

MOTHERISK ROUNDS

Nicotine Replacement Therapy During Pregnancy: Recommended or Not Recommended?

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Abstract

Smoking during pregnancy increases the risks of maternal and fetal complications and adverse neonatal outcomes, and it remains a significant health problem. Although pregnancy is often a strong motivator for smoking cessation, many pregnant women continue to smoke. Effective smoking cessation strategies for use during pregnancy are therefore clearly needed. Behavioural support provided by prenatal smoking cessation programs is safe and effective during pregnancy, but it generates a relatively modest reduction in smoking cessation rates. Nicotine replacement therapy (NRT), in conjunction with behavioural support, may offer an effective alternative to help pregnant women quit smoking. This suggestion is based on the convincing research evidence for the effectiveness of NRT in the general population.

There is no consensus, however, on whether or not care providers should recommend NRT during pregnancy because of persistent concerns about its safety and effectiveness. We reviewed the data on the safety and effectiveness of NRT and on the possible physiological reasons for NRT's low effectiveness in pregnant women, and conclude that it is prudent to advise pregnant women who smoke 5 cigarettes or fewer per day to use behavioural support, and not NRT, to help them quit. Pregnant women with a moderate or high level of addiction may use NRT under the supervision of their physician. A combination of cognitive-behavioural therapy and counselling with NRT is the most effective strategy to achieve smoking cessation during pregnancy.

Résumé

La pratique du tabagisme au cours de la grossesse entraîne la hausse des risques d'issues néonatales indésirables et de complications maternelles et fœtales; elle demeure donc un problème de santé considérable. Bien que la grossesse constitue souvent un facteur incitant fortement à l'abandon du tabagisme, bon nombre de femmes enceintes continuent de fumer. Des stratégies efficaces d'abandon du tabagisme pouvant être utilisées au cours de la grossesse sont donc manifestement

requises. Bien que le soutien comportemental offert par les programmes prénatals d'abandon du tabagisme soit sûr et efficace au cours de la grossesse, il ne génère qu'une baisse relativement modeste des taux d'abandon du tabagisme. La thérapie de remplacement de la nicotine (TRN), conjointement avec un soutien comportemental, peut offrir une solution de rechange efficace aux femmes enceintes qui souhaitent cesser de fumer. Cette suggestion est fondée sur les résultats de recherche convaincants qui attestent de l'efficacité de la TRN au sein de la population générale.

Il n'existe toutefois pas de consensus quant à la question de savoir si les fournisseurs de soins devraient recommander ou non le recours à la TRN pendant la grossesse, et ce, en raison de préoccupations persistantes au sujet de son innocuité et de son efficacité. Nous avons analysé les données sur l'innocuité et l'efficacité de la TRN, et sur les possibles raisons physiologiques expliquant la baisse de l'efficacité de la TRN chez les femmes enceintes; nous en sommes finalement venus à la conclusion qu'il est prudent de conseiller aux femmes enceintes qui fument au plus cinq cigarettes par jour d'avoir recours à un soutien comportemental (et non à la TRN) pour les aider à cesser de fumer. Les femmes enceintes qui présentent une assuétude de degré modéré ou élevé peuvent avoir recours à la TRN sous la supervision de leur médecin. Le recours concomitant à une thérapie/counseling cognitivo-comportementale et à une TRN constitue la stratégie la plus efficace pour l'abandon du tabagisme au cours de la grossesse.

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INTRODUCTION

Smoking during pregnancy has a well-documented negative effect on the health of the mother and her baby. Numerous studies have shown increased risks of pregnancy complications and adverse neonatal outcomes associated with maternal smoking, including placental abruption,¹ placenta previa,^{2,3} spontaneous abortion,⁴ stillbirth,^{5,6} fetal growth restriction,^{7,8} preterm delivery,^{7–9} low birth weight,^{10,11} and sudden infant death syndrome.¹²

Pregnancy is often a strong motivator for women to stop smoking. It is estimated that 18% to 25% of women who

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smoke manage to quit when they become pregnant.¹³ Nevertheless, many women continue to smoke during pregnancy despite the known adverse consequences for their health. In 2004, 11% of women in the United States reported smoking during pregnancy. This number is even higher in the United Kingdom, where 36% of women reported smoking while pregnant in a 2001 survey.¹⁴ According to the 2007 Canadian Tobacco Use Monitoring Survey, 10% of Canadian women aged 20 to 44 who had been pregnant in the previous five years reported smoking regularly during their most recent pregnancy.¹⁵ Therefore, effective strategies for reducing maternal smoking during pregnancy are clearly needed.

SMOKING CESSATION OPTIONS

Smoking cessation programs implemented during pregnancy have been shown to increase smoking cessation and to reduce preterm birth and low birth weight.¹⁶ They should therefore be offered to any pregnant woman who smokes. The common types of intervention strategies in these programs include providing information about the harmful effects of smoking on the fetus and mother, advice to stop smoking, and pregnancy-specific self-help materials; teaching cognitive-behavioural strategies for quitting smoking; providing biochemical feedback on cotinine or carbon monoxide levels to motivate cessation; and providing rewards and social and peer support.

Although clearly beneficial, these interventions have produced a relatively modest reduction in the number of women who continue to smoke throughout pregnancy. For those who do not respond to counselling or behavioural support, adding nicotine replacement therapy may improve cessation rates. This suggestion is based on the convincing evidence of the effectiveness of NRT in the general population.^{17,18} The most recent systematic review of 111 randomized clinical trials of NRT has confirmed that all commercially available forms (gum, transdermal patches, inhalers, nasal sprays, and lozenges) are effective and may increase the chance of quitting smoking by 50% to 70%, regardless of the setting or the intensity of additional support provided to subjects.¹⁹

However, the few available randomized trials of nicotine replacement therapy in pregnant smokers provide no conclusive evidence of its effectiveness in this particular subgroup of smokers. In 2004, Lumley et al. reviewed 64

trials and compared the effectiveness of various smoking cessation interventions in pregnancy.¹⁶ Of the 64 trials, only three trials of nicotine replacement therapy were conducted in pregnant women. A meta-analysis of these three trials did not show a significant effect of NRT use in pregnancy (pooled RR 0.94; 95% CI 0.89–1.00). However, some recent studies have clarified the question of NRT effectiveness in pregnancy.

In 2007, Pollak and colleagues examined the effectiveness of NRT in addition to cognitive-behavioural therapy in an open-label randomized trial. They found cessation rates during pregnancy that were almost three-fold higher in the CBT+NRT arm compared with the CBT-only arm. Although the difference in cessation rates did not persist postpartum, the results are promising because the effect was greater than that observed in the general population.²⁰

In 2008, Onkhen et al. reported the results of a randomized, double-blind, placebo-controlled trial of gum with 2 mg of nicotine for smoking cessation during pregnancy.²¹ Both the treatment and placebo groups received individualized behavioural counselling. The authors reported that use of gum with 2 mg of nicotine does not increase the rate of smoking cessation more than placebo. However, in women who received the nicotine gum, there was a significant reduction in the number of cigarettes smoked per day and in the serum concentration of cotinine compared with the placebo group. This observation suggests that nicotine gum substitution may reduce overall tobacco exposure during pregnancy, but this claim requires further validation. Notably, more favourable birth outcomes were reported in the NRT group: neonates in the nicotine gum group were significantly heavier than in the placebo group (3287 g $\pm$ 566 and 2950 g $\pm$ 653 respectively, $P < 0.001$), and gestational age was significantly greater with NRT. These results are consistent with the findings of Wisborg et al., who reported a higher mean birth weight (by 186 g) in the NRT group compared with the placebo group.²² Given the burden of increased morbidity and mortality associated with low birth weight, these improved perinatal outcomes are of clinically significant importance.

NRT AND PREGNANCY

The most recent data, therefore, suggest that in pregnancy using NRT is no more harmful, and is probably safer, than continuing to smoke.^{23–26} Cigarette smoke contains over 4000 toxic substances, many of which are teratogenic or carcinogenic. Of particular concern are carbon monoxide, oxidizing chemicals, aniline, phenol, ammonia, lead, and nitrogen oxide.²³ In contrast, nicotine replacement therapy delivers pure nicotine, and therefore poses less risk to a pregnant woman and her fetus. Furthermore, a few

ABBREVIATIONS

CBT	cognitive-behavioural therapy
NRT	nicotine replacement therapy

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