

A Literature Review of Effective Approaches That
Support Smoking Cessation for Pregnant Women
Who Call a Quitline Service

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ABSTRACT

Smoking in pregnancy is harmful to both the mother and her unborn child. Currently, pregnant women are under-represented as a group that uses the New Zealand *Quitline* service. This literature review on smoking cessation during pregnancy reviewed published academic and grey literature for ways of encouraging pregnant women to stop smoking by using a quitline service. Factors that contributed to an effective approach supporting pregnant women to quit using a quitline were also investigated. The literature review analysed over 40 articles spanning the last 14 years. Most were from peer reviewed academic journals.

The review report has been divided into five sections in order to better understand the dynamics involved in encouraging pregnant women to call a quitline service. The sections also highlight factors that could mitigate against a pregnant woman's referral to a quitline. The first section discusses the context of smoking and the need to understand the pregnant woman's environment. The context of smoking needs to inform the development of a telephone cessation service that is uniquely tailored to provide cessation support to pregnant women who smoke.

The second section discusses the characteristics of effective quitlines for pregnant women, which includes having trained quitline staff sensitive to the woman's situation, together with ongoing calls to the woman throughout her pregnancy and postpartum. The role of media advertising and the use of new information technologies integrated within a quitline service, are also proposed as effective ways to encourage pregnant women to use a quitline.

The third and fourth sections discuss the central role of health professionals in identifying and referring pregnant women who smoke to cessation services such as quitlines. These sections also outline the need for clear and universal protocols for health professionals to follow when working with this population. Pregnancy is a vulnerable time when pregnant women are motivated to quit smoking. Utilising the antenatal period to initiate smoking cessation when pregnant women are more motivated to quit requires health providers to proactively identify and refer on to a specialised cessation service such as a quitline. However health professionals in contact with pregnant women do not consistently enquire about smoking in pregnancy, actively counsel, or refer these women on to specialist cessation services.

The last section discusses the role of a quitline and the use of nicotine replacement therapy (NRT) for women who are pregnant. There is ongoing debate in the current literature about the harms, benefits, and success of NRT in assisting pregnant women to quit smoking. Behavioural and motivational support interventions have the most support in the smoking cessation literature and remain the best practice treatment for this group, together with an individualised lifestyle approach tailored to the pregnant woman's social environment.

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1.0 INTRODUCTION

A quitline service is a cessation intervention that relies on a variety of strategies to engage smokers to stop smoking. It provides support and advice over the phone. Strategies that provide smokers with information and education about stopping smoking come from both formal and informal sources including media (television and radio advertising), printed health education information, smokefree legislation, workplace environments, face-to-face interaction with friends and family, and health professionals discussing/encouraging smoking cessation. They all contribute to promoting calls to a quitline service from those wanting assistance to stop smoking.

The smoking cessation guidelines published by the Ministry of Health, report the prevalence of smoking among women of childbearing age (15-39 years) ranges from 26-29% depending on the specific age group. Rates are highest among Māori (39-61%) and Pacific women (27-47%), compared to Pakeha women (22-27%) (Ministry of Health 2007a).

Pregnant women who call the New Zealand *Quitline* are under-represented compared to non-pregnant women calling the service. The number of pregnant first time callers to the *Quitline* between 2001 and 2005 was 921 (Li and Grigg 2007). For the same period there was an average of 30,000 first time callers per annum and between 1.1% and 2.5% of female callers over this period were pregnant at the time of registration to this service. Despite the low utilisation rate, an upward trend in pregnant caller rates indicated that this group was receptive to using the *Quitline* service (Li and Grigg 2007).

Māori women of child bearing age have up to twice the smoking rate of Pakeha women, however there has been no published New Zealand research into how best to support Māori women to use the *Quitline*. Glover (2004), in a qualitative study of 60 pregnant Māori women aged 17-43 years, found that most were aware of the *Quitline* service, and were advised to quit by health professionals, but were rarely offered support to quit or referral to a cessation service.

International research findings confirm that smoking during pregnancy is common. Between one in three and one in five pregnant women from developed countries smoke. A significant number of women smoke throughout the entire pregnancy. In 2001, in Australia, smoking prevalence during pregnancy was 19.5%, and in the US in the late 1990's around 23% (Lumley et al. 2004). However there is little specific research literature that focuses on initiatives to promote and encourage more pregnant women to call a quitline service. Anderson and Zhu (2007) argue that more evidence is needed to support 'pregnant women specific' protocols, and more studies are needed into cessation services for women who smoke during pregnancy.

Research indicates that pregnancy is a sensitive time in a smoker's life where smoking cessation is highly relevant for maternal and fetal wellbeing, and knowledge of the association of cot death (Sudden Unexpected Death in Infants/SUDI) appears to be an important motivator to stop smoking (Griffiths et al. 2005).

This literature review has taken a broad perspective to include literature related to the woman's personal and wider environment; the context of which is integral to understanding smoking behaviour. The review has also focused on the role of health professionals in

identifying pregnant women who smoke and referring them on to cessation services. A telephone cessation service that addresses the pregnant woman's environment together with health services that promote, identify and support cessation in an integrated way may contribute to improving smoking cessation rates, through increasing the utilisation of a quitline service.

2.0 METHODS

The Quit Group provided an initial selection of national and international databases related to cigarette smoking and tobacco use. These were searched for relevant material relating to the focus of this literature review. However most of the papers reviewed were sourced independently. Almost all of the retrieved literature comprised published peer reviewed articles which were found from the Internet, citation references from articles already obtained, a few from individual article search, and through discussion with other health professionals.

In total, the literature search returned approximately 400 papers with possible relevance to this research topic. Of these, 80 articles were selected for further review, and subsequently 40 were included in this report. The papers excluded were those that were more focused on relapse/prevention interventions and not specific enough to inform on effective approaches for encouraging pregnant women to quit smoking using a telephone cessation service.

Search methods

Selected items were reviewed from articles retrieved from the following databases:

PubMed	http://www.ncbi.nlm.nih.gov/sites/entrez/
Psychinfo via Ovid	http://library.massey.ac.nz/
Medline via Ovid	http://library.massey.ac.nz/
Web of Science	http://library.massey.ac.nz/
Google Scholar	http://scholar.google.co.nz/schhp?hl=en&tab=ws
The Cochrane Library	http://www.cochrane.org/

The following smoking cessation related websites were searched for articles meeting the search criteria.

New Zealand websites

ASH	www.ash.org.nz
Health Promotion & Policy Research Unit	http://www.wnmeds.ac.nz/academic/dph/research/heppru/research/tobacco.html
Health Sponsorship Council	http://www.hsc.org.nz/publications.html
Ministry of Health	http://www.moh.govt.nz/moh.nsf/wpg_Index/Publications-Tobacco+Control+and+Smoking+Information+-+Publications

Overseas websites

Quit Victoria	http://www.quit.org.au/browse.asp?ContainerID=1807
Tobacco Control Supersite (University of Sydney)	http://tobacco.health.usyd.edu.au/site/supersite/resources/docs/index.htm
Tobacco Fact File	http://apps.nccd.cdc.gov/osh_pub_catalog/PublicationList.aspx
North American Quitline Consortium	http://www.naquitline.org/index.asp?dbid=1&dbsection=search

Health Canada	http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/research-recherche/index_e.html
Quit South Australia	http://www.quitsa.org.au/asp/index.aspx
Globalink (global tobacco control)	http://www.globalink.org/tobacco/
Database and educational resource for treatment of tobacco dependence	http://www.treatobacco.net/home/home.cfm
Global Tobacco Research Network	http://www.tobaccoresearch.net/

The journal *Tobacco Control* was specifically searched because prior searches identified a published supplement on tobacco cessation for pregnant women.

Google was searched for 'grey' literature.

Search terms used

Inclusion criteria:

- pregnancy OR 'pregnant women' & 'smoking cessation' & telephone OR 'telephone counselling' & recruitment OR enrolment.
- pregnancy OR 'pregnant women' & 'smoking cessation' OR 'smoking cessation programmes' & NRT OR nicotine.
- Māori & 'smoking cessation' & pregnancy OR 'pregnant women'.

Exclusion criteria:

- Journal articles written before the year 2000 were not included with the exception of a small number that had relevance to telephone counselling of pregnant women, which were found by hand searching through references of identified articles.
- Studies that focussed on comparative counselling interventions for cessation.

Dates of searches

Internet database searches were done between 10/1/08 and 28/1/08. Citation research and individual article retrieval was completed by 15/4/08.

Quality of research

Both qualitative and quantitative research has been included to provide a broad perspective about the nature of the issues that promote or create barriers to a pregnant woman accessing a telephone cessation service. The most robust quantitative studies included two Cochrane reviews of randomised and quasi randomised trials and a couple of non-reviewed randomised control trials (RCTs) with almost 66,000 participants from 108 trials, and a survey of over 400,000 pregnant women in New South Wales. There was a range of qualitative studies involving semi-structured interviews with small numbers of women. A number of studies were best practice interventions and service reviews or audits, which aimed to assess how well health professionals, services, and programmes were at identifying and treating smoking pregnant women according to established protocols.

The final group of articles consisted of academic reviews of the existing literature or editorial comment on other published research.

Study type	No. of studies	No. of participants
Randomised or quasi randomised trials*	60	29,094
Randomised or quasi randomised trials (non pregnant population)*	48	>36000
Uncontrolled intervention study	1	948
Structured questionnaire	10	441,187
Longitudinal cohort study	2	796
Semi-structured interviews	3	52
Programme or Service reviews #	8	888
Meta-analysis	13	N/R
Literature review	3	N/A
Protocol	5	N/A
Editorial	1	N/A
Grey literature	3	260

Notes:

* Mainly Cochrane reviews of RCTs

Reviews of cessation/quitline programmes or organisational or health professional practice

N/R – not reported

N/A – not applicable

Limitations and research gaps

- There was little research as to the possible causes of the low telephone quitline uptake rate of pregnant women who smoke compared to the higher rates of non-pregnant women who smoke.
- No specific research was found about the characteristics of pregnant women who smoke and call a quitline or pregnant women who smoke and do not call a quitline.
- There was no culture or ethnicity relevant research on increasing quitline call rates specifically from pregnant Māori, Pacific and Pākehā women. There was one reference to Australian Aboriginal women, but the relevance of this to other ethnic groups, including indigenous people, is unclear.
- There is a need for a greater understanding of the specific challenges facing a pregnant woman and her ability/motivation to call a quitline.
- In view of the relatively low quitline enrolment and success rate among some groups of women, there was very little research into the effect of environment as well as mental health issues facing women who continue to smoke during pregnancy and the utilisation of a quitline.
- Although there were a number of semi-structured interviews there was a scarcity of literature based on qualitative analysis, which explored women's experiences of smoking and quitline use during pregnancy.
- Since mid 2007 New Zealand *Quitline* has had an Internet on-line blog web page for smokers and a few pregnant women have made entries. However, there was no evidence that research has utilised this resource as a basis for analysis for informing service delivery.
- There was little research into whether there are benefits of quitline programmes being specifically tailored to the stage (trimester) of the woman's pregnancy, which may encourage enrolment to a quitline throughout the duration of pregnancy.

3.0 THE CONTEXT OF SMOKING IN PREGNANCY

Understanding the pregnant woman's environment

Understanding and identifying the challenges of smoking cessation and making sense of smoking during pregnancy is critical to an effective cessation service. Pregnant women who seek help to stop smoking from a telephone cessation service have reported personal, social and economic challenges as well as pregnancy-related challenges such as morning sickness, fatigue and weight gain (Cummins et al. 2007).

A qualitative study by Abrahamsson et al. (2004) interviewed 17 pregnant and post pregnant women to explore ways of understanding smoking in pregnancy in the context of the pregnant woman's social circumstances, and the emotional and psychological stressors associated with pregnancy. Some of these stressors were related to the woman continuing to smoke in the knowledge that it was harmful to the baby, conflict between her prior intention to stop smoking once she was pregnant and her subsequent inability to quit, and her perception of that it was shameful to be a smoker. The authors conclude that advice to pregnant women about stopping smoking needs to become more focused on a process of two-way dialogue as an objective in health education, and argue that this type of information exchange would enhance self-efficacy of smoking cessation.

A qualitative study of low-income African American women found that smoking cigarettes was a way of managing stress arising from economic, familial, social and health challenges (Pletsch et al. 2003). Giving the woman the opportunity of telling her story from her perspective would encourage her to quit smoking by increasing her awareness of personal meanings around smoking, addressing the avoidance of the defence of smoking, and increasing self-efficacy in cessation and enabling identification of supports necessary to help quit smoking.

Socio-demography of smoking in pregnancy

Understanding the socio-demographic characteristics of pregnant women who continue to smoke would further enable cessation services to target population subgroups more effectively. A study conducted in New South Wales (NSW), Australia covering all births in public and private hospitals in the period 1999-2003, analysed data from 426,344 pregnant women. Socio-demographic characteristics of the women smoking in pregnancy (72,428), which represented 17% of the pregnant population, showed a much higher rate of smoking during pregnancy among teenage mothers (42.9% smoked), compared to older mothers (11.2%). A higher rate of smoking during pregnancy was also reported for Aboriginal mothers (57.8%). Overseas-born mothers showed very low rates of smoking. All immigrant women were less likely to smoke with only 1.8% among Asian born women. Multiparity, lower socio-economic status, unbooked confinements and lack of antenatal care were other factors associated with maternal smoking during pregnancy. Mothers who were born in Asia, first time mothers, and those in a higher socio-economic status (SES) group, reported early attendance at antenatal care, and those who had any obstetric complication were significantly more likely to quit during pregnancy. Older mothers (aged 35+) had lower smoking rates but were more likely to be heavier smokers than teenage mothers. The relevance of maternal, social and demographic characteristics was significantly associated with smoking behaviour and is consistent with international findings (Mohsin and Bauman 2005).

New Zealand research by McLeod et al. (2003) identified that factors significantly associated with stopping smoking in the first trimester were current employment, first pregnancy, and experiencing nausea during pregnancy. Women who held a community services card¹, Māori women, and women whose partners smoked, were significantly less likely to stop smoking. Strong associations between social inequality and continuing to smoke point to the need to take account of socio-cultural factors when delivering cessation interventions that are accessible and appropriate to this population. In a validated telephone counselling protocol designed for pregnant smokers, Cummins et al. (2007) state a telephone service can deliver higher utilisation rates among typically underserved groups because of ease of access, timeliness (as counselling can begin immediately when motivation is high), and tailoring to the specific needs of each pregnant woman.

Effect of partner, family and friends smoking on pregnant mothers who smoke

Another characteristic of the pregnant woman's environment is partner smoking status. This is an important dimension, which can influence whether a woman will spontaneously quit (DiClemente et al. 2000). A 12-month longitudinal study, conducted in maternity hospitals in Perth, Australia, examined the socio-demographic factors of pregnant women. Partner smoking appeared to be a significant factor in whether a woman who smokes in pregnancy is able to quit. Not attending antenatal classes and not intending to breastfeed after four months were also factors associated with smoking in pregnancy (Giglia et al. 2007).

Knowledge of partner smoking status is an important factor in understanding why pregnant women continue to smoke. A Canadian study based on 20 interviews was conducted on men's constructions of smoking in the context of women's tobacco reduction or cessation during pregnancy and postpartum. This study suggested that fathers who smoke experience discomfort with their smoking. It also found that smoking cessation messages targeted at the partner may provide the opportunity for a change in smoking, and play a role in promoting maternal cessation (Bottorff et al. 2006).

In an earlier article based on the same 12-month longitudinal study conducted in maternity hospitals in Perth, Giglia et al. (2006) found that a woman was more likely to stop smoking if she reported smoking less than ten cigarettes per day in the pre-pregnancy period, and that there were a greater number of fathers who stopped smoking after the baby was born. The authors suggest that the fathers' perception of the baby does not seem 'real' until after the baby has been born, and this may explain why fathers are more likely to stop smoking after the child is born. Cummins et al. (2007) also report that pregnant women using a quitline had difficulty seeing the baby as real, and that the possibility of harm to the baby from the effects of smoking in utero seemed remote. Antenatal environments have the potential to increase parental perceptions of the unborn baby, through practical baby-care classes, discussion of developmental milestones during ultrasound examination, and feeling the baby move for the first time (Cummins et al. 2007).

Dunn et al. (2003) looked at the advice-giving role of female friends and relatives (confidantes) of low-income women who were pregnant. They compared confidante advice with antenatal advice from doctors. Findings suggest that mothers and sisters are frequently

¹ The Community Services Card is an income tested healthcare subsidy for low-income earners and in the New Zealand context is used as a proxy for socio-economic status (SES).

present during women's pregnancies and they are valued for their advice after doctors. However, the confidantes' support role in the context of cessation was problematic in terms of consistency of support for the pregnant woman to stop smoking. Some confidantes encouraged cessation and others undermined cessation. This study is relevant to understanding the influence of lay advice-givers, which are a natural resource for the pregnant woman to use. The findings indicate that confidantes can influence a woman's decision to quit smoking during pregnancy, which points to the importance of educating the confidante to take a key role in influencing the pregnant woman to stop smoking.

Recent research on motivations around use of telephone counselling for pregnant smokers, found that calls were prompted because either a doctor or spouse wanted them to quit (Cummins et al. 2007). Promoting the encouragement of confidantes to call a quitline service (which can offer information, support and skill building) would also provide motivation and support for smoking cessation and increase the use of a quitline. McAfee (2007) reported that many quitlines have seen a change in the caller referral source, with a larger number of referrals from friends, family members, and health professionals.

Women's beliefs and self-efficacy

Understanding the beliefs and self-efficacy of pregnant smokers to quit is relevant for cessation workers to determine whether pregnant women have high or low intention to quit smoking. Data from the United States Smoke-Free Families project that focused on cessation during the antenatal period was collected from over a thousand (n=1372) pregnant smokers who were less than 26 weeks' gestation. Findings indicated that women with low intentions to stop smoking were less confident in their ability to quit smoking and less convinced that smoking harms the unborn child. The low intention group also smoked more cigarettes per day, had fewer years of education, and were more likely to have friends and family members who smoke. The authors suggest that by identifying women with low and high intentions to quit, a tailored cessation service could be provided (Ersoff et al. 2000).

The influence of gravidity on smoking in pregnancy

Women who quit smoking during pregnancy can be divided into sub groups of those who are pregnant with their first child (primigravid) and those who have given birth before (multigravid). These two groups differ in motivation and receptivity to quitting smoking. Multigravid women who smoked in previous pregnancies are more likely to resist the message of maternal and fetal harm, if previous pregnancy experiences were perceived as uneventful. This group may also be less likely to see health professionals than primigravid women who are generally more cautious and have more health contact with health professionals. In a retrospective study, 7506 pregnant women were enrolled to examine self-reported tobacco consumption in the first trimester of pregnancy. Multigravid women were more likely to smoke in their pregnancies than primigravid women, with a highly significant trend with increasing pregnancy order (Morris et al. 2007).

The relevance of understanding these two distinct groups is first, that smoking cessation services may be more successful targeting first time mothers. Second, multigravid women are more resistant to stopping smoking, but they are the most in need of cessation interventions.

Discussion

Understanding and identifying the challenges of smoking and making sense of smoking during pregnancy needs to move from information and advice about stopping smoking in pregnancy, towards a creation of dialogue and reflections on the meanings of smoking for the pregnant woman. A mutual dialogue would encourage the pregnant woman to engage in making positive changes to smoking during pregnancy.

Ethnicity, educational level, income and employment status, and attendance at antenatal clinics, have been identified as primary characteristics of the women who spontaneously stop smoking compared to those who continue to smoke. The social disparities evident in both the Australian and New Zealand research on pregnant women who smoke indicate there is an unmet need to provide a service that addresses the needs of indigenous and lower SES groups of women. Likewise an awareness of the differences between first time mothers and mothers who were in their second or later pregnancy needs to be integrated into a telephone cessation service that is tailored to the needs of pregnant women.

The antenatal environment is a positive health setting where encouragement to identify and recognise that the baby is 'real' can actively be addressed with parents who continue to smoke. Promoting the unborn baby as 'real' to both parents may facilitate a stronger motivation/rationale to quit, along with providing education on health risks to the unborn baby and mother. Health promotion strategies need to focus not only on the expectant mothers but also expectant fathers and other household members who can contribute towards creating a smokefree environment for the mother and the unborn child. By addressing the social environment of the pregnant woman, the wider family context of the pregnant woman can be acknowledged and understood. A quitline service responsive to the social environment would provide a service that is appropriate and relevant to pregnant women.

Innovative approaches to smoking cessation support in pregnancy that address the pregnant woman's environment have the potential to encourage this group to call a quitline. For example, a joint approach between health professionals and a quitline service may encourage both the pregnant woman and her confidante to engage with a 'buddy' cessation support system. Utilising the teachable moment in the context of the health encounter may provide the right environment in which to refer on to a quitline service. Media education that targets natural advice givers on smoking and support to quit could also be an effective way of engaging with pregnant women. This would promote a greater number of pregnant women calling a quitline service that understands the unique challenges faced by pregnant woman who continue to smoke.

4.0 CHARACTERISTICS OF EFFECTIVE QUITLINES FOR PREGNANT WOMEN

The benefits of a specialised telephone cessation service for pregnant women

There is limited research focusing on the use of telephone counselling for pregnant women who smoke. A pilot study, which used referral to a telephone counselling service, was conducted at the Royal Women's Hospital antenatal clinic in Melbourne. A Quitline Callback service was offered to women who had been identified by midwives as smokers or recent ex-smokers at their first antenatal visit. Trained staff from the Quitline service made approximately seven calls during the pregnancy and three months postpartum. The women could also initiate calls themselves. The recruitment rate for both pregnant smokers and for recent quitters was 71%. Recent quitters were more likely to be first time mothers (60%) than the smokers group (44%). Recent quitters were less likely to have a partner or other household members who smoked. The average amount of telephone time minutes was 177 minutes per recent quitter compared to 137 minutes for the smokers group (Trotter 1998-1999).

Participant feedback from the women enrolled in the study was very positive, and they reported that the counsellors were sensitive to their situation. In terms of service delivery, many women reported that they would have preferred the same counsellor being available to them rather than a number of different counsellors calling them. The relevance of this pilot study for the *Quitline* is that it was an innovative referral intervention between an antenatal service and a telephone cessation service. It provided professional cessation interventions that were seen as positive from the perspectives of patients, counsellors, and hospital staff. Feedback from counsellors was also assessed. They stated that the population of pregnant women who used the quitline service were different from the usual callers to this service, highlighting the need for further training when counselling pregnant women. Specific characteristics that the counsellors referred to among this group were lower levels of motivation for quitting and poorer socio-economic circumstances.

A specialised cessation service is more likely to understand the needs of women who continue to smoke. Pregnant women who smoke may also have mental health problems. There is an association between mental disorders and nicotine dependence among pregnant women. Goodwin et al. (2007) conducted a face-to-face survey of 1516 women who reported a pregnancy between 2001-2002 and used a validated mental health schedule. Goodwin et al. (2007) suggest there is a link between nicotine dependence and major depression, dysthymia and panic disorder, which may hamper efforts to quit among pregnant women. This group of women are a challenge from an intervention perspective as anxiety disorders and depression make it harder to quit. The authors conclude that treatment of a pregnant woman's nicotine dependence through a specialised telephone cessation service may require added support from mental health agencies working with pregnant women.

Improving access and removing barriers

An effective cessation service specific to the needs of pregnant women would enable barriers to quitting to be addressed and benefits of quitting explained. This would encourage pregnant women to feel confident that the service was relevant to them and cognisant of their circumstances. Ussher et al. (2006) undertook a survey of pregnant smokers and recent ex-smokers, which indicated that access to smoking cessation courses and a disbelief that such courses would help, were major barriers to pregnant women accessing them. However the majority of women perceived there were benefits to attending a cessation course.

The questionnaire, delivered via the Internet, found that many pregnant smokers might not have received advice to quit from their doctor or midwife. The sample was from self-selected Internet-users, and findings may not be generalisable to the population of pregnant smokers. However, consistent with previous findings for smokers in general, the pregnant women in this survey rated their chances of stopping through attending a clinic as 60% although only 5-6% of respondents indicated that they had attended a cessation course either for this pregnancy or a previous one. About 40% of the sample reported lack of time as a reason for not attending courses. Telephone intervention may be more suited to this group because of the relatively easy access that such an intervention offers.

Personalised assistance and support

The use of media to increase pregnant women smokers' awareness of quitlines, along with enlisting the support of health professionals to support cessation counselling may increase women's confidence to quit, thereby increasing the efficacy of smoking cessation counselling services. Ussher et al. (2006) found women who reported less confidence in quitting unassisted, reported a greater interest in receiving personalised help from a cessation counsellor than those who had more confidence in quitting unassisted. The advantage of promoting a telephone service dedicated to or customised for pregnant women, is that it could address barriers relating to access, time constraints, and self-efficacy beliefs.

An earlier study by Ussher et al. (2004) examined pregnant smokers' interest in different types of smoking cessation support that were found to be effective. The majority of the 206 women in the study sample enrolled at their first antenatal booking were interviewed over the telephone, and 87% expressed an interest in wanting to stop smoking. Support for behavioural interventions was 82%, using self-help materials was 77%, and using a helpline was 45%. Interest for cessation support was strongest among heavier smokers and those from professional/ managerial occupations. Those from ethnic minorities expressed the most interest in behavioural support, and 'buddy' support was found to be of interest to women from more deprived social groups. The study focused on different cessation supports from data gathered at one brief telephone interview lasting ten minutes. The authors acknowledge that further studies with larger samples and the use of more in-depth face-to-face interviews are needed to extend the findings. Other interventions were not explored such as cessation support delivered via the Internet, and use of nicotine replacement therapy (NRT). Importantly, the results did suggest that telephone helplines are an appropriate intervention for pregnant women.

Learning from examples of good practice in specialist smoking cessation services for pregnant women has relevance for the *Quitline*. A UK National Health Service (NHS) survey

(Lee et al. 2006) which focused on characteristics of good practice outcomes of cessation services, identified three exemplar services, which are relevant to the relationship between specialist cessation provider and health professional referral.

First, all three services received most referrals from local midwives. Midwife collaboration was achieved by providing brief training on how to refer pregnant smokers, rather than how to treat them. Importantly, the services had the full support of midwives. Less productive alternatives that were identified included a reliance on advertising to the general public, self-referrals, and recruiting smokers directly from surgeries. Second, NRT was identified as an effective intervention, and was offered to most pregnant smokers together with an efficient way of providing NRT prescriptions. Flexible home visits were offered, rather than clinic visits. (A quitline service also has a characteristic of offering flexible service provision). Finally the exemplar services provided multi-session treatment delivered by specialised counsellors.

Rigotti et al. (2006) examined the effectiveness of specialised counsellors. The study consisted of 209 pregnant women smokers who had not asked for cessation assistance and were provided with proactive telephone counselling. The 212 controls received routine pregnancy care. The women in the treatment arm were telephoned throughout their pregnancy and for two months postpartum. The mean number of calls offered was five and on average women had 68 minutes of counselling. Timing of the calls was tailored to the participants' needs. Each woman had a dedicated counsellor who used motivational interviewing along with written materials.

Results of the study found cessation rates increased in two groups: those women who were light smokers were 2.58 times more likely to quit than controls, and those that had previously made quit attempts were 3.02 times more likely to quit than controls. Nearly two thirds of the study sample was in one of these two groups. The 152 participants who completed the counselling programme (76%) rated the telephone-counselling programme highly: 90% rated the calls as useful, 90% stated that the calls helped them to think about their smoking behaviour, while 80% said that the calls helped with making behaviour changes. Rigotti et al. (2006) suggest future research into the use of proactive telephone counselling which targets these two groups.

Role of the media

Another route to increasing the numbers of pregnant women seeking smoking cessation advice is to use television advertising to inform pregnant women about the hazards of smoking in pregnancy. In the New Zealand context, there is little media activity that targets pregnant women who smoke. An American smoking cessation programme called Great Start was launched in 2001 to provide smoking cessation counselling to pregnant women through a toll-free quitline (Haviland et al. 2004). The media campaign successfully reached pregnant women. Seventy-six percent of the callers indicated they were calling in response to the television advertisements. The pregnancy specific nature of the Great Start quitline, confirmed that there was a need for cessation services designed to specifically address the needs of this population. Providing media information about the ill effects of smoking during pregnancy, if given in an affirming tone together with advice on how to take action, demonstrated that it was possible to reach pregnant smokers. Although only 2.5% of current pregnant smokers called the quitline, this figure may be related to the challenges inherent in

attracting callers to quitlines, together with the limited time of the media campaign airing (Haviland et al. 2004).

Information technology and quitlines

Quitlines have the capacity to increase the depth and breadth of services offered through the utilisation of information technology services such as the Internet and e-mail. McAfee (2007) states that, “quitlines have the capacity to serve a larger fraction of the population than they currently serve” (p.357).

Anderson and Zhu (2007) state that quitlines are central interventions to the promotion of population-based smoking cessation strategies. They suggest the adoption of new technologies could reach more people, by attracting new groups of users or by reducing caller attrition. An example is integrating telephone counselling with web linked smoking interventions, such as posting information online about quit progress and receiving online feedback or a telephone call-back from their counsellor. Anderson and Zhu (2007) discuss a general future direction for quitline services, which has applicability for targeting women who smoke during pregnancy as well as targeting healthcare providers such as midwives and doctors to refer their patients to a quitline service. There is future opportunity for these new technologies to be successfully adopted by women who smoke in pregnancy. As yet the integration of phone services with other communication media lacks evidence-based research.

Discussion

Specialised smoking cessation telephone services, many of which may be evidence-based, are not used by many women who continue to smoke in pregnancy (Li and Grigg 2007). As identified in the section above, reasons may include: lack of a service that addresses the unique circumstances and challenges that a pregnant woman faces, lack of an integrated system that utilises reactive and proactive counselling support, and health professionals not routinely identifying and referring women who smoke in pregnancy for appropriate cessation support. Smoking cessation support needs to be part of an integrated care package, with antenatal care and other health professionals needing to play a larger role in identifying and promoting smoking cessation during pregnancy.

Addressing the barriers relating to access and beliefs about the success rates of cessation courses, as well as using the media to provide pregnancy specific health information and contact advice would be a targeted way of increasing the numbers of callers to a quitline service. A quitline service has the flexibility to tailor interventions and support to the specific needs of pregnant smokers and may therefore attract more women to the service.

A telephone cessation service has many similar characteristics of the exemplar services outlined in the NHS study: flexibility and accessibility to counselling, the capability of initiating stronger links with providers who can refer pregnant women on to a quitline, plus the scope to provide a specialised service for pregnant women.

Media communication and quitline promotions have a proven success rate in attracting cessation calls in response to television advertising. Under-utilisation by pregnant women may reflect how the message is presented. The messages may need to be presented in a supportive and pregnancy-specific context to increase pregnant women’s use of a telephone

service. Media messages primarily rely on a reactive approach to recruit smokers to seek help, which may be one reason why quitline services are underutilised.

The use of the Internet may enable pregnant smokers to contribute to 'cessation conversations' through a pregnancy-specific Internet blog site, and could provide a novel way for telephone cessation services to increase their caller rates. The New Zealand *Quitline* currently has a web-based blog site that could be relevant to pregnant women who smoke. The utility of an Internet site would be to provide a forum for information, support and motivation to quit (in conjunction with using the *Quitline* service). For some women, it may also overcome isolation and become a personalised intervention for those who are comfortable with this mode of communication. Given that the Internet may be widely available to *Quitline* callers, the use of a website may function to promote cessation that is specifically directed towards women who smoke in pregnancy, and/or motivate calls to a cessation service. Research is needed to assess the efficacy of the new technologies with pregnant women who smoke.

5.0 THE ROLE OF HEALTH PROFESSIONALS

Targeting health professionals

Health professionals have a major role in advising pregnant women to stop smoking because they are involved in confirming pregnancy and providing ongoing maternal and fetal care. Just as blood pressure, urine, and mothers' weight is routinely monitored by health professionals during pregnancy, smoking status as part of ongoing routine antenatal care, also needs to be included as an indicator of maternal and fetal health. The New Zealand Report on Maternity (Ministry of Health 2007b), states that approximately 75% of antenatal care is provided by midwives. General practitioners and obstetricians provide around 12% of antenatal care, and for a further 12% the provider of antenatal care was not reported. There are regional, parity, and age differences in the type of health professional (known as the Lead Maternity Carer, LMC) providing a woman's antenatal care. Pregnant women in District Health Boards (DHBs) with higher rural and Māori populations (e.g. Northland, Lakes, Tairāwhiti, Whanganui), were more likely to use a midwife LMC, than women in more urban areas with lower Māori populations. Obstetricians were more likely to be LMCs for older women and for mothers of lower parity (Ministry of Health 2007b).

Promoting smoking cessation during pregnancy is an effective way of reducing the number of women who smoke because pregnancy is a time when women who are smoking are more motivated to quit (Giglia et al. 2006). However health professionals in contact with pregnant women do not consistently enquire about smoking in pregnancy, actively counsel, or refer these women on to specialist cessation services (Giglia et al. 2006; Glover et al. 2008).

American research into the extent to which physicians addressed tobacco use during pregnancy found that 793 physicians reporting on 5,622 clinic visits identified pregnant women's smoking status 81% of the visits but provided cessation counselling in only 23% of the visits (Moran et al. 2003). Ussher et al. (2006) reported that midwives found it difficult to provide smoking cessation support, and that when support was provided, it was not effective in promoting cessation. Glover et al. (2008) in a postal survey of general practitioners' and midwives' smoking cessation knowledge and practices, reported inconsistent advice about smoking abstinence was given to pregnant women, but high routine reporting of their smoking status was recorded. Findings from the Cochrane Review (Lumley et al. 2004) state smoking behaviour and support for smoking cessation needs to be part of antenatal care.

It is important to address factors that will have resonance with the particular circumstances of each woman, in terms of the counselling and information provided by the health professional. Some cessation programmes promote smoking cessation in pregnancy as a strategy for reducing the risk of cancer and chronic diseases for the mother, rather than promoting the benefits to the fetus (Lumley et al. 2004).

McLeod et al. (2003) sent a postal questionnaire to 1283 pregnant women in New Zealand (response rate was 69%), which explored the characteristics of women who continued to smoke beyond the first trimester. The reasons most frequently given by pregnant women who had stopped smoking in the first trimester were related to current employment, first pregnancy and experiencing nausea during the pregnancy. Yet in this sample none of the

pregnant women who did stop and a few who continued to smoke, had attended cessation programmes. McLeod et al. (2003), argue that integrating smoking cessation initiatives such as *Quitline* with antenatal care, has the potential to reduce the rates of smoking in pregnant women.

Role of midwives

Midwives have a central role in smoking cessation with pregnant women. They are most likely to be the lead maternity carers and have the most regular contact with pregnant women. Training midwives about how to advise women to give up smoking is one of the first steps in addressing cessation. This should go hand-in-hand with informing and endorsing the cessation services available, together with an effective referral system to a cessation service. A study by Glover et al. (2008), which looked at general practitioners' and midwives' smoking cessation knowledge and practices found that midwives were more likely to advise cutting down rather than stopping smoking.

A pilot study which aimed to develop an intervention for women who smoked while pregnant, was conducted at the Royal Women's Hospital antenatal clinic in Melbourne during 1998-1999. The study focussed on assessing the feasibility, acceptability, and effectiveness of including a quitline service in routine antenatal care. Midwives identified pregnant smokers at the antenatal clinic and proactively referred the pregnant women to a telephone cessation service. The telephone counsellors were trained to work with this specific population group. The adoption of a referral intervention within a hospital setting was seen as a strategy to target pregnant women who smoked. It also recognised that hospital staff had limited time and expertise to provide counselling within the antenatal clinic. The results from the pilot study indicated that the women found the referral to a telephone service workable, acceptable, and likely to be effective. The high recruitment rate of 70% endorses these findings (Trotter 1998-1999).

Use of clear and universal protocols

Health professionals caring for women who continue to smoke in pregnancy need universal and consistent protocols about supporting smoking cessation. Barker et al. (2000) conducted a survey of managed care organisations, from which most Americans receive primary health care services. A lack of consistent smoking cessation protocols was highlighted. The survey of 147 North American Managed Care Providers (response rate 69%) found support for the implementation of pregnancy specific smoking cessation strategies offered in health care settings. Cessation strategies included telephone support and brief counselling by providers, self help materials, quit classes, and use of patient databases for outreach. Only 40% of Managed Care Providers used the Agency for Health Care Policy and Research Guidelines to design their cessation strategy. One-quarter of respondents identified a lack of patient interest, competing clinic priorities, and lack of smoker identification as barriers to implementing strategies within the clinic setting. The limitations of this research included a 40% non-response rate. However, as the requirements for participation in the study were that respondents had an antenatal smoking cessation strategy in use, it was suggested that the need for antenatal smoking cessation services was even greater than implied by the survey results.

Quantifying the utilisation of cessation services by health professionals has relevance to the *Quitline* in terms of increasing the numbers of referred pregnant women. Quantifying pregnancy specific initiatives that are offered by primary health care providers can highlight

organisational service gaps of health providers that miss identifying and supporting pregnant women to stop smoking. For example, Māori women are more likely to continue to smoke during pregnancy, despite being in contact with a maternity provider (Wilson et al. 2003). McLeod et al. (2003) argue that smoking cessation programmes must be adequately resourced and designed to meet the needs of the pregnant women for whom they are intended.

Training needs of health professionals

McLeod et al. (2003) analysed a survey of pregnant women registered with a maternity care provider and suggested that more training to provide smoking cessation advice during pregnancy by antenatal care providers is needed. Furthermore, they highlighted the importance of pregnancy referral services as a way to increase the number of pregnant women who stop smoking. The authors argue that there is a need to integrate structured smoking cessation interventions with antenatal care, combined with the continuation of *Quitline* and advertising campaigns targeting pregnant women.

Research by Giglia et al. (2007) found that pregnant women not attending antenatal classes, was significantly associated with smoking before and during pregnancy. The authors suggest that class non-attendance may lead to pregnant mothers not receiving antenatal information about maternal and fetal hazards of smoking. The role of other health professionals who may have contact with this group therefore becomes important for promoting cessation and referral to specialised cessation services such as a quitline.

The Australian Tobacco Strategy (2004-2009) based on evidence reviews, reinforced the importance of developing guidelines for health professionals and quitline service providers, to provide clear protocols for health professionals working with pregnant women. These protocols are summarised in the table below.

Cessation Protocols for health professionals in maternal and child health

- Women who are trying to conceive or who are pregnant and their partners are asked about smoking status, counselled to quit, offered smoking cessation resource and referred to smoking cessation services.
- Ensure that those intending, expecting and new parents who quit are provided with advice about avoiding relapse and are encouraged to sustain abstinence post-partum.
- Encourage those who relapse to try again.
- All antenatal services record smoking status routinely along with notes on provision of advice and/or referral.
- Encourage maternal and child health workers to identify smokers and their partners who smoke or are at risk of postpartum relapse, and counsel or refer to Quitline services.
- Establish and promote Quitline for expectant and new parents that have staff trained to meet their specific needs.
- A Quitline service tailored for expectant and new parents available to smokers in Australia.

Source: Australian National Strategy, 2004-2009. Tobacco Control Supersite, University of Sydney. Accessed 26/3/08. <http://tobacco.health.usyd.edu.au/site/supersite/resources/docs/index.htm>

Discussion

A mother is likely to be more receptive and motivated to hear the quit message during the antenatal period. There needs to be consistent recognition by health professionals during

this period to encourage and facilitate smoking cessation. This includes involving both the pregnant woman and her partner in order to promote the wellbeing of the unborn child and the mother's health. Antenatal care providers also need to be able to confidently refer on to cessation services. The Australian National Guidelines for Cessation Referral provide guidelines that reinforce the importance of identification of pregnant women who smoke and referral by health professionals to a telephone cessation service.

Health professionals need to be an integral part of an identification and referral network that specialised cessation services can link into for the purpose of encouraging pregnant women to quit. A telephone service that provides advice tailored to the needs of pregnant women can then link with antenatal care providers to provide cessation support.

However, not all women make contact with antenatal care providers and there is a need to look more broadly at the role of all health professionals who may be in contact with pregnant women who smoke; for example, pharmacists, dentists, and family planning, so that the message about cessation and referral to a cessation counselling service is more widely known.

6.0 IMPROVING THE ABILITY OF HEALTH PROFESSIONALS TO IDENTIFY AND REFER

Proactive and reactive support

Proactive support is a more complex route to contacting people that smoke, than reactive support (such as a dedicated cessation service available for smokers to call). Proactive support involves a cessation provider (such as a quitline) initiating first contact with the pregnant woman who previously had indicated her willingness to be contacted. For some pregnant women, proactive support may be the most effective way to stop smoking because it is individualised, supportive, and easily accessed. There is also the potential to increase the number of pregnant women who receive cessation support through a community-wide referral system, which is networked and integrated with antenatal providers. A study of proactive peer support to help pregnant women stop smoking, found that 89% of the women who participated appraised the telephone contacts positively and said they were helpful in changing their smoking behaviour (Solomon et al. 2000).

The acceptability to smokers receiving 'cold calls' from a quitline service was studied in a random sample of smokers (n=121) who were offered a transfer to the New York State Smokers' Quitline at the end of a telephone interview assessing smoking behaviours (Van Deusen et al. 2007). The study results found 41% of smokers accepted the offer for, and received the New York State Smoker's Quitline services, and women were more likely to accept immediate service. The authors stated that the offer of transfer to the New York State Smokers' Quitline came at the end of a 30-minute survey, and that by this time rapport was established, enabling referral to be more acceptable. These findings suggest that proactive calls could have an effect on increasing the low utilisation rate of a quitline service.

A New Zealand cessation programme, SmokeChange, used proactive support to enrol pregnant women in face-to-face individualised counselling and "enabled participants to substantially reduce tobacco toxin exposure to themselves and their developing infants" (Ford et al. 2001). Pregnant women were contacted through a general practice register. Questions in the registration form enabled an interest in smoking cessation support to be expressed. Eighty percent of women expressed an interest to register, with 48% of smoking registrants completing a first home visit with their educator. This proactive cessation programme was successful in enrolling both Māori and non-Māori women. The greatest changes in smoking reduction for pregnant women occurred by the second visit. The need for early intervention and enrolment at the first antenatal visit is relevant to health professionals and cessation services in terms of understanding the timing of cessation advice to pregnant women, which will have the greatest influence on smoking cessation rates during their pregnancy. The difference in the numbers of pregnant women who expressed an interest to register for smoking cessation support and those registrants who received their first visit from an educator was 32%. The 32% who did not receive a first visit may have preferred a different cessation approach, which a quitline service for pregnant women may have been able to offer.

Support for proactive telephone counselling was also validated in a review of studies of proactive and reactive telephone counselling among non-pregnant smokers (Stead et al. 2006). Proactive counselling is relevant to pregnant women who may be more receptive to responding to the quit message because of fetal and maternal health benefits. Stead et al.

(2006) concluded that three or more calls from a telephone counsellor increased the chances of quitting, compared to providing self-help materials and brief advice or compared to pharmacotherapy alone. However this number of calls was for a non-pregnant population and would need to be repeated with a sample of pregnant women.

A free service funded by the Vermont Department of Health, developed a proactive telephone peer-support system to help low-income pregnant women stop smoking (Solomon and Flynn 2005). Pregnant smokers were recruited from the Women, Infants, Children Programme (WIC) who agreed to receive calls from a female ex-smoker who initiated the calls based on the time of day the pregnant woman nominated. The support worker called weekly for the first month. Calls were more frequent following a quit attempt, then biweekly or monthly as required. Self-reported abstinence was 25% (defined as not smoked in the past 24 hours) at last telephone contact when women ceased using telephone support. Self-reported abstinence during pregnancy was 20% among the women who returned for their post-partum visit (reported not smoking in the last three months of their pregnancy), and 15% reported they were smoking zero cigarettes per day (Solomon and Flynn 2005).

These results are consistent with other intervention studies with pregnant smokers (DiClemente et al. 2000), and studies of proactive telephone counselling for smoking cessation (Lichtenstein et al. 1996). The WIC study is interesting in that the intervention had success in reaching a large number of low-income participants. Data revealed that telephone support was accepted by one third of eligible pregnant smokers enrolled in WIC. This is higher than the number of pregnant women that would have participated in more traditional cessation support. Although the cessation rates were consistent with other interventions, the eligible number of pregnant women who accepted support is worth noting not only from the recruitment setting of the WIC clinic, but also because the women who consented to receiving cessation support accepted this from a female ex-smoker. Lichtenstein et al. (1996) argue that proactive counselling can reach smokers who may not otherwise use cessation services. However, proactive telephone counselling is likely to be more expensive than smoking cessation quitlines. Major costs include counsellor wages and training time, and phone charges.

Promoting smoking cessation messages prior to pregnancy or as close to the beginning of pregnancy as part of family planning programmes, birth control, and pregnancy testing, to reach smokers and their partners was proposed over a decade ago by an expert panel convened by the US Department of Health and Human Services (DiClemente et al. 2000). The important point with regards to cessation during pregnancy is that support to stop is not only promoted through the reactive health promotion model of providing health information to the population, which relies on the target audience to respond to the information. There is also the need for more complex intervention strategies for those pregnant women who continue to smoke, such as proactive telephone counselling. It is important to note that smoking cessation may not occur at the first antenatal visit and cessation encouragement needs to remain active throughout the pregnancy and following birth.

Antenatal care providers may not routinely undertake identification and referral of pregnant women who smoke. Moran et al. (2003) conducted research with a nationally representative sample of US physicians. Results indicated that physicians were less likely to identify a pregnant woman's smoking status at the first visit. The pregnant women's ethnicity was also

a barrier to physicians asking about smoking status; physicians were less likely to identify the smoking status of non-white women compared with white women.

A focus on 'recent quitters'

Women who recently quit after finding out they were pregnant, are a specific group that remain vulnerable to relapse. This group may perceive that they do not need any further assistance. Likewise, health professionals may perceive that recent quitters do not need assistance.

A study by Ruggiero et al. (2003) looked at the identification and recruitment of low-income smokers into a smoking cessation programme. The study was a randomised controlled trial (RCT), which recruited pregnant women waiting for routine antenatal appointments at a public hospital clinic. The purpose of the study was to look at effective interventions to help women quit, effective interventions to prevent relapse, and effective methods of reaching women who smoke during pregnancy. The findings highlighted the need to focus attention on those women who had recently quit. Women who had stopped after knowing they were pregnant were termed 'early quitters', and were the least likely to enrol in the intervention trial. It is possible that these women who had quit, felt they did not need any assistance. Health professionals at the clinic may also have influenced the women, as the staff may not have seen women who spontaneously quit to be in need of cessation interventions. Ruggiero et al. (2003) suggest that strategies to enhance recruitment of 'early quitters' may need to focus on educating pregnant women and health professionals about the difficulties of staying smokefree after giving birth and that referral to a telephone cessation service may provide appropriate counselling support for this group.

Role of multi-component interventions

The US Task Force on Community Preventive Services Medicine (2001) has recommended multi-component patient telephone support. This includes reactive and proactive telephone counselling support, combined with other interventions such as patient educational materials, formal individual or group counselling, or nicotine replacement therapies. Although the Task Force does not single out pregnant women, it does make recommendations, which are inclusive for the entire smoking population.

Telephone smoking cessation services in North Carolina include two quitlines, which deliver evidence-based cessation help to smokers. These quitlines are also seen as an important referral resource for clinicians who are caring for pregnant women who smoke (Melvin and Malek 2004). The links between health professionals and specialised telephone cessation providers in North Carolina along with combined efforts such as educational approaches or medical therapies follow the recommendations of the US Task Force on Community Preventive Services as previously discussed. The importance of establishing partnerships between health providers and cessation services to achieve smokefree pregnancies in conjunction with media advertising which encourages pregnant women to call a quitline has been endorsed within the United States action plan to reduce smoking during pregnancy: The National Partnership to Help Pregnant Smokers Quit (Orleans et al. 2004).

Discussion

There is a need for maternity service professionals to be more proactive in identifying pregnant women of all ethnicities who smoke during pregnancy, and identify smoking status early. Specifically, referring women to a smoking cessation programme, such as a quitline

service would provide an integrated partnership to address the low numbers of women who currently use these services. Given the specific challenges pregnant women face to stop smoking, early quitters may be a significant group that has not been identified and who would benefit from utilising a quitline service.

Research into the use of proactive support suggests that a quitline specialist calling a pregnant woman who has previously stated to her regular health provider that she wished to quit, is a promising intervention for increasing caller rates to a quitline. The telephone survey by Van Deusen et al. (2007) on smoking in pregnant women, used proactive support to increase the rate of referral to a quitline service. This may be able to be generalised to other telephone advice settings. For example, telephone advice lines in New Zealand such as Plunketline, Healthline, and the pregnancy advice line (0800MUM2BE), may be appropriate channels through which rapport between health advisors and callers can occur. The health professional who has been assisting with advice and information-giving, within the context of assessment protocols of other health helplines, could initiate, at an appropriate opportunity and with the agreement of the pregnant woman, a proactive transfer to the *Quitline*. Pregnant women could be immediately transferred to the *Quitline*, or agree to a *Quitline* advisor calling back at a more convenient time.

7.0 NICOTINE REPLACEMENT THERAPY (NRT)

Behavioural cessation counselling and support of pregnant women to stop smoking may not be an effective intervention on its own for every pregnant woman who smokes. The addictive properties of nicotine may continue to be a barrier to cessation for some women even when best practice interventions are offered. The New Zealand Smoking Cessation Guidelines (Ministry of Health 2007a) support the use of NRT for pregnant women (which indicate gum is preferable over patches). The practice of the *Quitline* was changed in October 2007, and now provides NRT to pregnant women.

Effectiveness of NRT alone

Lumley et al. (2004) in discussing interventions for promoting smoking cessation during pregnancy, reviewed NRT-related literature and suggested that NRT does not appear to have an advantage over other interventions available. Some countries require a prescription if pregnant women want to use NRT. The women who want to try this intervention would therefore have to negotiate with health professionals to get a prescription rather than be able to use a support service to obtain NRT. A quitline service tailored to the needs of the pregnant woman may still be able to assist however with behavioural support and advice, independent of supplying NRT.

A survey of 145 pregnant women in the third trimester assessed the acceptability of nicotine replacement products in pregnancy. It found that 68% would accept nicotine replacement therapy and that they would like help to stop smoking. Overall, 74% of the women surveyed wished to stop smoking (Griffiths et al. 2005).

Effectiveness of NRT and cognitive behavioural therapy

There is still ongoing debate in the literature about the use of NRT in pregnant women, although the New Zealand Ministry of Health Smoking Cessation Guidelines (2007a) have assessed the risks and benefits of smoking versus using NRT and strongly support the use of NRT.

A large trial conducted by Pollak et al. (2007) examined the use and effectiveness of NRT in a group of pregnant women (n=181). This study assessed the effectiveness of NRT and Cognitive Behavioural Therapy (CBT) together in one arm of the study (NRT+CBT), with CBT-only in the other arm of the study. Women in the NRT+CBT arm were nearly three times more likely than women in the CBT-only arm to have stopped smoking (biochemically validated). However, the study was suspended early when a higher rate of negative birth outcomes in the NRT+CBT arm was found. The authors were able to identify confounders (a history of pre-term births in the NRT/CBT was higher than in the CBT-only arm) and the adverse rates were found not to be statistically different. The researchers concluded that “the trial cannot support or negate the previous literature about the harm of NRT use during pregnancy” (p. 304).

Hotham et al. (2005) conducted a randomised controlled trial of NRT using patches. Results from the sample of 40 women, with 20 women in the treatment arm being given nicotine patches, found three participants in this arm were still abstinent at birth. The authors provided three case studies of these women who were all in the treatment arm, to highlight the difficulties and challenges that each pregnant woman faced when attempting to quit

smoking, even with the use of NRT. Importantly, the authors argued that cessation needs to be understood in the context of the pregnant woman's environment, especially with respect to the other factors, which mitigate against quitting smoking. Support from a quitline service in relation to NRT use would require quitline staff to be confident in exploring with the pregnant woman, the balance between the risks of continuing to smoke and the risks of using NRT during pregnancy (Coleman et al. 2004).

Discussion

NRT is a pharmacologic treatment that is in routine use within the non-pregnant population. However uncertainty with regards to fetal health has meant that not all health providers recommend this treatment as they do for non-pregnant smokers to address the nicotine cravings.

The implication for the *Quitline* is that a tailored service for pregnant women would need to be sensitive to the debate over safety concerns of NRT in pregnancy. As well as NRT being seen as a first-line cessation treatment, addressing the social environment of pregnant women is equally as important. Using an individualised lifestyle approach with the woman, her partner or significant others within her social environment, would enable appropriate and timely education, and behavioural and motivational support from a quitline to stop smoking with or without the use of NRT.

8.0 GLOSSARY

Antenatal	Before birth.
Cognitive behavioural therapy	Counselling designed to enhance motivation and develop skills to quit smoking.
Gravidity	Number of pregnancies a woman has experienced, including the current one.
Lead Maternity Carer	A midwife, GP or obstetrician whom the woman has selected to provide her maternity care.
Multigravid	More than one pregnancy.
Primigravid	Woman in her first pregnancy.
Proactive support	Provider directly initiates contact to give cessation support, or the tobacco user initiates contact with provider-initiated follow-up.
Reactive support	Tobacco user initiates contact with cessation service.
Teachable moment	A time in a pregnant woman's life where the meanings she has around smoking begin to change as she understands more about the harmful effects of smoking in pregnancy.

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