynecologists recommends nicotine replacement therapies (NRTs) during
pregnancy.\textsuperscript{5} According to a systematic review of approximately 111 randomized clinic trails, NRTs may increase a smoker’s chance of quitting by 50\% to 70\%.\textsuperscript{25} However, the safety and efficacy of NRTs are not clearly known, as clinical trials using NRTs on pregnant women were inconclusive.\textsuperscript{25} Scholars argue that NRTs effects were seen as inconclusive because pregnant women metabolize nicotine and cotinine 60\% to 140\% faster than non-pregnant smokers.\textsuperscript{25} Nevertheless, the FDA recommends caution when administrating such drugs.\textsuperscript{5}

Overall, evidence strongly indicates that a multicomponent approach must be used when providing tobacco cessation interventions to pregnant women.\textsuperscript{25} According to Pollak et al., cessation rates during pregnancy were almost three times higher in women who had received a combination of CBT and NRTs than women who had just received CBT.\textsuperscript{26} While NRTs are considered to be safer for pregnant woman than either bupropion SR or varenicline, effects on the fetus are unknown.\textsuperscript{25}

Scholars have also indicated cessation success in the prenatal period through financial incentives, indicating a quit rate of up to 34\% in the intervention group and improvements in infant birth weight.\textsuperscript{5} However, such financial incentives must be further researched to determine cost effectiveness as well as to determine effectiveness in more diverse populations and settings.\textsuperscript{5} Other studies have looked at voucher based reinforcement therapy (VBRT) as an incentive for smoking cessation.\textsuperscript{28} VRBT is therapy in which pregnant smokers are able to earn vouchers for retail items once their abstinence from tobacco use is verified using biochemical tests.\textsuperscript{28} Heil et al. found that these type of contingent vouchers are successful in increasing smoking cessation compared to non-contingent vouchers (41\% vs. 10\%) at the end of the pregnancy.\textsuperscript{28} Despite its success, Heil et al. notes the need for interventions of lower intensity, lower costs and greater reach.\textsuperscript{28}
POSTPARTUM PERIOD

Postpartum refers to the period of time directly following birth to approximately 6 weeks after birth. This 6th week mark has traditionally been defined as women’s transition from pregnant to non-parous status. For women who did not quit smoking during pregnancy, there are very few who quit postpartum. For those who do quit, their reason for quitting is often related to the effects of secondhand smoke exposure. This postpartum period is also a time marked when both intervention assisted quitters and spontaneous quitters, women who quit immediately upon learning they are pregnant, are likely to relapse. Researchers estimate that as many as 70% of women who quit during pregnancy return to smoking within 6 months after delivery.

Remarkably, research indicates that relapse is often postponed until after mothers wean their infants from breastfeeding. Yet, further research with larger sample sizes is needed to explore factors to explain this association, as studies have shown that pregnant women who smoke are less likely to intend to breastfeed, less likely to initiate breastfeeding, and likely to breastfeed for a shorter duration than nonsmoking pregnant women. In fact, mothers who return to smoking postpartum are 50 percent more likely to wean their infants from breastfeeding early (less than 12 weeks). This is compared to mothers who abstained from smoking postpartum. However, despite several studies indicating a dose-response relationship between the number of cigarettes smoked per day and breastfeeding intention, initiation and duration, national breastfeeding rates for this population have not yet been aggregated. Nevertheless, current evidence suggests the need for integration of smoking relapse prevention and breastfeeding promotion. Unfortunately, there are far fewer tobacco cessation interventions that target this unique transition into motherhood, which is often marked by stress, lack of sleep, and concerns about weight.
One intervention, referred to as Project PANDA, specifically targeted this unique and vulnerable time period by mailing resources to women and their partners who smoked during the pregnancy period. The materials were mailed in the last few weeks of a woman’s pregnancy and the first six weeks postpartum. Items mailed include videos and newsletters about smoking cessation. According to the study, intervention participants showed greater abstinence (55% vs 45%) during the follow-up period as well as at the one-year mark, showing promise that permanent abstinence is possible. This study’s success was partly due to its focus on the role of partner, in which the partner received tailored videos and materials. An early evaluation of these materials showed greater cessation among the men.

CHALLENGES

There are several barriers to successfully employing perinatal tobacco cessation in clinic and healthcare settings. Despite evidence suggesting tobacco cessation interventions are more successful when delivered by health care providers, providers face implementation challenges and many may be reluctant to provide these interventions. These barriers include lack of time, inadequate training or institutional support, limited resources, and competing priorities. Some providers simply believe that patients cannot and will not quit. As a result, patients receive minimal tobacco cessation counseling (3-5 minutes) and of the 56% of health care providers trained on smoking cessation, only 35% provided patients with self-help materials.

Yet, these challenges are not insurmountable, as S.M.A.R.T. Moms, or Smart Mothers Are Resisting Tobacco, illustrated in Tennessee where 29.3% of all pregnant WIC patients smoked. S.M.A.R.T Moms is a Tennessee-based project that designed a self-help guide to educate pregnant WIC mothers on the dangers of smoking. The self-help guide, which was based on the 5A’s, was used by trained providers in all WIC clinics in Tennessee. By providing
comprehensive training for the health care providers, S.M.A.R.T Moms discovered that of the 13,285 patients receiving counseling and smoking cessation resources, 77% percent of women who received the self-help guide and counseling agreed to attempt smoking cessation. Of those women, 24.4% quit smoking, which exceeds prior success rates of 14% in similar settings. The project also addressed challenges noted by health care providers, such as lack of time and training. It not only provided training on evidence-based counseling techniques that were short, simple and brief, but the project also provided patient resources and incentives for patients and providers. As a result of the project’s success, its activities are now institutionalized in the state government system.

**Rationale for Tools**

As evidenced by the review of interventions for perinatal smoking cessation, there are numerous resources and strategies that can be used by clinicians, health care providers, and public health professionals to help clients quit smoking, once and for all. In identifying best practices and gaps in implementation, tools were created for clinicians in inpatient and outpatient clinical settings. These tools can be accessed through Prevention Partners’ Patient Quit Tobacco System, one of four nationally recognized web-based products helping to effectively promote tobacco cessation for patients in hospital and clinics. Prevention Partners is a nonprofit located in Chapel Hill, North Carolina that focuses on addressing the nation’s leading health issues, including decreasing tobacco use, increasing physical activity, promoting good nutrition and reducing obesity. To review the developed tools, please refer to the Appendix.

**Conclusion**

The association between adverse maternal and infant health outcomes and tobacco use before, during and after pregnancy has been well documented. With the recently passed
Affordable Care Act (ACA), which requires all Medicaid programs to cover a comprehensive tobacco cessation benefit for pregnant women, there have been significant changes to prevention in healthcare. While more extensive coverage for cessation interventions will improve prenatal and postpartum quit rates, the need to address tobacco use through preconception care and primary care prevention continues to grow. In fact, scholars believe cessation rates would exceed current pregnancy quit rates if tobacco cessation strategies and interventions were placed into preconception care and practice.

However, there are several challenges for preconception care, as preconception health and health care is a relatively new paradigm that healthcare providers are still working to actively promote and integrate within services. One challenge is family planning. While ideally health care providers should assist female smokers of reproductive age to quit smoking before conceiving, nearly half of all pregnancies in the United States are unintended. Having an unintended pregnancy often affects prenatal outcomes, as pregnant women who smoke are less likely to obtain prenatal care and more likely to start prenatal care later than nonsmoking women.

While pregnancy may serve as an opportunity for women to change their patterns of tobacco use, many of these women are facing far superior battles than their fight to quit tobacco. Thus, greater efforts should be placed on acknowledging social and structural factors affecting both pregnant and non-pregnant female smokers and integrating a social determinants framework into primary care prevention and cessation interventions. Current research suggests that electronic medical records and their multiple functions, including screening, triaging, referring, tracking, and data sharing, may serve as a platform for such integration. The Institute of Medicine plans to publish recommendations on the facilitation of incorporating evidence-
based social determinants of health metrics into healthcare delivery systems, which could enhance the integration of medical care and social services.\textsuperscript{36} By focusing on prevention before pregnancy rather than treatment, there is an opportunity to advance preconception care and improve the landscape of maternal and perinatal health.
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Acknowledgements

I would like to acknowledge the contributions of Dr. Jon Hussey, Dr. Melva Fager Okun, and the staff at Prevention Partners. I want to thank each of them for their support, aid and recommendations.

Appendix

Best Practices in Perinatal Smoking Cessation

This document includes recommended strategies for addressing perinatal smoking in inpatient and outpatient settings. These recommendations should be adapted to fit your current environment.

Why Focus on Perinatal Smoking?

Tobacco use during pregnancy can result in major pregnancy complications for the mother and can also result in poor birth outcomes for the child. These include low birth weight, premature birth, respiratory illness, and an increased risk of birth defects and death. Despite evidence linking tobacco use to negative maternal and child health outcomes, pregnant women continue to smoke in the United States. Research indicates, however, that women are more likely to quit during pregnancy than at any other time in their lives.

In order to ensure that pregnant women quit and never resume, the following four components are recommended. Using Prevention Partners’ web-tool, Patient Quit-Tobacco System, will help you effectively and efficiently implement a comprehensive system approach to fully support your patients in quitting.

Four Components of Successful Perinatal Smoking Cessation

Organizational Culture

1. Evaluate your current system and environment
   ✓ Ask questions: How does your organization currently identify and document pregnant tobacco users? Whose responsibility is it? What systems (prompts, reminders) do you have in place to make sure tobacco is integrated into patient/clinician encounters? How is the offering of tobacco cessation counseling and/or treatment being documented?

2. Develop a culture that promotes tobacco cessation and includes positive modeling and effective systems
   ✓ Ask questions: What do women see in and around your organization or clinic — are staff smoking? What self-help materials are widely available on counters, in bathrooms, and in the waiting rooms? Do the materials discuss Medicaid cessation benefits? Are there tobacco-free signs at entrances?
   ✓ Display educational materials, including posters and brochures, in the waiting room, the examination rooms, or other accessible areas.
   ✓ Remove magazines from the waiting room that include ads for tobacco products.
   ✓ Define staff roles and dedicate staff to providing tobacco cessation intervention.
   ✓ Assess the delivery of tobacco cessation treatment to patients in staff performance evaluations.

Professional Education and Training

1. Identify a champion
   ✓ Identify and train a champion to provide evidence-based counseling and effective support services to all pregnant smokers.

2. Train staff working with pregnant and postpartum women
   ✓ Provide consistent provider education on perinatal smoking interventions.
     ▪ Training should include education on reimbursement procedures, use of prescriptions, referral options (i.e., social services), as well as role playing sessions.

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Trainings are best conducted live, or through online training materials, such as the Virtual Clinic. The Virtual Clinic walks clinicians through a nationally-recognized, best practice clinic experience, which includes office culture.

- Provide opportunities for feedback.

Cessation Interventions for Perinatal Smoking

1. Integrate and implement the evidence-based 5As and 5Rs of high-quality cessation counseling into every visit. This includes motivational interviewing.
   - Screen pregnant patients and those considering becoming pregnant for all tobacco products.
   - Conduct a depression screening with every pregnant woman who smokes. PEERS is one recommended tool. Refer to a specialist, if needed.
   - Incorporate motivational interviewing into the 5As. Patients may fear the stigma attached to smoking during pregnancy - it is important to remember to ask questions that give them control.
   - The more tailored and personalized the questions are to the patient’s needs, activities and interests, the more successful the intervention.
   - Complete an intervention record for prenatal visits and postpartum visits.

2. Provide baby-related incentives
   - In combination with brief counseling and other support, programs targeting pregnant smokers have seen success in offering baby-related incentives. The Baby and Me Tobacco-Free program offers one year of free diapers to women whose carbon monoxide scores remain negative for the year postpartum. This type of monitoring is non-invasive and gives immediate feedback to pregnant women and their clinicians. The program has documented a 70% postpartum quit rate. It’s important to note that the ability to provide baby-related incentives is often dictated by funding and other resources, which can make long-term success challenging but not impossible.

3. Nicotine Replacement Therapies (NRTs)
   - The research regarding safety of using NRTs during pregnancy is not conclusive. For pregnant or breastfeeding women, it is recommended that they first attempt to quit without the use of NRTs; however, if pregnant or breastfeeding women are unable to quit without medication, it is within the provider’s discretion to provide NRTs.

Resources for Perinatal Smoking and Follow Up

1. Provide referrals and resources
   - Offer personalized quit plans.
   - Provide cessation guides and other resources for pregnant smokers.
   - Refer all current pregnant smokers to the Quitline (1-800-QUIT-NOW), which provides an extended free callback service for pregnant callers. Callers may receive between 4 and 10 calls as part of this service.

2. Follow up
   - Assign a staff member to follow up and see if the patient has reviewed the materials or online tools, set a quit date, signed up for a community program, or connected with the Quitline.
   - Research shows that follow up post-discharge is equally important as the intervention while in the healthcare facility. Relapse within the first six months following childbirth can be 70%.
   - Send congratulatory letter or recorded message, if possible.
   - Track postpartum quit rates to evaluate effectiveness of interventions. Give feedback to staff on quit rates and their performance specific to this effort.

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Implementation of Perinatal Smoking Cessation Interventions

Tobacco use during pregnancy is one of the leading preventable causes of pregnancy complications and infant morbidity and mortality in the United States. In order to reduce perinatal smoking among women of reproductive age (15-44 years), evidence-based interventions and behavior strategies should be integrated in health care settings. Unfortunately, gaps exist between research knowledge of effective perinatal interventions and the actual services or counseling being delivered by health care providers.

The following two planning frameworks are recommended for implementing, or integrating, perinatal smoking cessation services in your inpatient or outpatient clinical settings. These frameworks should be adapted to fit your environment.

Active Implementation Framework: Implementation Drivers

**Implementation Drivers**, one of the five Active Implementation Frameworks, are defined as “critical components of capacity and infrastructure that are needed to develop, improve and sustain an intervention as intended.” There are 3 categories of Implementation Drivers:

1. **Competency Drivers** are mechanisms to develop, improve and sustain a clinic’s ability to implement an intervention. *Example: health care provider/nurse training*

2. **Organization Drivers** are mechanisms to create and sustain organizational and system environments for effective services. *Example: integrating perinatal smoking data in EHRs*

3. **Leadership Drivers** focus on providing the right leadership strategies (technical vs adaptive) for different types of challenges. *Example: adaptive solutions for systematic barriers for clinicians*

![Implementation Drivers Diagram]

**Reflection Questions:**

- How are the Implementation Drivers relevant to implementing tobacco cessation for pregnant women in your clinic or organization?

- How could the Implementation Drivers framework improve the implementation of services?

- Which Drivers needs the most work? The least?
The Hexagon Tool

The Hexagon Tool helps teams and organizations evaluate new and existing interventions. This planning tool can assist you in deciding on the right tobacco cessation intervention for your clinic or practice as well as help you communicate with stakeholders, including local communities and state agencies.

The tool is based on 6 factors:

1. Needs: Is your clinic and/or intervention meeting the needs of women smokers?
2. Fit: How does perinatal tobacco cessation fit with the priorities of your state, community, or agency?
3. Resource Availability: Is there enough staff and/or training available to provide cessation counseling?
4. Evidence: Will the intervention stay true to its original design or are you willing to adapt? Is your intervention effective? Is it cost effective?
5. Readiness for Replication: Have all intervention components been operationalized?
6. Capacity to Implement: Do you have buy-in with the practitioners? Have staff been trained in motivational interviewing?

By beginning to ask these essential questions, your team is one step closer to implementing an intervention that fits with the culture and goals of your clinic or organization. Example Hexagon Tool

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The Affordable Care Act & Perinatal Tobacco Cessation

The Affordable Care Act (ACA) contains many provisions that are designed to improve access to preventive services, including tobacco cessation treatment for pregnant women. Through expansion of Medicaid and the Health Insurance Exchange, Medicaid enrollees now have access to all FDA-approved cessation medications. Since one in five pregnant women with Medicaid coverage smoke, it is critical that health care providers understand the Medicaid program in their state.

What is Covered?

- All Marketplace plans are required to cover tobacco use screening for all adults and cessation interventions without coinsurance or copayment. The patient is not required to meet their yearly deductible.
- For tobacco users, coverage includes at least two tobacco cessation attempts per year. Cessation attempts includes:
  - Four tobacco cessation counseling sessions that last at least 10 minutes each without prior authorization. These counseling sessions include telephone counseling, group counseling and individual counseling.
  - All FDA-approved tobacco cessation medications offered for a 90-day treatment regimen when prescribed.

Why is this Important?

Approximately 20 percent of women on Medicaid smoke during pregnancy. Research indicates that among women on Medicaid:

- Coverage of nicotine replacement therapies (NRTs) is associated with a reduction of 1.6 percentage points among women smoking before pregnancy.
- By adding counseling coverage to nicotine replacement therapies (NRTs), smoking before pregnancy is further reduced by 2.5 percentage points.

What is the criteria for getting reimbursed for Medicaid cessation counseling?

- Counseling must be face-to-face, and the claim must include a diagnosis of pregnancy (ICD-9 CM Diagnosis Codes: 630-677, V22, V23, V28)
- During a medical visit, counseling must be provided by a physician, registered physician’s assistant, registered nurse practitioner, or licensed midwife.
- Group sessions do not count.
- Physicians, nurse practitioners, licensed midwives, hospital outpatient departments, and freestanding diagnostic and treatment centers are allowed to bill for smoking cessation counseling (SSC).
- Smoking cessation counseling (SSC) is only payable with a diagnosis of pregnancy, an E&M code, and a SCC CPT Procedure code.

For more information, please review the tobacco cessation counseling coding list developed by the American Academy of Family Physicians and the billing code guide developed by the Texas Department of State Health Services.

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