CATEGORY: BEST PRACTICE



Smoking and pregnancy

This statement was developed by Dr Christopher Griffin with input from Dr Julia Harding and Dr Clare Sutton, and reviewed by the Women's Health Committee and approved by the RANZCOG Board and Council.

The committee acknowledges the contribution of A/Prof Gillian Gould to this statement.

A list of Women's Health Committee Members can be found in <u>Appendix A</u>.

Disclosure statements have been received from all members of this committee.

Disclaimer This information is intended to provide general advice to practitioners. This information should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient. This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The document has been prepared having regard to general circumstances.

First endorsed by RANZCOG: November 2001 Current: March 2020 Review due: March 2023 **Objectives:** To provide advice on the management of cessation of smoking in pregnancy.

Outcomes: To improve outcomes of those women attempting to cease smoking in pregnancy.

Target audience: All health practitioners providing maternity care.

Evidence: Cochrane Library, Medline and Pubmed were searched for systematic reviews, randomised controlled trials and cohort studies relating to smoking behaviour, smoking cessation and the effects of smoking on women's health, pregnancy, fetal development and childhood health.

Values: The evidence was reviewed by the Women's Health Committee (RANZCOG), and applied to local factors relating to Australia and New Zealand.

Background: This statement was first developed by Women's Health Committee in October 2001 and was reviewed in March 2020.

Funding: This statement was developed by RANZCOG and there are no relevant financial declarations.

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1. Plain language summary

Smoking during pregnancy is harmful to both the mother and fetus and remains the most significant preventable cause of complications for women and their children. Smoking is associated with preterm delivery, developmental problems with the placenta, low birth weight, stillbirth and sudden unexpected death in infancy (SUDI) as well as later impairments of child growth and development, and increased risk of chronic disease later in life.¹ Exposure to second hand smoke, also known as passive smoking from any type of smoke and the use of smokeless tobacco and e-cigarettes also pose serious health risks to pregnant women and children.²

All women should be screened for smoking status during pregnancy advising them of the risks of smoking and the value of smoking cessation and offering them counselling and behavioural support where appropriate.

Pregnancy is a time when some women are highly motivated to quit smoking. Of the women who cease smoking during pregnancy, between 50-70% will resume in the year postpartum. Women who cease smoking during pregnancy should therefore receive follow up support to promote smoking cessation. It is recommended that cigarette-smoking partners of pregnant women should also be identified and offered assistance with smoking cessation.

2. Summary of recommendations

| Recommendation 1 | Grade |
|--|---|
| People who smoke, or have recently ceased, should be identified at their first contact with a health care service, ideally in the preconception setting. Health care providers should enquire about smoking history and current smoking pattern, including exposure to second hand smoke and this information should be recorded so that it is available for the remainder of the pregnancy. | References ^{3, 4} Consensus - based |
| Recommendation 2 | Grade |
| All women who currently smoke or have recently quit should be advised of the risks of smoking and the value of smoking cessation. Health care providers should assess the patient's motivation and thoughts related to smoking cessation/reduction. They should advise patients to stop smoking and offer assistance with any smoking cessation attempts. Assistance can take the form of written information, referral to quit lines and/or referral to individual or group-based smoking cessation programs. | A References 3, 4 |
| Recommendation 3 | Grade |
| If, after other options have been explored, a woman expresses a clear wish to use nicotine replacement therapy, the risks and benefits should be discussed with her. | B Reference ⁵ |
| Practice Point | Grade |
| If nicotine replacement therapy is used during pregnancy, intermittent use formulations (gum, lozenge or tablet) are preferred to continuous use formulations (nicotine patches). If patches are used, women should use a 16 | |

| hour patch or remove at night. | |
|--|---|
| Practice Point | Grade |
| Of women who cease smoking during pregnancy, 50-70% will resume smoking postpartum. Patients who receive a smoking cessation intervention ideally should be followed up and assessed for ongoing abstinence during subsequent contacts. | References 6, 7 |
| Recommendation 5 | Grade |
| Partners of pregnant women should be asked about smoking status at points of contact with health professionals and referred to cessation support as having a partner who smokes is a major influence on women who smoke during pregnancy and on relapse rates postpartum. | Reference ⁴ Consensus - based |

3. Introduction

Smoking during pregnancy is a common and preventable cause of complications for both the mother and fetus. About 1 in 10 pregnant women smoke in Australia, with a rate of 1 in 8 in New Zealand. In Australia 44% of Aboriginal and Torres Strait Islander women smoke in pregnancy⁸ and in New Zealand, 35% of Maori women smoke during pregnancy.⁹ Women who smoke in pregnancy are more likely to be younger and to live in areas of socioeconomic disadvantage.⁸

4. Smoking and pregnancy

Smoking and smoke exposure in pregnancy have several detrimental effects largely due to nicotine, carbon monoxide, cotinine, cyanide, cadmium, mercury, polycyclic aromatic hydrocarbons (PAHs) and tar inhalation. These constituents not only affect the mother but also have the ability to cross the placenta and affect the fetus.⁴ Smoking disturbs the development of the placenta, potentially disrupting the implantation process and interfering with the transformation of the uterine spiral arteries. Studies show thickening of the villous membrane of the placenta in smokers, lessening the ability of the placenta to function. Nicotine also impairs amino acid transport across the placenta. These changes increase the risk of intrauterine fetal growth restriction and preterm birth.⁶

Smoking in pregnancy is associated with a number of obstetric and perinatal complications making it important that pregnant women are made aware of the potential risks and given a clear message regarding the importance of smoking cessation.³ Reducing smoking has been identified by the Stillbirth Centre for Research Excellence as an important intervention to reduce stillbirth risk.²

4.1 Obstetric complications of smoking

- Miscarriage¹⁰
- Ectopic pregnancy¹⁰
- Preterm labour and premature rupture of membranes There is a two-fold increase in the risk of preterm birth with smoking, after adjustment for other factors.¹¹
- Placental abruption Two-fold increase in the risk, after adjustment for other factors.^{12, 13}
- Placenta praevia Relative risk for placenta praevia is 1.36 after adjustment for other factors.¹³

- Pre-eclampsia Of pregnancies that are complicated by severe pre-eclampsia, smoking is associated with increased rates of perinatal mortality, placental abruption and small for gestational age infants.^{10, 13}
- Thrombotic risk¹⁴
- Anaesthetic risks and respiratory complications¹⁰

4.2 Fetal complications of maternal smoking

- Low birth weight (less than 2500g at birth)⁶
- Fetal anomalies^{15, 16}
- Perinatal death⁶

4.3 Child and adult complications of maternal smoking

- Sudden unexpected death in infancy syndrome⁶ (SUDI)
- Respiratory disease⁶
- ENT and other infections^{17, 18}
- Childhood cancers^{19, 20}
- Nicotine dependence²¹

Smoking has been shown to affect women's health outside of pregnancy, including increased rates of allcause mortality, lung cancer, cervical pre-invasive disease and cancer, vulval cancer, bladder cancer, oropharyngeal cancer, breast cancer, cardiovascular disease, thromboembolic disease, chronic respiratory disease, reduced fertility, premature menopause and osteoporosis^{4, 6, 22-25}

5. Management of smoking in pregnancy

5.1 Assessing smoking status

Non-disclosure of smoking in pregnancy is widespread. Disclosure is improved by asking "do you smoke the same as before you were pregnant?" or "do you smoke less since you found out you were pregnant?", or "do you smoke occasionally?" compared to "do you smoke?". Consideration should be given to offering all women an exhaled breath carbon monoxide reading. Counselling, nicotine patches,²⁶ and telephone support services have been shown to be effective in reducing the incidence of smoking.³

5.2 Smoking cessation and pregnancy

Women who smoke are more likely to stop during pregnancy than in any other time in their lives. Pregnancy is a time when women are the most motivated to stop smoking, with a 3.8-fold increase in smoking cessation rate when compared to non-pregnant women.²⁷ This is due to the increased social and family support for quitting and the increased contact with the healthcare system. Evidence has consistently shown that a combination of brief advice from a health professional, behavioural intervention and smoking cessation pharmacotherapy is the most effective approach to successful smoking cessation.²⁸ Of Australian women who reported they smoked in the first 20 weeks of pregnancy, 20.4% of them did not report smoking in the second 20 weeks. This reduction was roughly halved for Aboriginal and Torres Strait Islander women with only 10.6% of pregnant smokers reporting smoking cessation in the second 20 weeks of pregnancy.²⁹

The reasons behind the higher smoking prevalence and lower quit rates among Indigenous pregnant women are complex. However they are often motivated to quit and make quit attempts, but may be less likely to be successful.

Despite the higher rates of smoking cessation recorded during pregnancy, estimates are that 50% to 70% of these women return to smoking regularly within 6 to 12 months postpartum.⁴ It is important that smoking cessation interventions target not just women during pregnancy, but also focus on women in the post-partum period to become smoke free for themselves as well as for the baby so that smoking cessation during pregnancy is a permanent change and not "just for the pregnancy".

Smoking cessation interventions in pregnancy reduce the proportion of women who continue to smoke in late pregnancy and have been shown to reduce both low birth weight and preterm birth.³ Such interventions should be employed and supported in all maternity care settings.³ Smoking cessation programs also help to improve the long term health and wellbeing of mothers and fathers by reducing the incidence of related health problems such as cancer and chronic disease.⁴

5.3 Interventions for reducing smoking during and post pregnancy

Non-pharmacological interventions are first line for women who want to stop smoking during pregnancy, however nicotine replacement therapy is appropriate following a risk benefit assessment.

- Screening People who smoke, or have recently ceased, should be identified at their first contact with a health care service, ideally in the preconception setting. Health care providers should enquire about smoking history and current smoking pattern and this information should be recorded so that it is available for the remainder of the pregnancy.^{3, 4} Revisit at 28 weeks if the initial screening was declined.
- **Counselling/Behavioral Support** All women who currently smoke or have recently quit should be advised of the risks of smoking and the value of smoking cessation.^{3, 4} Health care providers should assess the patient's motivation and thoughts related to smoking cessation/reduction. They should advise patients to stop smoking and offer assistance with any smoking cessation attempts. Assistance can take the form of written information, referral to quit lines and/or referral to individual or group-based smoking cessation programs.^{3, 4} Smoking cessation support should be provided in a sensitive culturally appropriate manner.
- Nicotine Replacement Therapy (NRT) NRT can be used by pregnant or breastfeeding mothers however the risks and benefits should be explained by those providing the product and the clinician supervising the pregnancy should be consulted.^{7, 30} NRT may be considered when a pregnant woman is otherwise unable to quit, and when the likelihood and benefits of cessation outweigh the risks of NRT and potential continued smoking. If NRT use is recommended, intermittent-use forms (such as gum or spray) are preferred over continuous-delivery nicotine (patches) for pregnant or breastfeeding women, as outlined in the official 'product information' approved by the TGA.³¹ This helps to avoid high levels of nicotine in the fetal circulation.³¹ A 2015 Cochrane review³² investigated the effectiveness of pharmacological interventions for smoking cessation during pregnancy. The authors concluded that there is weak evidence to suggest that using NRT with behavioural support for smoking cessation in pregnancy is effective; however, the authors note that findings should be interpreted with caution, due to the risk of bias in some of the studies. The review also concluded that there is no evidence that NRT has either a positive or negative impact on health outcomes for the mother or child.

The New Zealand smoking cessation guidelines³³ state that the balance of risk versus benefit during pregnancy overwhelmingly supports the use of NRT, compared to the health risks of

continued smoking.¹⁰ This is because NRT delivers nicotine at lower levels than smoking, without the additional toxins contained in cigarette smoke.

- e-cigarettes / vaping with Electronic Nicotine Delivery Systems (ENDS) Under Australian poison regulations, the possession and use of nicotine for vaping is illegal unless prescribed by a doctor. Pregnant women should avoid using e-cigarettes due to the lack of scientific evidence regarding their safety and the risks on maternal and fetal health.³⁴ The adverse health effects of nicotine on maternal and fetal outcomes are documented. The literature suggests that it is the nicotine in traditional cigarettes and in nicotine replacement therapy that has the greatest impacts and is most detrimental to prenatal development. Although often viewed as safer than tobacco cigarettes, no human studies have assessed the potential for maternal ENDS use to affect the health of a developing baby.³⁴
- Follow-up postpartum Of women who cease smoking during pregnancy, approximately 70% will resume smoking postpartum⁶. Patients who receive a smoking cessation intervention should be followed up and assessed for ongoing abstinence during subsequent contacts.³²
- Incentive-based programs Encourage participation in smoking cessation programs and provide external motivation for quitting.³⁵
- **Partners** Partners of pregnant women should be asked about smoking status at points of contact with health professionals as having a partner who smokes is a major influence on women who smoke during pregnancy and on relapse rates postpartum.⁴
- Health system policy The health system should promote an inclusive strategy to facilitate identification and treatment of tobacco dependence. Smoke-free legislation is associated with a statistically significant decrease in preterm birth rates, as well as reduction in babies being born small for gestational age.³⁶
- Staff training –Training health professionals to provide smoking cessation interventions has been shown to have a measurable effect on point prevalence of smoking and continuous abstinence.³⁷ Health professionals and healthcare settings are in an excellent position to promote cessation among pregnant women, who are often highly motivated to quit. However, opportunities to intervene with pregnant women are often underutilised. Although most pregnant women are asked about their smoking, appropriate advice, intervention, and follow-up can be lacking. Pregnant women are often not routinely asked about their smoking by each of their health professionals, due to concerns about damaging the relationship, time constraints, and differences between professional groups. Intervention should provide positive, non-judgemental encouragement to quit that addresses women's concerns about stopping smoking, and include referral to the Quitline or other services able to provide tailored support for pregnant women.

6. Conclusion and recommendations

Pregnancy is a time when some women are highly motivated to quit smoking. When pregnancy is planned or confirmed a woman should be informed of the importance of smoking cessation, intervention strategies and referral to local stop smoking services. Of the women who cease smoking during pregnancy, between 50-70% will resume in the year postpartum. Women who cease smoking during pregnancy should thus receive follow up support to promote smoking cessation.

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8. Useful links

Substance use in pregnancy (C-Obs 55) <u>https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Substance-use-in-pregnancy-(C-Obs-55)-March-2018.pdf?ext=.pdf</u>

Safer Baby Bundle. https://www.stillbirthcre.org.au/safer-baby-bundle/quit-smoking/

Clinical Practice Guidelines Pregnancy Care (2019) <u>https://www.health.gov.au/resources/pregnancy-care-guidelines</u>

Quitline https://www.quit.org.au/

Sudden infant death syndrome https://www.healthdirect.gov.au/sudden-infant-death-syndrome-sids

https://www.health.govt.nz/publication/national-sudi-prevention-programme-needs-assessment-andcare-planning-guide

Quitline New Zealand https://quit.org.nz/reasons-to-quit/smoking-and-pregnancy

NZ Government advise for parents <u>https://www.health.govt.nz/your-health/pregnancy-and-kids/pregnancy/helpful-advice-during-pregnancy/stop-smoking-drinking-alcohol-and-using-drugs-pregnancy</u>

9. Patient information

A range of RANZCOG Patient Information Pamphlets can be ordered via:

https://www.ranzcog.edu.au/Womens-Health/Patient-Information-Guides/Patient-Information-Pamphlets

Appendices

Appendix A Women's Health Committee Membership

| Name | Position on Committee |
|-----------------------------------|---------------------------------------|
| Professor Yee Leung | Chair and Board Member |
| Dr Gillian Gibson | Deputy Chair, Gynaecology |
| | Deputy Chair, Obstetrics and |
| Dr Scott White | Subspecialties Representative |
| Associate Professor Ian Pettigrew | Member and EAC Representative |
| Dr Kristy Milward | Member and Councillor |
| Dr Will Milford | Member and Councillor |
| Dr Frank O'Keeffe | Member and Councillor |
| Professor Sue Walker | Member |
| Dr Roy Watson | Member and Councillor |
| Dr Susan Fleming | Member and Councillor |
| Dr Sue Belgrave | Member and Councillor |
| Dr Marilyn Clarke | ATSI Representative |
| Associate Professor Kirsten Black | Member |
| Dr Thangeswaran Rudra | Member |
| Dr Nisha Khot | Member and SIMG Representative |
| Dr Judith Gardiner | Diplomate Representative |
| Dr Angela Brown | Midwifery Representative, Australia |
| Ms Adrienne Priday | Midwifery Representative, New Zealand |
| Ms Ann Jorgensen | Community Representative |
| Dr Rebecca Mackenzie-Proctor | Trainee Representative |
| Dr Leigh Duncan | Maori Representative |
| Prof Caroline De Costa | Co-opted member (ANZJOG member) |
| Dr Christine Sammartino | Observer |

Appendix B Overview of the development and review process for this statement

i. Steps in developing and updating this statement

This original statement was developed in October 2001 and the statement was re-written in March 2020. The Women's Health Committee carried out the following steps in reviewing and re-writing this statement:

- Declarations of interest were sought from all members prior to reviewing this statement.
- Structured clinical questions were developed and agreed upon.
- An updated literature search to answer the clinical questions was undertaken.
- The existing consensus-based recommendations were reviewed and updated (where appropriate) based on the available body of evidence and clinical expertise in November 2019 by the Women's Health Committee. At the February 2020 teleconference further minor changes were made to the statement and the statement was forwarded to

Council for approval in March 2020. Recommendations were graded as set out below in Appendix B part iii)

ii. Declaration of interest process and management

Declaring interests is essential in order to prevent any potential conflict between the private interests of members, and their duties as part of the Women's Health Committee.

A declaration of interest form specific to guidelines and statements was developed by RANZCOG and approved by the RANZCOG Board in September 2012. The Women's Health Committee members were required to declare their relevant interests in writing on this form prior to participating in the review of this statement.

Members were required to update their information as soon as they become aware of any changes to their interests and there was also a standing agenda item at each meeting where declarations of interest were called for and recorded as part of the meeting minutes.

There were no significant real or perceived conflicts of interest that required management during the process of updating this statement.

iii. Grading of recommendations

Each recommendation in this College statement is given an overall grade as per the table below, based on the National Health and Medical Research Council (NHMRC) Levels of Evidence and Grades of Recommendations for Developers of Guidelines.³⁸ Where no robust evidence was available but there was sufficient consensus within the Women's Health Committee, consensus-based recommendations were developed or existing ones updated and are identifiable as such. Consensus-based recommendations were agreed to by the entire committee. Good Practice Notes are highlighted throughout and provide practical guidance to facilitate implementation. These were also developed through consensus of the entire committee.

| Recommendation category | | Description |
|-------------------------|---|--|
| Evidence-based A | | Body of evidence can be trusted to guide practice |
| | В | Body of evidence can be trusted to guide practice in most situations |
| | С | Body of evidence provides some support for recommendation(s) but care should be taken in its application |
| | D | The body of evidence is weak and the recommendation must be applied with caution |
| Consensus-based | | Recommendation based on clinical opinion and expertise as insufficient evidence available |
| Good Practice Note | | Practical advice and information based on clinical opinion |

Appendix C Full Disclaimer

This information is intended to provide general advice to practitioners, and should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient.

This information has been prepared having regard to general circumstances. It is the responsibility of each practitioner to have regard to the particular circumstances of each case. Clinical management should be responsive to the needs of the individual patient and the particular circumstances of each case.

This information has been prepared having regard to the information available at the time of its preparation, and each practitioner should have regard to relevant information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that information is accurate and current at the time of preparation, it takes no responsibility for matters arising from changed circumstances or information or material that may have become subsequently available.