Treating Tobacco Use Among Pregnant and Parenting Smokers

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Introduction

Since 1975, a growing volume of research has demonstrated the effectiveness of clinically proven interventions in achieving long-term or even permanent abstinence from tobacco use for all smokers.[1,2] Achieving cessation is especially important for pregnant and parenting smokers whose use of tobacco is a threat to their own health, and that of their pregnancies and offspring. Cessation of tobacco use, prevention of secondhand smoke exposure and prevention of relapse are key clinical intervention strategies during pregnancy and early childhood.[3] Given the harm associated with exposure to secondhand smoke (SHS), both parents and caregivers of young children should receive treatment to achieve cessation. Generally speaking, treatment for smokers also applies to parenting smokers but special considerations regarding treatment need to be made for pregnant women.

Subject

To date, intervention trials for pregnant women have focused on

- how to achieve higher rates of cessation during pregnancy
- how to prevent postpartum relapse
- the effect of cessation on birth outcomes.

Few intervention trials have specifically targeted pregnant and parenting smokers in an effort to reduce secondhand smoke exposure among young children. However, interventions designed for smokers as a group may also be used to achieve cessation for parents and, with some modification, for pregnant women. Increased cessation and abstinence rates will lead to reduced secondhand smoke exposure rates for pregnant women, infants and children.

Problems

The key problems in this area of investigation are as follows:

1. *Identifying all smokers, especially pregnant smokers*
   People who smoke are often reluctant to discuss their tobacco use with caregivers and to be labelled as smokers.[4] Given social pressure to abstain from smoking during pregnancy, pregnant women may be more reluctant to disclose their smoking status and may frequently be misclassified as non-smokers. Several trials have found high percentages of deception (28% and 35%) when self-reported smoking status is biochemically confirmed among pregnant women.[5,6,7]Although biochemical validation of self-reported smoking status remains the gold standard for identifying smokers, the associated expense and ethical issues generally consign its use to clinical trials. A structured, multiple-choice question to assess tobacco use among pregnant women increases the likelihood of accurate self-report by as much as 50%.[4] The choices in this question allow women to rate their smoking status under “never smoke,” “recently quit” (upon learning they were pregnant or while trying to get pregnant), and “continue to smoke” (although they may have reduced their smoking since learning of their pregnancy). These categories allow women to visualize their smoking behaviour in the context of their pregnancy and are designed to exclude responses that could paint pregnant women smokers as being irresponsible. Despite the improvement in disclosure observed with this technique, new approaches to ascertain smoking status are needed for both pregnant and other smokers.
2. Quantifying the exposure of pregnant women, fetuses, infants and young children to secondhand tobacco smoke and measuring its effect on maternal morbidity, fetal and infant

outcomes and childhood morbidities. Methods for accurately quantifying ETS exposure that are accurate, non-intrusive and economical are needed for use in settings where pregnant women, infants and children are present.

3. Establishing linkages between exposure to varying levels of secondhand smoke and maternal outcomes, including miscarriage and infant and child outcomes.

Research Context

All of the studies included in meta-analyses to determine best practices for achieving cessation among pregnant smokers and smokers have in general, been conducted as randomized, controlled trials. These meta-analyses are summarized in Treating Tobacco Use and Dependence: A Clinical Practice Guideline (2008 update)[2] and various Cochrane Collaboration reviews.[8,9]

Key Research Questions

The following topics regarding treatment for pregnant smokers will require additional research:

- Ethical issues associated with the routine use of
    1. Biochemical validation of smoking status
    2. Biochemical feedback to increase the likelihood of cessation
    3. Incentives for pregnant smokers to remain smoke-free.
    - Understanding the motivation of spontaneous quitters.
    - Efficacious treatments for highly dependent smokers, spontaneous quitters and women who quit smoking during pregnancy.
    - The most efficacious amount of contact time, number of sessions and duration for smoking cessation interventions with pregnant women.
    - The efficacy of various counselling and behavioural therapies and motivational interventions (e.g., the physiological feedback of adverse impacts and the benefits of quitting).
    - The safety and efficacy of tobacco dependence pharmacotherapy during pregnancy with regard to the woman and fetus and to the woman and child during nursing.

- The effects of smoking with the concomitant use of tobacco dependence pharmacotherapies.
- The efficacy of targeted or individualized interventions during pregnancy.
- Strategies for linking pre-conception, pregnancy and postpartum (including pediatric) interventions.

The primary research needs with regard to reducing parental secondhand smoke exposure are as follows:

- Mechanisms for accurate, economical and non-intrusive biochemical assessments of secondhand smoke exposure.
- Methods for establishing the relationship of secondhand smoke exposure to various health and behavioural outcomes while accounting for confounding variables and identifying underlying mechanisms that explain observed linkages.
- Approaches to targeting smoking cessation messages and treatments to parents and caregivers to reduce the exposure of children to secondhand smoke.

Recent Research Results

The effects of smoking

Smoking remains the single most important preventable cause of poor birth outcomes. An estimated 5-8% of preterm deliveries, 13-19% of term deliveries of infants with low birth weight, 23-34% of cases of sudden infant death syndrome (SIDS), and 5-7% of preterm-related infant deaths can be attributed to prenatal maternal smoking.[3] Cigarette smoking by pregnant women has been shown to cause adverse fetal outcomes, including intrauterine growth restriction, *placenta previa*, abruptio placenta, decreased maternal thyroid function,[10,11] preterm premature rupture of membranes,[12] low birth weight, perinatal mortality,[10] and ectopic pregnancy.[10]

The risks of tobacco use during pregnancy extend beyond pregnancy-related complications. Children born to mothers who smoke during pregnancy are at an increased risk of asthma, infantile colic and childhood obesity.[13,14,15] Infants born to women who use smokeless tobacco during pregnancy have a high level of nicotine exposure, low birth weight and shortened gestational age as compared to mothers who smoke during pregnancy.[16,17] Women smokers are less likely to breastfeed their infants.[10]

The effects of maternal exposure to secondhand smoke

The evidence is sufficient to infer a causal relationship between maternal exposure to secondhand smoke and SIDS, and a small reduction in birth weight; and is suggestive but not sufficient to infer a causal relationship to preterm delivery, childhood cancer, childhood leukemia, childhood lymphomas and childhood brain tumors.[18]

The effects of secondhand smoke exposure from parental smoking

The evidence is sufficient to infer a causal relationship between secondhand smoke exposure from parental smoking and lower respiratory illnesses in infants and children; middle ear disease in children (including acute and recurrent otitis media and chronic middle ear effusion); cough, phlegm, wheeze and breathlessness among children of school age; ever having asthma among children of school age, the onset of wheeze illnesses in early childhood; persistent adverse effects on lung function across childhood; and a lower level of lung function during childhood.[18]

The effectiveness of interventions for smokers

The literature on tobacco treatment supports the widespread adoption of screening for tobacco use and treatment for all tobacco users.[2]

The five major components (the “5 A's”) of a brief intervention in the primary care setting are Ask, Advise, Assess, Assist and Arrange. It is important for a clinician to ask the patient if he or she uses tobacco, advise him or her to quit, and assess willingness to make a quit attempt. The first three components of the 5A’s should be delivered to each tobacco user, regardless of his or her willingness to quit. If the patient is willing to quit, the clinician should assist him or her in making a quit attempt by offering medication and providing or referring for counseling or additional treatment and arrange for followup contacts to prevent relapse.[2] If the patient is unwilling to make a quit attempt, the clinician should provide a motivational intervention and arrange to address tobacco dependence at the next clinic visit.[2]

These intervention components constitute the core elements of a tobacco intervention, but they need not be applied in a rigid, invariant manner. For instance, the clinician need not deliver all elements personally. One clinician (e.g., a medical assistant) may ask about tobacco use status; and a prescribing clinician (e.g., physician, dentist, physician assistant, nurse practitioner) may deliver personal advice to quit, assess willingness to quit and assist with medications, but then

refer the patient to a tobacco intervention resource (e.g., a tobacco cessation quitline, health educator) that would deliver additional treatment to the patient. Evidence indicates that full implementation of the 5 A's in clinical settings may yield results that are superior to partial implementation.[2]

Clinicians should support patients willing to quit by

- Helping the patient develop a quit plan.
- Recommending the use of approved medication, except when contraindicated or with specific populations for which there is insufficient evidence of effectiveness (i.e., pregnant women, smokeless tobacco users, light smokers and adolescents).[2] The first-line medications include: bupropion SR, nicotine gum, nicotine inhaler, nicotine lozenge, nicotine nasal spray, nicotine patch and varenicline; second-line medications include: clonidine and nortriptyline.
- Providing practical counselling (problem solving/skills training, such as learning from past quitting experiences, anticipating triggers or challenges in quitting, and dealing with other smokers in the household).
- Providing social support as part of treatment.
- Providing supplementary materials, including information on quitlines.[2]

Treatment for pregnant smokers

Given the serious risks of smoking to the pregnant smoker and fetus, whenever possible pregnant smokers should be offered person-to-person psychosocial interventions that exceed minimal advice to quit. Although abstinence early in pregnancy will produce the greatest benefits to the fetus and expectant mother, quitting at any point during pregnancy can yield benefits. Therefore, clinicians should offer effective smoking cessation interventions to pregnant smokers at the time of the first prenatal visit and throughout the course of a woman’s pregnancy.[2]

The use of a structured question to improve disclosure is also recommended. Pharmacotherapies should be considered only when the pregnant woman is otherwise unable to quit, and when the likelihood of quitting, with its potential benefits, outweighs the risks of pharmacotherapy and potential continued smoking. If nicotine replacement therapies are chosen, the clinician should consider using medication doses that are at the low end of the effective dose range, and consider

choosing delivery systems that yield intermittent, rather than continuous, drug exposure (e.g., nicotine gum rather than the nicotine patch).[2] Because none of these medications has been tested in pregnant women for efficacy in treating tobacco dependence, the relative ratio of risks to benefits is unclear.

A five-step counselling approach adapted to meet these recommendations for pregnant smokers has been developed (see below).[3,19] This "5-A" approach works equally well with women of various ethnic and racial groups but is less effective with pregnant women who smoke heavily (i.e., more than one pack per day).[20]

The Five A's[3]

1. Ask the woman about her smoking status using a multiple-choice question to improve disclosure. The patient should choose the statement that best describes her smoking status:
    A. I have NEVER smoked or have smoked LESS THAN 100 cigarettes in my lifetime.
    B. I stopped smoking BEFORE I found out I was pregnant, and I am not smoking now.
    C. I stopped smoking AFTER I found out I was pregnant, and I am not smoking now.
    D. I smoke some now, but I have cut down on the number of cigarettes I smoke SINCE I found out I was pregnant.
    E. I smoke regularly now, about the same as BEFORE I found out I was pregnant.
2. Advise the patient who smokes to stop by providing advice to quit with information about the risks of continued smoking to the woman, fetus and newborn.
3. Assess the patient's willingness to attempt to quit smoking at the time.
4. Assist the patient who is interested in quitting by providing pregnancy-specific, self-help smoking cessation materials. Support the importance of having a smoke-free space at home and seeking out a "quitting buddy," such as a former smoker or non-smoker. Encourage the patient to talk about the process of quitting. Offer a direct referral to the smoker's quitline (1-800-QUIT NOW) to provide ongoing counseling and support.
5. Arrange follow-up visits to track the progress of the patient's attempt to quit smoking. For current and former smokers, smoking status should be monitored and recorded throughout pregnancy, providing opportunities to congratulate and support success, reinforce steps taken towards quitting, and advise those still considering a cessation attempt.

Conclusions

There is solid epidemiological evidence that maternal smoking during pregnancy can result in adverse outcomes in pregnant women, fetuses, infants and children. Women who quit smoking before or during pregnancy reduce the risk of seeing adverse reproductive outcomes. Children who live in smoke-free environments are also less likely to succumb to mortality and morbidity.

Smoking cessation programs based on current research findings are effective for both pregnant smokers and smokers in general. The most recent review indicates that extended or augmented psychosocial interventions exceeding minimal physician advice to quit smoking nearly tripled cessation rates among pregnant smokers.[2] Counselling and pharmacotherapeutic intervention with smokers also resulted in a doubling or tripling of long-term abstinence.[2]

Despite these promising findings, abstinence achieved during pregnancy is not maintained for most women and clinical trials testing interventions to prevent relapse have not produced significant results. Similarly, little success in long-term abstinence has been reported from cessation programs for mothers of young children.[10,21,22] The lack of effectiveness in these areas indicates that infants and young children are at risk of developing conditions related to exposure to secondhand smoke and that these women are likely to expose fetuses to tobacco smoke during future pregnancies.

Despite these limitations, existing evidence-based approaches for treating pregnant and parenting smokers should be widely implemented. At least 35% of women who quit smoking while pregnant remain smoke-free, improving not only their own health but also the health of their children and other family members.[23] The return on investment for health care systems is significant and visible in the short term.

Implications for Policy and Services

Effective treatments exist and should be implemented for pregnant and parenting smokers. The health and economic benefits for individuals, families and society are significant and cost effective. If smoking cessation programs are properly and universally implemented, fewer children will die in the first year of life and will experience fewer smoking-related morbidities and other conditions throughout infancy and childhood.

Institutional policies facilitating the adoption of tobacco treatment interventions include:

- Implementing a tobacco user identification system in every clinic.
- Providing training, resources and feedback to ensure that providers consistently deliver effective treatments intervention.
- Dedicating staff to provide tobacco dependence treatment and assessing the delivery of this treatment in staff performance evaluations.
- Promoting hospital policies that support and provide tobacco dependence services.
- Monitoring and improving the quality of services delivered.
- Including tobacco dependence treatments (both counselling and pharmacotherapy) identified as effective in this Guideline as paid or covered services for all subscribers or members of health insurance packages.[2]

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