

Tobacco use and pregnancy

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Key points:

- smoking is the single largest preventable cause of foetal and infant morbidity in the UK
- smoking in pregnancy affects the health of mother and baby so the focus should not just be on the baby
- women should be supported to quit rather than put under pressure to do so
- smoking increases the risk of pregnancy-related illness and complications
- maternal exposure to second-hand smoke also has adverse health effects for the mother and the foetus
- exposure to second-hand smoke is a serious health threat to infants
- smoking cessation is an effective intervention which has immediate and long term health benefits for pregnant women and families.

This information briefing is for women who are pregnant or considering pregnancy and for health professionals who work with families.

Introduction

Active maternal smoking (causing passive exposure of the foetus) causes about 5,000 miscarriages, 300 perinatal deaths, and 2,200 premature births in the UK each year¹. Passive exposure of the foetus to active maternal smoking also causes around 19,000 babies to be born with low birth weight in the UK each year².

In Scotland:

- the overall percentage of women who reported smoking at the time of their first antenatal booking has decreased consistently from 29.0% in 1995 to 18.8% in 2010³
- 18.1% of new mothers smoke at first visit (home visit from health visitor, usually about 10 days after birth)⁴

- 30.6% of pregnant women in the most deprived categories smoke at booking, compared to 6.1% in the least deprived categories⁵ and there is a similar disparity at first visit – 29.3% compared to 5.3%⁶.

There is evidence that self-reported smoking is under-reported and that the true smoking figures for pregnant women may be underestimated by up to 25%⁷.

Pregnant women face huge pressure to stop smoking because of the mothering and caring roles prospective mothers are expected to adopt. However, a woman who already feels guilt about continuing to smoke is unlikely to respond to the coercive demands of professionals if she feels judged by those who know little about her personal circumstances. A mutually respectful approach should be used when trying to raise the issue of smoking in pregnancy, for if a non-reproachful dialogue can be established with parents, and if sufficient support is offered, it can be a good opportunity to improve family health.

Continued smoking in pregnancy

It is physiologically more difficult for pregnant women to quit smoking because changes in metabolism mean that the speed with which nicotine leaves their system can increase by 60% and cotinine (a chemical found in tobacco) by 140%, and lowered nicotine levels then increase the desire to smoke⁸. Smoking patterns during pregnancy and childbirth are also affected by fluctuating hormone levels so that the sense of smell and taste is changed⁹ and whilst this prompts some women to quit spontaneously it can also be a cue to resume when hormonal balance is restored after the birth.

The reasons why women continue to smoke in pregnancy are complex but there is a strong association with a younger age, poverty, low educational attainment, poor social support and psychological illness¹⁰. Having a smoke is seen by some women as a way of taking a break from daily problems, of dealing with stress, of responsibilities of caring for others and as a way controlling their emotions¹¹. Women who are economically disadvantaged and socially unsupported face parenting challenges in isolation, and say that they smoke to relieve anxiety and depression¹².

How tobacco use affects the developing foetus^{13 14}

When tobacco burns, it releases about 4,000 chemicals including more than 70 cancer-causing chemicals and hundreds of other poisons¹⁵. Tobacco use and exposure to second-hand smoke during pregnancy allow a dangerous cocktail of toxins to interfere with normal placental function, reducing uterine blood flow and depriving the foetus of nutrients and oxygen. This can lead to an increased risk of adverse effects including:

- miscarriage and placental abruption
- premature birth
- foetal growth restriction
- lower birth weight, which may contribute to coronary heart disease, type 2 diabetes, and obesity in adulthood¹⁶
- stillbirth (20–30% higher likelihood)¹⁷
- sudden infant death syndrome (SIDS) (two-to-five fold increase).
Infants of mothers who smoked during pregnancy have more pauses in breathing and have decreased ability to wake up from sleep in response to low oxygen¹⁸.

Maternal and infant exposure to second-hand smoke

Second-hand smoke is smoke from other people's tobacco (also called passive smoking) and breathing it in brings non-smokers many of the same health risks as active smoking would. Exposure to second-hand smoke compromises the health of women and unborn children^{19, 20} depending on the extent of exposure. It is therefore important to address smoking behaviours within the family or wider social group whether a woman smokes or not. A recent systematic review and meta-analysis²¹ concluded that pregnant women who are exposed to second-hand smoke are estimated to be 23% more likely to experience stillbirth and 13% more likely give birth to a child with a congenital malformation. Because the timing and mechanism of this effect is not clear, it is important to prevent second-hand smoke exposure in women before and during pregnancy.

Exposure to second-hand smoke increases the risk of fatal and non-fatal coronary heart disease in non-smokers by about 30%²². Compared with unexposed non-smokers, non-smokers exposed to second-hand smoke have blood chemistry similar to that of active smokers²³. For example, even 30 minutes of exposure to a typical dose of second-hand smoke can damage the layer of flat cells lining the inside of a non-smoker's blood vessels and heart in the same way that actively smoking would²⁴.

Children and infants face the highest level of second-hand exposure at home and in cars as they are often unable to remove themselves from smoky environments. With their smaller airways, faster rates of breathing and immature immune systems children and infants are also most vulnerable to any adverse health effects²⁵ and the impact of second-hand smoke exposure is greater in low birth-weight and premature babies. Exposure to second-hand smoke in childhood is associated with reduced lung function, middle ear disease, an increased risk of a range of respiratory symptoms and a higher incidence of respiratory tract infections. Living in a household in which one or more people smoke more than doubles the risk of sudden infant death syndrome (SIDS) and appears to more than double the risk of meningitis²⁶. The risk of SIDS is greatly increased by bed sharing when either parent smokes, even if they do not smoke in the bed²⁷.

Research findings from the University of Glasgow suggest that the introduction of national, comprehensive smoke-free legislation in Scotland was associated with significant reductions in preterm delivery and babies being born small for gestational age²⁸. This adds to the growing evidence of the wide-ranging health benefits of smoke-free legislation.

Giving up smoking in pregnancy

The risk to the foetus of continued smoking outweighs any potential adverse effects of nicotine replacement therapy (NRT)²⁹ and is a safer alternative than smoking during pregnancy because the woman and the foetus are exposed to one chemical instead of the thousands of found in cigarette smoke³⁰. According to the Health Scotland Smoking Cessation Guidelines 2010³¹ intermittent forms of NRT, such as lozenges or gum, are preferable to continuous forms such as patches, although a patch may be more appropriate if suffering from nausea/vomiting. Pregnant women using nicotine patches should be advised to remove them before going to bed to avoid the administration of nicotine overnight (when the foetus would not normally be exposed to nicotine from smoking). Giving up during pregnancy also helps to reduce an infant's exposure to its mother's second-hand smoke. Increasing awareness of the ways in which families can reduce SHS exposure levels, if not eliminate them, would be beneficial. Concerns have been raised^{32, 33} about the possibility of adverse effects of nicotine on the foetus, through alterations in uterine, placental or blood flow or directly on

the brain. It had been hoped that the SNAP (Smoking and Nicotine in Pregnancy) trial³⁴ would provide clarification. The trial found³⁵ that adding a nicotine patch (15 mg per 16 hours) to behavioural cessation support for women who smoked during pregnancy did not significantly increase the rate of abstinence from smoking until delivery or the risk of adverse pregnancy or birth outcomes. However, low compliance rates substantially limited the assessment of safety.

A Cochrane Review of the effect of interventions designed to promote smoking cessation in pregnant women³⁶ reported that almost 15% reductions in preterm birth and low birth weight in the intervention arm of smoking cessation trials confirm that smoking cessation can reverse the adverse effects of smoking on perinatal outcomes. Stopping smoking in the first three months of pregnancy greatly reduces the risk of low birth-weight and stopping smoking at any stage during pregnancy brings proportional health benefits³⁷. The Cochrane Review also concluded that the most effective intervention appeared to be providing financial incentives, which helped around 24% of women to quit smoking during pregnancy in the studies included in the review. There are now examples of financial incentives schemes for cessation in pregnancy in place in Scotland. For example, 'Give It Up For Baby' is in place across Tayside and uses grocery vouchers to encourage pregnant smokers from socially deprived communities to quit smoking³⁸.

Resources

A guide to smoking cessation in Scotland. NHS Health Scotland, September 2010. Online: www.healthscotland.com/documents/4661.aspx

How to stop smoking in pregnancy and following childbirth
NICE guidance June 2010. <http://guidance.nice.org.uk/PH26>

ASH Scotland information briefings at:
<http://www.ashscotland.org.uk/what-we-do/supply-information-about-tobacco-and-health/briefings.aspx>

ASH Scotland archive of tobacco-related research (updated weekly)
See headings for pregnancy and infants, and second-hand smoke at:
www.ashscotland.org.uk/information/tobacco-related-research

Free support to stop smoking

People who smoke have a much better chance of giving up smoking if they get support to do so and there are lots of different ways to find support:

- pharmacies/local chemists are able to provide quit smoking advice and support. Where appropriate, the pharmacist can identify the most suitable form of nicotine replacement therapy (NRT) and some pharmacies run NHS-funded stop smoking services
- through the local doctor's surgery
- phone free to Smokeline on **0800 84 84 84** (8am to 10pm, seven days a week)
- Smokeline advisers provide free advice and information for anyone who wants to stop smoking, or who wants to help someone to quit
- Smokeline also provides information about the free stop smoking services provided by every health board in Scotland
- request stop smoking leaflets, a magazine and a DVD from Smokeline either by calling the helpline, or by texting 'QUIT' to 83434
- visit www.canstopsmoking.com and enter a postcode to find the nearest stop smoking service or use web chat support (8am to 10pm) at www.canstopsmoking.com/Web-Chat

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<http://old.rcplondon.ac.uk/professional-Issues/Public-Health/Documents/Preface-to-passive-smoking-and-children-March-2010.pdf> [Accessed 06.09.12]

² Ibid

³ Information Services Division Scotland. Births in Scottish Hospitals 2009/10. Table: smoking history at booking by maternal age and deprivation. Available from: www.isdscotland.org/Health-Topics/Maternity-and-Births/Births/ [Accessed 06.09.12]

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