The clinical case for smoking cessation for pregnant women

What is the relationship between smoking and pregnancy?

Smoking during pregnancy poses significant health risks to both mother and baby.[1–5] In fact, smoking is considered to the most significant modifiable cause of adverse pregnancy outcomes.[2,6]

Although the specific mechanisms involved in the adverse affects of smoking on pregnancy are not clear, the major components of cigarette smoke that are thought to cause harm are carbon monoxide and cyanide.[7] These toxins freely cross the placenta and reduce oxygen and nutrient transfer to foetal tissues.[8] Smoking also damages the placenta, causing reduced vascularisation, internal edema of the capillaries and broadening of the basement membrane of the placental villi.[9]

Why intervene in secondary care?

Hospitalisation offers an opportune time to encourage patients to stop smoking for five main reasons:

- Firstly, this time is often a 'teachable moment' where patients are more receptive to intervention and are more motivated to quit.
- Secondly, abstaining from smoking at this time can lead to significant health benefits.
- Thirdly, the hospital's smokefree environment creates an external force to support abstinence.
- Fourthly, patients are ideally placed to be given information about treatment options, support through withdrawal, and signposted to specialist stop smoking services.
- Finally, stop smoking interventions are highly cost-effective and result in direct cost-savings to the NHS.

Compared to non-smokers, women who smoke during pregnancy have a significantly increased risk of:[1–9]

- Low birth weight baby (<2500g)
- Preterm birth
- Miscarriage
- Ectopic pregnancy
- Spontaneous abortion
- Premature rupture of membranes (PROM)
- Perinatal mortality (still birth and neonatal death)
- Fetal growth restriction (FGR)
- Heart and other defects
- Placenta preavia
- Placental abruption
- Deep vein thrombosis

Smoking and exposure to secondhand smoke also increases the risk of:[1,4,5]

- Sudden infant death syndrome (SIDS)
- Neonatal respiratory problems

"Smoking is the most significant modifiable cause of adverse pregnancy outcomes."

What are the benefits of quitting for pregnant women?

Successful quitting will benefit a mother's long-term health by reducing the risk of disease development including heat disease, lung, breast and other cancers, and respiratory illness.[5,11] Importantly, there is also strong evidence that quitting smoking during pregnancy significantly improves pregnancy outcomes.[2,3,12]

To gain maximum benefit, a quit attempt needs to begin at the beginning of pregnancy and remain quit throughout the pregnancy. Women who stop smoking before 15 weeks of pregnancy reduce their risk of spontaneous premature birth and of having a low birth weight baby to the same as a non-smoker.[13,14] However, temporary abstinence beginning in the first trimester or even the third trimester and lasting until a mother has finished breastfeeding will still have worthwhile benefits.[5]

There is no safe level of smoking in pregnancy and smoking even a few cigarettes a day poses a significant risk to mother and baby.[10] While some women have reduced their smoking, quitting smoking completely is one of the most important thing they can do to have a healthy baby.

Smoking abstinence during early pregnancy has been associated with the following outcomes:

- A Cochrane review has shown that receiving behavioural support for smoking cessation reduces low birth weight by 17% (RR 0.83; 95%CI 0.72, 0.94) and there was an average 55.6g increase in mean birth weight (95%CI; 29.82g, 81.38g).[12]
- 22% less likely to be admitted to NICU (RR 0.78; 95%CI 0.61, 0.98).[12]
- 37% reduced odds of placenta previa (OR 0.63; 95%CI 0.47 – 0.96) and placental abruption (OR 0.63; 95%CI 0.47 – 0.96).[15]
- 44% reduced odds of ectopic pregnancy (OR 0.56; 95%CI 0.45, 0.76).[15]
- 41% reduced odds of preterm PROM (OR 0.59; 95%CI 0.44, 0.85).[15]
- 41% reduced odds in occurrence of colic (OR 0.59; 95%CI 0.36, 0.98).[16]
- Reduced incidence of SIDS.[17]

General health benefits of stopping smoking[18]

- Within 20 minutes heart rate and blood pressure drops.
- Within 12 hours carbon monoxide levels in the blood return to normal.
- Within 24 hours the chance of a heart attack decreases.
- Within 2 weeks to 3 months circulation improves and lung function increases.
- Within 1 to 9 months lungs regain normal ciliary function, reducing infection risk.
- Within 1 year risk of heart attack is reduced by half.
- Within 5 to 15 years risk of stroke is reduced to that of a non-smoker.
- By 10 years the risk of lung cancer is approximately half that of a smoker. The risk of cancers of the mouth, throat, bladder, kidney and pancreas also decrease.
- By 15 years risk of heart attack is that of a non-smoker.

Supporting pregnant women with quitting

Smoking cessation interventions have been proven effective for pregnant women.[12] Pregnant women who smoke have an increased chance of quitting if they use a high level of behavioural support and nicotine replacement therapy (NRT).[12,19–23]

NRT works by reducing urges to smoke and other withdrawal symptoms, thereby making stopping smoking a bit easier.[19,23] There has been some debate over the risks of NRT during pregnancy due to the effects that nicotine can have on the developing foetus. Research has found the levels of nicotine delivered by NRT are not likely to compromise the foetus.[24,25] NRT products are safer than continuing to smoke and can be particularly beneficial to women with high levels of tobacco dependence or significant cravings to smoke.[25] Combining two forms of NRT such as the patch and a oral form of NRT (e.g. gum, inhaler, lozenge) has been shown to result in higher quit rates among pregnant women who smoke.[26]

Maternity care providers can play an important role in supporting quitting among pregnant women. Helping women through their quit attempt in a non-judgmental and supportive manner and helping normalise the feelings and challenges they may be experiencing is an important part of supporting women with stopping smoking.[27–28]

Addressing smoking during antenatal and postnatal admissions

Women who smoke are more likely to be admitted for antenatal care than non-smokers. Whilst in hospital, some women will suffer from acute tobacco withdrawal symptoms and may request to leave the ward frequently to smoke to relieve them or even request early discharge. Tobacco withdrawal symptoms can begin within hours after a person's last cigarette and can be quite intense for some, making the individual quite uncomfortable and agitated and can affect their care while in hospital.

Not all women will be forthcoming in identifying their inability to smoke in causing discomfort for fear of judgment and it is important for healthcare professionals to assess smoking status and link women who smoke with support while in hospital. Providing behavioural support and NRT to treat their tobacco withdrawal in the inpatient setting will make the patient more comfortable and compliant with treatment and increase their chance of a successful outcome in pregnancy.

Recognising tobacco withdrawal symptoms

Nicotine is a highly addictive substance and it can be very difficult for some women to quit smoking. For most people tobacco withdrawal symptoms are usually strongest in the first week after quitting and generally last 2 to 4 weeks, although this can be longer for some smokers.

Tobacco withdrawal symptoms include:

- Urges to smoke or cravings
- Restlessness or difficulty concentrating
- Irritability, aggression, anxiety, crying, sadness or depression
- Difficulty sleeping or sleeping disturbances
- Increased appetite and weight gain
- Coughing
- Mouth ulcers
- Constipation
- Light headedness

Very Brief Advice on Smoking

How to approach smoking cessation with pregnant women

NICE guidance "Stopping smoking in pregnancy and after childbirth" [20,21] outlines a care pathway for supporting smoking cessation among pregnant women, which may be adopted for pregnant smokers in inpatient settings. In essence, the care pathway incorporates a very brief intervention using the 3As:

ASK about smoking status and conduct carbon monoxide (CO) testing

ADVISE women:

- of the personal health benefits of stopping smoking for both mother and baby
- the best way of quitting is with a combination of support and stop smoking medication
- support with stopping smoking and/or managing any tobacco withdrawal symptoms (temporary abstinence) is available

ACT on the women's response

- initiate NRT for patients at the bedside to manage withdrawal (within hours of admission)
- monitor withdrawal and adjust NRT accordingly
- refer to available stop smoking support at the hospital or via the local Stop Smoking Service

Document smoking status and the intervention provided in the medical notes

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