

Encouraging smoke-free pregnancies: the role of primary care



One in ten New Zealand women smoke during pregnancy and this figure is significantly higher among Māori and women living in lower socioeconomic areas. Prospective parenthood provides motivation to stop smoking and health professionals can increase smoking cessation rates by offering support at this time. Non-pharmacological interventions are first-line for women who want to stop smoking during pregnancy or while breast feeding, however, nicotine replacement therapy (NRT) is appropriate, following a brief risk-benefit assessment. The post-partum period is characterised by a high level of smoking relapse, especially among women who live in households with other people who smoke. Therefore it is important that smoking cessation advice also includes partners and family/whānau.

Pregnancy provides a golden opportunity to discuss smoking cessation

Maternal smoking is the largest modifiable risk factor affecting fetal and infant health in the developed world.¹ The number of New Zealand women who continue to smoke during pregnancy is a major health concern. The “Growing up in New Zealand” study of over 7000 women who were pregnant during 2009 and 2010 reported that 11% of New Zealand mothers smoked at some stage during pregnancy.² This figure was significantly higher among Māori women (34%) and women from lower socioeconomic areas (17%).²

Women who smoke are more likely to stop during pregnancy than at any other time in their lives.³ First time mothers are particularly receptive to cessation advice. A study of over 70 000 women who were pregnant and smoked, found that women who were giving birth for the first time were 2.5 times more likely to stop smoking than women who already had children.⁴ Discussions about pregnancy are therefore a crucial opportunity to offer smoking cessation support.⁵ When patients present for pre-conception advice or the first antenatal check, smoking status should be confirmed and if appropriate, cessation support offered. Discussions about smoking should, wherever possible, also include family/whānau. Women who are pregnant and living with a person who smokes are four times more likely to resume smoking after giving birth.⁶ The goal of smoking cessation treatment is to help families remain smoke-free long-term.

Managing smoking cessation in women who are pregnant

All women who are pregnant should be routinely asked about their smoking status and those who smoke encouraged to use smoking cessation supports, e.g. Quitline and NRT where appropriate. ABC reminds health professionals what to do: Ask

PHO performance goals for smoking cessation

The PHO Performance Programme currently has two smoking related indicators. The “smoking status recorded indicator” aims to capture smoking status for 90% of enrolled patients in New Zealand aged 15 – 74 years. This indicator accounts for 7% of the performance funding; 2% for the total population and 5% for the high need population. During the January 2012 to July 2012 reporting period, 78% of the total population and 77.4% of the high need population within New Zealand had smoking status recorded. Although this continues a strong upward trend for this indicator, this result is below the national target and only three of 35 PHOs met the Programme goal.

The “smoking brief advice and cessation support indicator” aims for 90% of enrolled patients aged 15 – 74 years who smoke and have been seen in General Practice, to be given brief advice and/or cessation support within the last 12 months. This indicator accounts for 13% of the performance funding; 4% for the total population and 9% for the high need population. Brief advice to stop smoking includes any documentation that either a person who currently smokes was advised to stop smoking or that an offer of cessation support was made. Cessation support includes referral to a smoking cessation programme, prescribing NRT or other medicines for the purpose of smoking cessation, or providing behavioural support.



The benefits of stopping smoking during pregnancy

All people who smoke begin to benefit within minutes of stopping. One of the most immediate and measurable changes is a decrease in carbon monoxide levels in the blood, which benefits both the mother and fetus. Stopping smoking also has long-term benefits, including reduced risk of stroke, cancer and coronary heart disease. In women who are pregnant, smoking cessation prevents fetal exposure to over 7000 chemicals contained in cigarette smoke, 69 of which are known to be carcinogenic.⁷

“When you smoke, so does your baby...” When a woman who is pregnant smokes, both carbon monoxide and nicotine accumulate in fetal serum and amniotic fluid at levels higher than those found in maternal serum.^{8,9} Nicotine is also present in the breast milk of mothers who smoke and its metabolites are detectable in the urine of their breast feeding infants.¹⁰

Carbon monoxide reduces oxygen binding to haemoglobin.⁹ Antenatal exposure to nicotine causes increased fetal heart rate and reduced fetal breathing movements.⁹ Assessing the long-term effects of antenatal exposure to nicotine is difficult due to a lack of human studies, however, animal studies have shown that nicotine can cause malformation of neural pathways in the developing brain.¹⁰

The reduced fetal oxygen supply caused by smoking results in intrauterine growth deficiency and infants born to mothers who smoke typically weigh 200 – 300 grams less than infants born to women who do not.⁹ Smoking during pregnancy also increases the risk

of a pre-term birth between 1.2 – 1.8 times.⁹ Ectopic pregnancy, placenta complications, stillbirth, premature rupture of membranes and sudden unexplained death in infancy (SUDI) are also complications that occur more frequently in women who smoke during pregnancy.⁹ A significant and dose-dependent increase in the risk of all adverse birth outcomes measured (other than still birth) demonstrates that there is no safe number of cigarettes that can be smoked per day.¹¹

Quitting smoking early during pregnancy reduces adverse effects. One study found that there was no significant difference between the birth weights and the rates of pre-term birth in women who stopped smoking before 15 weeks gestation and women who had never smoked.¹ However, women who continued to smoke beyond 15 weeks gestation were at increased risk of having a low birth weight infant and/or a pre-term birth.¹ However, there are still long-term benefits to be gained for mother and fetus by stopping smoking later in pregnancy.

Mothers who stop smoking are more likely to breast feed for periods longer than six months, which has numerous well known short and long-term health benefits for the infant.⁵ Health professionals should stress the importance of continuing to breastfeed, regardless of smoking status.¹²

There are also financial benefits to be gained by stopping smoking that may provide additional motivation for young families to remain smoke-free.

about smoking, Briefly advise to quit, and most importantly, offer Cessation support.¹²

All women of a reproductive age should be asked about pregnancy intent or risk. If a woman who smokes is considering, or is at high-risk of becoming pregnant, then the health benefits of smoking cessation should be discussed further and a referral made to a dedicated smoking cessation service. Alcohol, drug use and other risk taking behaviour should be explored, and lifestyle factors, e.g. weight, diet, nutrition and supplement use should be addressed.



For further information see: “Pre-conception care in general practice”, BPJ 35 (Apr, 2011).

Ask about and record the smoking history

The smoking habits of a patient are useful for estimating nicotine dependence and identifying individuals who may benefit from extra assistance in their quit attempt. The smoking status of other members of the household is also important, as having a partner who smokes has been said to “almost universally predict” a return to smoking for a pregnant woman attempting to remain smoke-free.⁶

“When was the last time you smoked a cigarette?” Asking about smoking in a non-judgemental way is important as women who are pregnant may under-report smoking. In the mid-1990s, a survey of New Zealand mothers found that nearly one-quarter of women who were smoking while pregnant did not self-report smoking, most likely due to feelings of guilt.¹³ A similar result was found in a more recent Scottish study.¹⁴

“How soon after waking do you usually have your first cigarette?” This is the best question for assessing nicotine dependence.¹² If a person smokes within 30 minutes of waking they have a high degree of nicotine dependence and are more likely to require medical assistance to successfully stop smoking.¹² The number of cigarettes smoked per day can also be used to assess nicotine dependence, however, this provides a less accurate estimate.

Briefly advise to stop smoking

“You’ve probably already thought about quitting – I’d like to help you do it.” This is a positive way to begin a discussion about smoking cessation. The discussion should address the challenge that smoking cessation represents. It should also encourage complete smoking cessation rather than “cutting down”. Reducing the number of cigarettes smoked per day typically results in people who smoke taking deeper puffs, holding the puffs for longer and therefore smoking each cigarette more intensively.¹²

Cessation support should be offered to all people who smoke


All women who are pregnant and wish to stop smoking should be referred to a dedicated smoking cessation service. Māori women who want to stop smoking can be referred to a culturally appropriate service (see “Aukati KaiPaipa”). Recent evidence strongly indicates that the offer of smoking cessation support is the most important component of the ABC approach. Furthermore, support should be offered to all smokers without assessing their willingness to stop smoking. A meta-analysis showed that offering cessation support motivated an additional 40 – 60% of people to attempt to stop smoking compared to being advised to stop smoking on medical grounds alone.¹⁵ The authors estimated that if all smokers were given advice to stop smoking, 25% would attempt to stop within six months of a consultation, however, this could be increased to 35% if this advice was followed up with an offer of cessation support.¹⁵ It is important to note that in all trials analysed, offers were made without an assessment of motivation to stop smoking.¹⁵ This and other data suggest that previous recommendations to assess a


Heavy smoking is a risk factor for other risky behaviours

Smoking ten or more cigarettes per day during pregnancy is a marker for additional fetal and maternal risk factors. A Canadian study of almost 250 000 births from 2001 – 2006 found that smoking ten or more cigarettes per day during pregnancy was associated with a 15-fold increase in the risk of drug use. Women who smoked between one and nine cigarettes a day had a ten-fold increased risk.¹¹ Alcohol use during pregnancy was also five times higher in women who smoked more than ten cigarettes per day.¹¹

Aukati KaiPaipa

Aukati KaiPaipa is a free, face-to-face smoking cessation service for Māori delivered from over 30 centres within New Zealand. The programme involves coaches who create a smoking reduction plan prior to an intensive smoke-free intervention with nicotine replacement therapy (NRT). Cessation follow-ups are conducted by phone or in person to prevent relapses.

 To find the closest provider go to the Aukati KaiPaipa website: www.aukatikaipaipa.co.nz/contact-us


 For further information see: “Smoking cessation for Māori”, BPJ 22, (Jul, 2009).



The screenshot shows the Aukati KaiPaipa website interface. At the top, there is a navigation menu with links for Home, About Aukati KaiPaipa, The Programme, What is NRT?, and Contact Us. The main content area features the Aukati KaiPaipa logo, which includes a stylized Māori design and the text "AUKATI KAI PAIPA". Below the logo, there is a heading "Aukati KaiPaipa - Smoking Cessation" followed by a description of the service: "Aukati KaiPaipa is a kaitiaki (face-to-face) service that is delivered locally within most communities." The text continues: "The quitting programme of the Aukati KaiPaipa service offers Māori and their whānau the opportunity to stop smoking through a range of activities and products which includes free nicotine patches, gum and/or lozenges (NRT), motivational counselling and ongoing support." The final paragraph states: "The goal is to reduce the smoking prevalence and consumption amongst Māori. The programme also aims to increase the positive attitudes towards supporting the smokefree kaupapa – such as smokefree environments, particularly for tamariki."


Better help for smokers to quit

The Ministry of Health began introducing national health targets in 2007. These targets reflect priority areas of healthcare for the government, and every quarter DHB performance results are published in major metropolitan newspapers. Unlike the PHO Performance Programme, health sector performance is not directly related to funding. In 2012–2013 a new smoking cessation target was released – brief advice and support to stop smoking should be offered to 90% of patients in primary care who smoke, and for 95% of patients who smoke and are seen in public hospitals. Within the target there is an expectation that progress should be made towards providing 90% of pregnant women who smoke with advice and support to stop smoking. This is to be delivered either in General Practice at the time of pregnancy confirmation, or by the LMC.

 Further information is available from: www.health.govt.nz (key words = smoking health targets)

person's willingness to stop smoking, and to restrict offers of cessation support to those who express a desire to stop is outdated and may even be causing harm.


Support from friends during quit attempts should be encouraged. The regular and positive input of a supporter has been shown to improve eight-month postpartum quit rates.¹⁶

 The Quitline is a smoking cessation support service which can be accessed six days a week on **0800 778 778**. Further information is available from: www.quit.org.nz. There are also pregnancy specific smoking cessation services in the Auckland, Mangere, Waitemata, Hastings, Canterbury and Southland regions. A number of services also provide Pacific smoking cessation support. Further information is available from: www.hiirc.org.nz (key words = smoking, cessation, providers).

Motivational interviewing is recommended by the American College of Obstetricians and Gynecologists for prompting behaviour change in women who are pregnant and smoke but are resistant to stopping.¹⁷ Motivational interviewing is useful when advice alone is ineffective at reducing risky behaviours because there is a misunderstanding of the connection between the activity and the health risk, or where there is a perceived value or a social connection associated with the behaviour.¹⁸

The principles that are important when using motivation interviewing as a smoking cessation intervention are:¹⁸

- Display understanding and avoid arguments by acknowledging how difficult smoking cessation can be
- Highlight discrepancies between goals and behaviour, e.g. smoking is at odds with any expressed desire to do everything possible for the health of an infant
- Accept resistance and provide feedback in situations where the patient may find quitting difficult, e.g. suggesting that the family collectively decide that the home becomes a smoke-free zone
- Support initiative and self-motivation in remaining smoke-free, e.g. reinforcing the collective benefits of being part of a smoke-free family/whānau


 The ACOG "Motivational Interviewing: A tool for behaviour change" is available from: www.acog.org (Key words = motivational interviewing).

The use of medicines to support quit attempts

Nicotine replacement therapy (NRT) is a useful smoking cessation treatment for all people who want to stop smoking. In pregnant women, smoking cessation without NRT is preferable and women who are “light” smokers may be confident that they can stop without it. However, for women who are pregnant or breast feeding and unable to stop smoking on their own, NRT can be offered after a brief discussion of the risks and the benefits of treatment. The New Zealand smoking cessation guidelines state that the balance of risk versus benefit during pregnancy overwhelmingly supports the use of NRT, compared to the health risks of continued smoking.¹² This is because NRT delivers nicotine at lower levels than smoking, without the additional toxins contained in cigarette smoke. In a large study involving over 1700 pregnant women who used NRT, no significant association was found between NRT use and decreased infant birth weight.¹⁹ Other studies report similar findings.²⁰

NRT also reduces cigarette withdrawal symptoms that can cause a smoking relapse. Generally, oral NRT, e.g. gum or lozenges, is recommended for pregnant women in preference to nicotine patches as this provides a lower daily dose of nicotine.¹² If the amount of nicotine delivered by oral NRT is unlikely to be sufficient, the shorter-acting 16-hour patch, removed before sleeping, is considered to be the best option.¹² Women who are pregnant should be advised that if they continue to smoke while using NRT the risk to their foetus may be greater than if either method of nicotine delivery is used alone.

NRT is fully subsidised at a cost to the patient of \$5 for a three-month supply. It can be prescribed by General Practitioners, Nurse Prescribers and Midwives, but is also available from Quitline and Quit Card providers. Some patients with a community services card may receive an additional subsidy. Unsubsidised NRT is also sold over the counter at pharmacies or supermarkets.


 Quit cards, which are mainly used by Quit Card providers or Quitline, have been redesigned with a new tick box system to make them easier to fill in. Further information on how to use the new Quit Cards is available from: www.quit.org.nz/file/quitcards/nrt-assessment-august-2012-online.pdf

Other smoking cessation medicines are not recommended for use in pregnancy as the potential risk to fetal development is largely unknown and cannot be balanced against the known benefits of smoking cessation. Pregnancy is listed as a precaution for nortriptyline use by New Zealand guidelines.¹² Bupropion has been reported recently by Medsafe (2012)

General Practitioners rarely act as Lead Maternity Carers (LMC)


In New Zealand, 1% of pregnant women have an LMC who is a General Practitioner.² The opportunities primary care health professionals, who are not registered as a LMC, have to routinely offer smoking cessation support to pregnant women are therefore often limited to consultations where pregnancy is confirmed and/or the first antenatal screen is performed (this is the only funded primary care consultation for pregnancy). If offers of smoking cessation treatment are not made at these times then opportunities in primary care will be limited to consultations for other reasons.

It is important that the general practice team take every opportunity to provide smoking cessation support and do not assume that this will be done by midwives.

 For further information see: “The role of General Practice in the care of pregnant women”, BPJ 35 (Apr, 2011).



to potentially increase the risk of congenital cardiovascular malformations and it is recommended that women who are pregnant, or planning to become pregnant, should be informed of this risk before considering treatment.²¹ Varenicline is contraindicated in women who are pregnant, according to New Zealand guidelines.¹² A phase 4 clinical trial in the United States is currently enrolling participants to determine whether varenicline use during pregnancy is associated with an increased risk of congenital malformations compared to continued smoking.²²

 For further information see: "Update on smoking cessation", BPJ 33 (Dec, 2010).

Electronic cigarettes (e-cigarettes) are battery powered nicotine delivery devices which resemble cigarettes. Currently there is no evidence to support healthcare workers actively recommending these devices. Further evidence is required to assess their effectiveness as smoking cessation aids.

Follow-up and ongoing support

Between 45% – 75% of women who stop smoking during pregnancy begin smoking again within one year of giving birth.¹⁷ Smoking cessation interventions for pregnant women therefore need to be ongoing and proactive. A follow-up visit can be scheduled for the eighth month of pregnancy at the same time as the quit date is set. This will allow the goals of cessation and strategies for staying smoke-free to be revised. It is particularly important that a follow-up consultation is arranged in primary care, due to the limited contact General Practitioners in New Zealand have with women during the antenatal and postnatal periods. Consultations for the six-week infant immunisation and subsequent immunisation schedule provide additional opportunities for follow-up.

Follow-up consultations should emphasise the ongoing health benefits of staying smoke-free for the mother and the infant, as it reduces the risk of SUDI, bronchitis, asthma and otitis media.¹⁷

If maternal weight gain is a concern, suggest that the woman focuses on remaining smoke-free and that weight-loss is a secondary goal. Encourage breast feeding, a healthy lifestyle and participation in physical activity which is likely to reinforce the health benefits of remaining smoke-free and to assist in weight reduction.

What to do if the patient begins smoking again?

If a relapse occurs, emphasise that this is a "misstep along a path", and not a failure. Provide a reminder that many people who quit smoking experience relapses.¹⁷ Encourage another attempt and set a new quit date, then support a commitment to not having a single puff from that point on. All smoking related items should be discarded, including lighters and ashtrays. Ask the woman to identify what caused the relapse, to enhance understanding of triggers, and help to implement a plan to avoid it happening again. Smoking cessation support services can provide day-to-day support and help to provide management strategies for the reintroduction of familiar smoking cues such as drinking caffeine and alcohol, and social and occupational situations.⁶

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