

New Zealand  
**Smoking Cessation Guidelines**

This project was lead by the Clinical Trials Research Unit, The University of Auckland,  
in association with the guidelines development team.

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# Executive Summary

The *New Zealand Smoking Cessation Guidelines* provide updated guidance for health care workers in their contacts with people who smoke tobacco. The guidelines make recommendations for the use of evidence-based interventions in priority population groups, in particular Māori, Pacific peoples, pregnant women and people who use mental health and addiction services. They are based on a comprehensive literature review that summarises the most recent national and international evidence on best practice in smoking cessation. The full range of smoking cessation treatments now available in New Zealand has been considered. People involved in providing smoking cessation services to many different population groups were consulted throughout the development of the guidelines.

The guidelines include several important messages. Health care workers:

- should give brief advice to stop smoking to *all* people who smoke, regardless of whether they say they are ready to stop smoking or not
- should provide evidence-based cessation support for people who express a desire to stop smoking
- should only recommend smoking cessation treatments of proven effectiveness, as identified in these guidelines, to people interested in stopping smoking.

The Guidelines are structured around a new memory aid – ABC, which incorporates and replaces the previously used ‘5As’ (Ask, Advise, Assess, Assist, Arrange). ABC is a simple and easy tool that all health care workers can use. ABC prompts health care workers to **Ask** about smoking status; to give **Brief advice** to stop smoking to *all* smokers and to provide evidence-based **Cessation support** for those who wish to stop smoking.

Implicit within this guideline is an assumption that health care workers have the prerequisite knowledge, attitudes and skills to support smokers in ways that maximise the smokers’ chances of stopping smoking permanently.

# Endorsements

These Guidelines have been endorsed by the following groups:

- Action on Smoking and Health (ASH) New Zealand
- Asthma and Respiratory Foundation of New Zealand (Inc)
- Australian and New Zealand College of Anaesthetists
- Australasian Faculty of Public Health Medicine (AFPHM): New Zealand Office
- Cancer Society of New Zealand
- Education for Change Ltd
- Health Sponsorship Council
- Mental Health Commission
- National Addiction Centre
- National Heart Foundation of New Zealand
- New Zealand College of Midwives
- New Zealand Guidelines Group
- New Zealand Nurses Organisation
- New Zealand Society of Physiotherapists Inc
- Pacific Medical Association
- Pacific Islands Heartbeat
- Pharmaceutical Society of New Zealand (Inc)
- Pharmacy Guild of New Zealand (Inc)
- Smokefree Coalition
- Social and Behavioural Research in Cancer Group, Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago
- Te Hotu Manawa Māori
- The Quit Group.

# About the Guidelines

## Background

Tobacco smoking is a major public health problem in New Zealand. Overall, around 23% of New Zealanders smoke tobacco.<sup>1</sup> However, smoking prevalence is much higher among Māori (46%) and Pacific peoples (36%). In addition to being directly linked to almost 5000 deaths each year, tobacco smoking causes significant morbidity and contributes to socioeconomic and ethnic inequalities in health in New Zealand.

Stopping smoking confers immediate health benefits on those who already have smoking-related diseases and future health benefits on all smokers. Helping people who smoke to stop is a leading national health goal. The New Zealand Health Strategy lists the reduction of smoking-related harm as one of its 13 priorities.<sup>2</sup> The national five-year strategic plan on tobacco control<sup>3</sup> includes promoting smoking cessation as one of its five objectives. Smoking cessation guidelines are essential to achieving this high-priority objective.

The New Zealand *Guidelines for Smoking Cessation*, first published in 1999 and revised in 2002,<sup>4</sup> have shaped smoking cessation training and treatment in this country for almost a decade. However, a 2003 survey of guidelines users undertaken by the New Zealand Guidelines Group (NZGG) found that the 2002 guidelines needed to be updated.<sup>5</sup> Considerable change has occurred even since 2003: new evidence on best practice has emerged from research; new pharmacotherapies and other treatments have been made available; new smokefree legislation has been introduced and patterns of smoking have changed (for example, overall cigarette consumption has fallen but levels of nicotine dependence may have remained unchanged) among specific population groups.<sup>6</sup>

These guidelines supersede all earlier national smoking cessation guidelines. They are based on an updated comprehensive literature review that summarises the most recent national and international evidence on best practice in smoking cessation, available at <http://www.moh.govt.nz> and thus provide updated guidance for health care workers to help people who smoke tobacco. The guidelines reflect the full range of smoking cessation services now available in New Zealand and contain information about their application to priority population groups, such as pregnant women and people who use mental health services.

Readers should note some important changes from earlier guidelines.

1. All reference to the 'Stages of Change' model has been removed because new research challenges the usefulness of this model in smoking cessation treatment.<sup>7</sup>
2. A key message is that *all* people who smoke, *regardless of whether they express a desire to want to stop or not*, should be advised to stop smoking.
3. A related message is that support to stop smoking should *always* be offered to those people who express an interest in stopping.

These guidelines are structured around three steps in an easy memory aid – ABC.

- **A** – **Ask** about smoking status.
- **B** – Give **Brief advice** to stop smoking to all people who smoke.
- **C** – Provide evidence-based **Cessation support** for those who express a desire to stop smoking.

The ABC approach should be used in preference to other available frameworks, such as the ‘5As’ (Ask, Advise, Assess, Assist, Arrange) or AAR (Ask, Advise, Refer).

All health care workers, regardless of their location, specialty or seniority, have a responsibility to help people who want to stop smoking. Health care workers should ask all people about their smoking status, to ensure that all smokers are aware of the health risks they are taking by smoking and to recommend that tobacco smokers stop smoking. Many people find it difficult to stop smoking, but support improves their chances of success. Cessation support includes health care workers providing behaviour change support, prescribing or recommending an effective smoking cessation medication or referring those interested in stopping smoking to evidence-based smoking cessation services.

The level of support a person needs in their attempt to stop smoking will depend upon many factors, such as the person’s degree of dependence on smoking, the existence of conditions or circumstances that may make the attempt more difficult and the person’s ability to cope with the disruption to their day-to-day patterns of behaviour and mood.

## The guidelines development process

In mid-2006, the Ministry of Health commissioned a consortium lead by The University of Auckland’s Clinical Trials Research Unit (CTRU) to develop these guidelines. The process has followed as closely as possible the steps recommended in the internationally recognised Appraisal of Guidelines for Research & Evaluation (AGREE) tool.<sup>8</sup> This includes having significant stakeholder and user involvement in the development process and having a stage of external expert review. A Guidelines Advisory Group was appointed in July 2006 to provide both technical and scientific expert input from a range of stakeholders, including Māori and cessation service providers. Using the New Zealand Tobacco Control Action Network (NZTAN – a tobacco control and cessation provider network) to elicit interest and participation, a ‘virtual’ Stakeholder Interest Group was established. In addition, comment was actively solicited through presentations and attendance at selected tobacco control, smoking cessation and mental health conferences, symposia and workshops in the latter half of 2006 and early 2007.

Underpinning the guidelines is an updated literature review, undertaken from 2002 (the date of the previous literature review) to December 2006. A copy of the literature review can be found on the Ministry of Health’s website (<http://www.moh.govt.nz>). The draft guidelines developed from this literature review were reviewed by the Guidelines Advisory Group in January 2007 and the Stakeholder Interest Group in March 2007. They were then peer reviewed by three international smoking cessation experts from Australia, the United States and Sweden respectively. Relevant professional organisations also received a near-final draft for comment and consideration for endorsement. The process was audited and approved by the New Zealand Guidelines Group (NZGG).



## Grading of recommendations

The evidence for each smoking cessation intervention comes from systematic reviews (principally those from the Cochrane database), randomised controlled trials (RCTs) or other studies where no RCTs exist, and is summarised in the literature review. Each recommendation has been assigned a grade based on the level of empirical evidence from the literature review, using the NZGG system (Table 1).

**Table 1: Grades of recommendations**

A	The recommendation is supported by GOOD (strong) evidence.
B	The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
C	The recommendation is supported by EXPERT opinion (published) only.
I	There is INSUFFICIENT evidence to make a recommendation.
✓	GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Plans for guidelines revision

The guidelines development team recommends that 1, the guidelines be updated on an annual basis to allow for changes in smoking cessation practice, and 2, a systematic review of the evidence for smoking cessation treatment be undertaken in 2010.

## Guidelines development team

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## Declaration of competing interests

Haikiu Baiabe, Kaaren Beverley, Dr Chris Bullen, Stewart Eadie, Trish Fraser and Professor Doug Sellman have no competing interests to declare.

Denise Barlow has provided smoking cessation advice and training for both GlaxoSmithKline (GSK) and Pfizer.

Dr Marewa Glover has undertaken research and consultancy for, and received honoraria for speaking at meetings for, the manufacturers of smoking cessation medications. She has also provided smoking cessation training for Novartis and Te Hotu Manawa Māori for the Aukati Kai Paipa pilot programme and Quitline.

Dr Hayden McRobbie has undertaken research and consultancy for, and received honoraria for speaking at meetings for, the manufacturers of smoking cessation medications.

Dr Wallace-Bell has undertaken research and consultancy for, and received honoraria for speaking at meetings for, the manufacturers of smoking cessation medications.

Dr Robyn Whittaker has undertaken consultancy for, and received honoraria for speaking at meetings for, the manufacturers of smoking cessation medications.

## Consultation and peer review

### Guidelines Advisory Group

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Judi Clements, Chief Executive Officer, Mental Health Foundation

## **NZGG representative**

Professor Cindy Farquhar, Chair, New Zealand Guidelines Group

## **Peer review group – guidelines**

Dr Ron Borland, Co-Director VicHealth (The Victorian Health Promotion Foundation) Centre for Tobacco Control, Australia

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## **Stakeholder interest group**

Self-selecting tobacco control, smoking cessation and health practitioners

## **Other key stakeholders**

Ministry of Health, non-governmental health organisations, DHBs and PHOs

# ABC for Smoking Cessation

## Ask

1. **Ask** about and **document** smoking status for all people (for those who smoke or have recently stopped smoking, smoking status should be checked and updated on a regular basis). For example, you could ask: **‘Do you currently smoke cigarettes?’**



## Brief advice

1. Provide **advice** to all people who smoke. For example, you could say: **‘You may know the risks involved with smoking, but do you realise how harmful it is? I cannot stress enough how important it is to stop smoking. Stopping is the best thing that you can do to improve your health. I understand that it can be hard to stop smoking, but if you want to, I can help you.’**
2. Personalise the advice (for example, if relevant explain how smoking is related to existing health problems and how stopping smoking might help). Highlight the benefits of quitting smoking (see Appendix 1 for some examples).
3. Acknowledge that some people make several attempts to quit before stopping for good.
4. **Document** that advice was given.



## Cessation support

There are two options for providing cessation support.

1. **Refer:** Health care workers *without* the expertise or time to help people to stop smoking should refer smokers to smoking cessation services such as the Quitline (phone tollfree: 0800 778 778 or <http://www.quit.org.nz>). For example, you could say: **‘Give the Quitline a call. They can help you and provide you with medication that will make quitting easier. The number is 0800 778 778.’**
2. **Provide support:** Health care workers who are able to provide support should do so. Support can include setting a quit date; advising the smoker that complete abstinence from smoking is best; arranging medication to aid the quit attempt and arranging for a follow-up consultation within a week. Assessment of the degree of nicotine dependence helps guide treatment (see Appendix 2).

# Ask

All people attending any health care service should be asked if they smoke tobacco. Their response should be recorded in their clinical records. The records of anyone who smokes, or has recently quit, should be updated regularly – ideally once a year. Simple systems – such as computer prompts, stickers in the client chart or including smoking status as a vital sign in the patient’s medical record – can remind health care workers to ask and document smoking status.

Recommendations	
<b>A</b>	<p><b>Ask</b> about and <b>document</b> smoking status for <i>all</i> patients.</p> <p>For people who smoke or have recently stopped smoking, the smoking status should be checked and updated on a regular basis.</p> <p>Systems should be in place in <i>all</i> health care settings (medical centres, clinics, hospitals, etc) to ensure that smoking status is accurately documented on a regular basis.</p>

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Brief Advice

Brief advice simply means advising people who smoke to stop. It can be done in as short a time as 30 seconds.<sup>9</sup>

It is unnecessary to assess the stage of change: advice should be provided to *all* smokers irrespective of whether they want to stop smoking or not.

Advice can be strengthened if it can be linked to a smoker's existing smoking related medical condition or to protecting children and young people from exposure to second-hand smoke.

Brief advice appears to work by triggering a quit attempt rather than by increasing the chances of success of a quit attempt.<sup>10</sup> It also seems to have its greatest effect on less dependent smokers.<sup>11</sup> For more dependent smokers, it is important that brief advice is followed by a recommendation to use stop smoking medications and referral to a smoking cessation service.

There is no evidence that adding self-help written materials to brief advice gives any additional benefit,<sup>11</sup> but providing written materials to support the advice that is given may reinforce the importance of quitting and provide information about cessation support.

### Key Points

There is evidence from RCTs that brief advice to stop smoking from a doctor improves abstinence rates measured at 6 months after stopping.<sup>11</sup>

Approximately 1 in 40\* people who would not otherwise have stopped smoking will do so for at least 6 months after receiving brief advice to stop smoking.

The evidence for the effectiveness of brief advice delivered by health care workers other than doctors is less clear.<sup>12-14</sup> However, clear advice from nurses, dentists, dental hygienists, pharmacists and all health care workers is likely to have some benefit.

### Recommendations

A	All doctors should provide brief advice to quit smoking at least once a year to <b>all</b> patients who smoke.
B	All other health care workers should also provide brief advice to quit smoking at least once a year to <b>all</b> patients who smoke.
C	Record the provision of brief advice in patient records.

\* This represents the number needed to treat (NNT) and indicates how many people need to be treated for every one person who stops smoking. The NNT is the inverse of the risk difference:  $NNT = 1 \div \text{risk difference}$ . For example, if the difference in the effect on quitting of brief advice from a physician compared to no advice is 2.5% then:  $NNT = 1 \div 0.025 = 40$ .

**B**

Health care workers should seek appropriate training to enable them to provide brief advice. This training should include providing the health care worker with information on available evidence-based smoking cessation treatments.

### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Cessation Support

The key components of cessation support that have been shown to be most effective include multi-session support and medication. The available evidence suggests that at least four follow-up contacts for support are required to provide the best chances of stopping smoking. Such support contact can be delivered via the telephone or face to face (individually or in a group).

Medication with proven efficacy should be recommended to all people who are nicotine dependent.

The treatment that individual health care workers provide depends upon their smoking cessation knowledge, skills and available time.

At the very least, all health care workers should *refer* people who want to stop smoking to services that provide effective interventions. This may include advising the smokers to contact a specialised service, such as, Aukati Kai Paipa (Māori smoking cessation services <http://www.tehotumanawa.org.nz> or (09) 638 5800) or the Quitline (<http://www.quit.org.nz> or 0800 778 778). Referral is best accompanied by a brief description of the referring service.

The following section covers those aspects of cessation support that have been proven to be effective in assisting people to stop smoking in the long term (at least 6 months). In general, effective cessation support includes:

- giving practical help in planning strategies and supports, including setting a target quit date
- assessing the degree of nicotine dependence, which will help guide treatment (see Appendix 2)
- recommending/prescribing stop-smoking medication (such as nicotine replacement therapy, bupropion, varenicline or nortriptyline)
- arranging follow-up consultations.

## Telephone support

Telephone support is an effective method for encouraging smoking cessation. It can be reactive (where the smoker calls a helpline for information and advice) or proactive (where the smoker receives calls from a telephone counsellor at set times). The strongest evidence for efficacy exists for the proactive form of telephone support.

Telephone cessation services are cost effective and have a very wide reach (that is, they can be delivered to many people over a large geographical area). In New Zealand, the Quitline provides a tollfree telephone support service to callers from around the country.

### Key Points

Proactive telephone support for smoking cessation increases long-term abstinence rates.<sup>15</sup>

There is evidence that adding telephone support to medication increases short-<sup>16</sup> and long-term<sup>17</sup> abstinence rates over that of medication alone.

There is no advantage in adding telephone support to face-to-face support.<sup>15</sup> However, when the intensity of face-to-face counselling is low, such as providing a single counselling session for hospital in-patients, additional follow-up with telephone counselling has been shown to have a positive effect.<sup>18</sup>

As yet, there is no evidence that telephone follow-up after intensive support reduces relapse rates.<sup>19</sup>

### Recommendations

- A** Offer telephone counselling as an effective method of stopping smoking.  
People who smoke can be directed to Quitline (tollfree: 0800 778 778).

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.  
**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.  
**C:** The recommendation is supported by EXPERT opinion (published) only.  
✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).



## Face-to-face support

Face-to-face cessation support, either on an individual basis or in a group situation, has been shown to help people stop smoking. The evidence indicates that quit rates are generally higher when medication is used in combination with face-to-face support.

### Key Points

There is clear and consistent evidence that face-to-face counselling increases smoking cessation rates over that of minimal support.<sup>20–22</sup>

Approximately 1 in 20 people who would not otherwise have stopped smoking will do so for at least 6 months after receiving face-to-face support.

Both individual and group-based interventions are effective.<sup>20–22</sup>

There is no evidence that any particular effective behaviour change method\* (for example, cognitive behavioural therapy, motivational interviewing, and withdrawal-oriented treatment) is superior to another. However, the basic principles of setting a quit date, emphasising the importance of complete abstinence and providing multi-session support after smoking cessation are important.

There is some evidence that more intensive support (relating to the frequency and duration of contacts with smokers) is associated with higher abstinence rates.<sup>22–24</sup>

There is also good evidence that nurses are effective in delivering smoking cessation interventions.<sup>13</sup> Interventions delivered by other health care workers are also likely to be effective. In fact, the professional background of the health care worker providing cessation support makes no difference to the outcome.<sup>22</sup>

Support is best delivered in a time set aside specifically for this purpose rather than as part of general duties of health care workers.

### Recommendations

A	Providing face-to-face smoking cessation support either to individual patients or to groups of smokers is an effective method of stopping smoking.
A	Aim to see people for at least four cessation support sessions.
C	Health care workers providing evidence-based cessation support (that is, more than just brief advice) should seek appropriate training.
C	Health care workers trained as smoking cessation providers require dedicated time to provide cessation support.

#### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

\* There are a number of unproven behaviour change methods that cannot be recommended – see ‘Other Treatments and Interventions’.

## Medications

### Nicotine replacement therapy

Nicotine replacement therapy (NRT) has been shown to help people stop smoking. It is extremely safe and highly cost effective. Its main mechanism of action is to reduce the severity of withdrawal symptoms associated with smoking cessation (see Appendix 3). Although NRT does not completely relieve the withdrawal symptoms, it makes the experience of stopping less unpleasant.

The use of NRT in pregnant women, breastfeeding women, young people and people with cardiovascular disease is discussed in detail under ‘Cessation Support in Priority Population Groups’.

International evidence shows that NRT is mainly effective in people who smoke 10 or more cigarettes per day. However, it is the person’s anticipated difficulty in stopping smoking based on their degree of nicotine dependence rather than the number of cigarettes they smoke that should be used to determine whether to arrange for NRT (see Appendix 2 for further detail on assessing nicotine dependence).

#### Key Points

NRT is safe and effective in aiding smoking cessation. It approximately doubles the chances of long-term abstinence.<sup>25</sup>

Approximately 1 in 14 people who would not otherwise have stopped smoking will do so for at least 6 months after completing a course of NRT.

There are six different NRT products\* that deliver nicotine in different ways, but there is no evidence of any difference in effectiveness between the six.

There is no evidence that matching particular products with particular types of people who smoke makes any difference to outcome. Product selection should be guided by client preference.<sup>26</sup>

There is a clear advantage in smokers who are highly dependent using 4 mg gum compared to 2 mg gum. A similar response to dose has been shown with nicotine lozenges and nasal spray.

Full-strength doses of both 16- and 24-hour patches have been found to be more effective than their lower strength preparations for people who smoke more than 10 cigarettes per day.<sup>27</sup>

NRT should be used for 8 to 12 weeks, but a small number of smokers may need to use it for longer (5% may continue to use it for up to a year).<sup>28</sup> There are no safety concerns with long-term NRT use.

NRT appears to be as effective as bupropion and nortriptyline. As yet, there are no published studies comparing NRT to varenicline.

There is a moderate advantage to using a combination of NRT products over just a single product.<sup>25</sup> There are no safety concerns with combining NRT products.

NRT can be safely used by people with cardiovascular disease.<sup>29</sup>

There is insufficient evidence that the use of NRT by pregnant women improves continuous 6-month abstinence rates.

\* These are patches, gum, sublingual tablets, inhalers, lozenges and nasal spray. At the time of writing, only the first four products were available in New Zealand. Only patches and gum are currently subsidised in New Zealand and can be obtained via the *Quitcards* nicotine replacement exchange card system.

The use of NRT in pregnancy carries a small potential risk to the fetus, but NRT is far safer than smoking. Expert opinion suggests that NRT can be used by women who are pregnant once they have been advised of and have assessed the potential risks and benefits.<sup>30</sup>

There is insufficient evidence that the use of NRT by young people who smoke improves continuous 6-month abstinence rates. Nevertheless, expert opinion is that NRT may be considered for use by dependent adolescents who want to stop smoking.<sup>31</sup>

NRT is safe to use repeatedly with other attempts to stop smoking by people who have tried to stop but have not succeeded in the past.<sup>25</sup>

There is evidence that NRT is effective at helping people reduce the number of cigarettes smoked before stopping and that this is an effective method of stopping smoking (the ‘cut down then quit’ approach – See Appendix 4).

### Recommendations

A	Offer NRT routinely as an effective medication for people who want to quit smoking tobacco.
B	The choice of NRT product can be guided by individual preference.
A	Use NRT for at least 8 weeks.
A	Combining two NRT products (for example, patch and gum is a popular combination) increases abstinence rates.
B	NRT can be used to encourage reduction prior to quitting (see Appendix 4).
C	People who need NRT for longer than 8 weeks (for example, people who are highly dependent) can continue to use NRT.
B	NRT can be provided to people with cardiovascular disease. However, where people have suffered a serious cardiovascular event (for example, people who have had a myocardial infarction or stroke) in the past 2 weeks or have a poorly controlled disease, treatment should be discussed with a physician. Oral NRT products are recommended (rather than longer-acting patches) for such patients.
C	NRT can be used by pregnant women after they have been informed of and have weighed up the risks and benefits. Intermittent NRT (for example, gum, inhaler, microtab and lozenge) should be used in preference to patches.
C	NRT can be used by young people (12–18 year of age) who are dependent on nicotine (that is, it is not recommended in occasional smokers such as those who smoke on weekends only) if it is believed that the NRT may help stopping smoking.

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Bupropion

Bupropion is an antidepressant medication that almost doubles the chances of long-term abstinence from smoking. Its action in helping people to stop smoking is independent of its antidepressant effects, so it works even in people without a history of depression. Like NRT, it acts to reduce the severity of withdrawal symptoms, but it may also have other actions that help people stop. Evidence that bupropion is more or less effective than NRT or nortriptyline is limited. However, evidence from three RCTs suggests that it is less effective than varenicline. There is also evidence from two RCTs that bupropion improves short-term (but not long-term) smoking abstinence rates for people with schizophrenia and that it has a good safety profile in this group.<sup>32, 33</sup>

### Key Points

Bupropion is effective in aiding smoking cessation, almost doubling the chances of long-term abstinence.<sup>34</sup>

Approximately 1 in 11 people who would not otherwise have stopped smoking will do so for at least 6 months after completing a course of bupropion.

There is insufficient evidence to recommend combining bupropion with any other smoking cessation medications.

Bupropion is a safe medication but has a number of contraindications and cautions for use (see Appendix 5). It is safe and effective when used by those with stable cardiovascular and respiratory disease.

There is insufficient evidence to recommend the use of bupropion by pregnant women or adolescents who smoke.

There is insufficient evidence to recommend its use in preventing smoking relapse.

Bupropion is only available on prescription.\*

### Recommendations

A	Bupropion can be offered as an effective medication for people who want to stop smoking.
A	Bupropion can be used by those with stable cardiovascular and respiratory diseases.
✓	The decision to use bupropion should be guided by the person's preference and contraindications and precautions for use.

### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

\* At the time of writing, bupropion was not subsidised in New Zealand.

## Nortriptyline

Nortriptyline is a tricyclic antidepressant that has been shown to be as effective as bupropion and NRT in aiding smoking cessation. Its action in helping people to stop smoking is independent of its antidepressant effects, and it works in those without a history of depression. Its main advantages are its low cost and the ability to monitor therapeutic blood levels. The main concern with using nortriptyline, like other antidepressants in its class, is the risk of adverse cardiovascular effects. There are a number of contraindications and precautions with its use (see Appendix 6 for more details).

### Key Points

Nortriptyline is effective in aiding smoking cessation. It almost doubles the chances of long-term abstinence.<sup>34</sup>

Approximately 1 in 11 people who would not otherwise have stopped smoking will do so for at least 6 months after completing a course of nortriptyline.

There is insufficient evidence to recommend the combination of nortriptyline with any other smoking cessation medications.

There is insufficient evidence to recommend its use by pregnant women or adolescents who smoke.

People with cardiovascular disease should use bupropion with caution.

Nortriptyline has the potential for more serious side effects than bupropion.

It is only available on prescription.

### Recommendations

- |   |  |
|---|--|
| A | Nortriptyline can be offered as an effective medication for people who want to stop smoking.   |
| ✓ | The decision to use nortriptyline should be guided by the person's preference in conjunction with discussing the risks associated with its use with a clinician. |

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Varenicline

Varenicline was developed especially to help people stop smoking. It works by binding to nicotine receptors in the reward centres in the brain. In so doing, it reduces the severity of tobacco withdrawal symptoms while simultaneously reducing the rewarding effects of nicotine.

Varenicline has demonstrated a good safety profile so far. However, adverse event data from general use in the population are not yet available. There are no known clinically significant drug interactions (see Appendix 7 for more detailed information).

### Key Points

Varenicline is effective in aiding smoking cessation. It approximately triples the chances of long-term abstinence.<sup>35</sup>

Approximately 1 in 8 people receiving a course of varenicline who would not have quit smoking on their own will stop smoking for at least 6 months.

Three studies have found varenicline to be more effective than bupropion.<sup>35</sup>

Its effectiveness compared to NRT or nortriptyline is unknown.

There is insufficient evidence to recommend its combination with any other smoking cessation medications.

There is insufficient evidence to recommend its use by pregnant women or adolescents who smoke or by anyone with an unstable cardiovascular disease.

It is only available on prescription.

### Recommendations

A	Varenicline can be routinely offered as an effective medication for those who want to stop smoking.*
---	--

✓	The decision to use varenicline should be guided by the person's preference and after discussing the contraindications and precautions for use with a clinician.
---	--

### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

\* At the time of writing, varenicline was not subsidised in New Zealand.

# Cessation Support in Priority Population Groups

## Introduction

A number of population groups have been identified by the Ministry of Health for priority because they have particularly high smoking prevalence rates (for example, Māori and users of mental health service), a need for stopping smoking for other reasons (for example, socioeconomic deprivation, barriers to accessing services) or because they are likely to obtain significant benefit from stopping smoking (for example, pregnant women). Such priority population groups are discussed briefly in the following sections.

In general, interventions that have been proven to be effective in the general population are also likely to be effective for these population groups. However, the manner in which these interventions are delivered may need to be adapted for each group in order to be acceptable, accessible and appropriate as possible.

## Smoking cessation interventions for Māori

Māori have a high smoking prevalence rate of 46% (current smokers aged 15 years and over).<sup>1</sup> Māori women have a higher rate of smoking (50%) than Māori men (40%). Māori women of childbearing age (15–39 years) have smoking rates of up to 61%. For Māori men of the same age, rates are as high as 51%.<sup>1</sup> Furthermore, smoking prevalence amongst Māori has not declined over time at the same rate as in the general population.<sup>1</sup>

Smoking cessation interventions for Māori need to address nicotine dependence, include the provision of support and be delivered in a way that is culturally appropriate and inclusive of whānau as much as possible.<sup>36</sup> It is also important to give Māori who smoke a choice of different treatment options.<sup>37</sup>

Aukati Kai Paipa, a smoking cessation approach developed by Māori for Māori, is predominantly delivered by Māori health organisations as well as other hospital- and community-based clinics. It is whānau-focused, operates in a Māori setting utilising strong local ties and adopts a holistic approach to health. Smoking cessation components typically combine NRT with support that addresses all elements of wellbeing and regular follow-up. Although not tested in a RCT, the Aukati Kai Paipa pilot programme that ran for 2 years from 1999 showed positive results.<sup>38</sup>

The Quitline is also an appropriate service for Māori who smoke. The service offers the support of Māori Quit Advisors and is accessible from all parts of the country.<sup>39</sup> Furthermore, an evaluation of the Quitline service showed that Māori callers using that service were just as likely to stop smoking as non-Māori callers.<sup>40</sup>

Bupropion has been shown in a RCT to help Māori stop smoking.<sup>41</sup> A mobile phone-based cessation intervention increased short-term abstinence rates, with no difference being demonstrated between Māori and non-Māori in the subgroup analysis, but there was insufficient evidence of longer-term effectiveness of the service in either group.<sup>42</sup>

### Key Points

Interventions that work in the general population (for example, support and medication) appear to be at least as effective for Māori.<sup>38</sup> This is supported by one well-conducted RCT that showed bupropion to be effective at assisting Māori to stop smoking.<sup>41</sup>

### Recommendations

✓	Offer Māori who smoke cessation support that incorporates known effective components (such as medication).
C	Where available, offer culturally appropriate cessation services to Māori.
✓	Health care workers should be familiar with the cessation support services for Māori that are available in their area (such as local Aukati Kai Paipa providers) and nationally (such as Quitline) so they can refer appropriately.
✓	Health care workers providing cessation support to Māori should seek training in how to deliver smoking cessation treatment to Māori.

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).



## Smoking cessation interventions for Pacific peoples

Pacific peoples in New Zealand have a high smoking prevalence rate of 36% (currently smoking, 15 years of age and over),<sup>1</sup> with 39% of Pacific males and 33% of Pacific females current smokers. Pacific young people also have high smoking rates, with 36% of 15- to 19-year-old Pacific youth currently smoking – 46% of boys and 28% of girls in this age group. Smoking prevalence in Pacific peoples has remained stable since the 1990s, whereas there has been a slow decline in the prevalence of smoking in the general population.<sup>6</sup>

There is only limited published information available on smoking prevalence for the different Pacific population groups in New Zealand. There are no published studies that specifically examine the effectiveness of smoking cessation interventions for Pacific peoples. Interventions for a population group need to be tailored to be maximally effective, and culturally appropriate models or examples may increase acceptance of treatment.<sup>22 43 44</sup> For example, anecdotal evidence suggests that Pacific peoples in New Zealand are more likely to access health care workers and interact less with doctors. More research is essential to develop appropriate and effective smoking cessation interventions for Pacific peoples.

### Key Points

Interventions known to work in the general population are likely to be as efficacious for Pacific peoples (for example, behavioural support and pharmacotherapy).

### Recommendations

- |   |  |
|---|--|
| ✓ | All Pacific peoples who smoke should be offered smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections). |
| C | Offer culturally appropriate services where available.   |
| ✓ | Health care workers providing cessation support to Pacific peoples should seek training in how to deliver smoking cessation treatment appropriately to Pacific peoples.          |

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Smoking cessation interventions for Asian people

Smoking prevalence in Asian people living in New Zealand is lower than most other ethnic groups, with 12% currently smoking.<sup>1</sup> However smoking prevalence rates are known to vary widely within the Asian group, depending on the country of origin, and by sex, with 18% of Asian males and 4% of Asian females currently smoking. Asian men aged 20–24 years have the highest smoking prevalence (31%).<sup>1</sup>

The Asian population in New Zealand is growing rapidly with a large proportion being new migrants. The language difficulty presents the major barrier to accessing services and health information for this group.<sup>45</sup> There is currently insufficient evidence on Asian-specific cessation interventions to be able to draw any conclusions. Interventions for a population group may need to be tailored to be effective, and culturally appropriate models or examples may increase Asian people's acceptance of treatment.<sup>22, 43, 44</sup> Research is required to develop appropriate and effective cessation interventions for Asian people.<sup>46</sup>

### Key Points

Interventions known to work in the general population (for example, support and medication) are likely to be as effective for Asian people.

### Recommendations

- |   |   |
|---|---|
| ✓ | Offer all Asian people who smoke smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections). |
| C | Offer culturally appropriate services where available.  |
| ✓ | Health care workers providing cessation support to Asian people should seek training in how to deliver support to Asian people.                                   |

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Smoking cessation interventions for pregnant and breastfeeding women

Recent data (2006) show that the prevalence of smoking in women of childbearing age (15–39 years) ranges from 26–29%, depending on the specific age group. However, rates are highest in Māori (39–61%) and Pacific peoples (27–47%), compared to Pākehā (22–27%).<sup>1</sup> Smoking during pregnancy poses risks to the pregnancy (for example, premature delivery, spontaneous abortion, placenta previa, placental abruption), the newborn baby (for example, accounting for low birth weight) and the infant (sudden infant death syndrome (SIDS), otitis media, learning difficulties).<sup>47 48</sup> When pregnant women stop smoking, there are benefits to both mother and child. Cessation efforts should be encouraged in all women of child-bearing age who smoke and at anytime throughout a pregnancy, from as early in the pregnancy as possible and into the post-partum period.<sup>49</sup> There is modest evidence for the effectiveness of intensive support in encouraging cessation.<sup>50</sup>

There is limited evidence of the effectiveness of NRT in helping pregnant women stop smoking. There is also concern about potential adverse effects of nicotine on fetal development. However, the main benefit of using NRT is the removal of all other toxins contained in tobacco smoke. Furthermore, NRT typically provides less nicotine than tobacco smoke. Therefore, current expert opinion is that NRT can be considered safe to use in pregnancy following an assessment of the risks and benefits.<sup>30, 51</sup> In general, NRT products, such as gum, lozenges, sublingual tablets and inhalers, should be used in preference to patches as the former products deliver a lower total daily nicotine dose than patches.<sup>30</sup>

Second-hand tobacco smoke also has known harmful health effects on young children.

Regarding breastfeeding and NRT use, nicotine freely passes in and out of breast milk, depending on the concentration of nicotine in the maternal blood (which is in turn affected by cigarette consumption, frequency of breastfeeding and the time between smoking and breastfeeding).<sup>30</sup> Due to the relatively low oral availability of nicotine,<sup>52</sup> it is unlikely that this very low level of exposure is harmful to the infant.<sup>51</sup> The importance of continuing to breastfeed, regardless of smoking status, should be stressed.

In summary, an analysis of the risks and benefits of smoking versus using NRT overwhelmingly supports the use of NRT.

## Key Points

There is evidence from RCTs that multi-session support interventions to help pregnant women stop smoking improve abstinence rates during pregnancy.<sup>50</sup>

There is insufficient evidence that the use of NRT in pregnant women improves abstinence rates during pregnancy.<sup>46</sup>

Expert opinion suggests that NRT can be used in pregnancy following assessment of the risks and benefits. Health care workers should balance the significant risks of continued smoking against the risks of providing NRT to help a pregnant woman stop smoking (see Appendix 8).

Intermittent-use NRT products, such as gum, lozenges, sublingual tablets and inhalers should be used in preference to patches. However, if a patch is judged to be the most appropriate product, then it should be used during waking hours only and removed overnight.<sup>30</sup>

## Recommendations

A	Offer all pregnant and breastfeeding women who smoke multi-session behavioural smoking cessation interventions from a specialist/dedicated cessation service.
A	All health care workers should briefly advise pregnant and breastfeeding women who smoke to stop smoking.
C	NRT can be used in pregnancy and during breastfeeding following a risk-benefit assessment. If NRT is used, oral NRT products (for example, gum, inhalers, microtabs and lozenges) are preferable to nicotine patches.

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Smoking cessation interventions for children and young people

Young people have a high overall smoking prevalence rate of 27%, but this varies considerably depending on ethnicity and sex. Young Māori women (aged 15–19) have the highest prevalence (60%), followed by young Pacific men (46%).<sup>1</sup>

There are very few studies showing the effectiveness of interventions designed to help young people stop smoking. It is likely that interventions aimed at young people need to be different than those developed for adults given differences in lifestyle and attitudes to smoking and quitting.

Health care workers should be aware of the risks of second-hand smoke to children and young people exposed to smoking in their families and homes. On these grounds alone, family members who smoke should be offered brief advice and cessation support.

### Key Points

There is insufficient evidence to confirm the effectiveness of interventions specifically aimed at helping young people stop smoking, or to recommend that any particular models be integrated into standard practice.<sup>53</sup>

There is also insufficient evidence to confirm the effectiveness of NRT in young people who want to stop smoking.<sup>53</sup> However, given that NRT is less harmful than smoking, safety concerns should not be a barrier to use. Expert opinion is that NRT may be considered for use in nicotine dependent adolescents who want to stop smoking.<sup>31</sup>

Given the lack of clear evidence on specific interventions for young people, it is recommended that interventions be used that are effective in helping adults – this means interventions that use multi-session support.

### Recommendations

✓	Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to young people who smoke.
C	NRT can be used by young people (12–18 year olds) who are dependent on nicotine (that is, NRT is not recommended for use by occasional smokers) if it is believed that NRT may aid the quit attempt.

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Smoking cessation interventions for hospitalised and preoperative patients

Patients with tobacco-related illnesses may get significant benefit from stopping smoking, even after many years of heavy smoking. Smoking increases the risk of poor outcomes after surgical operations, whereas stopping reduces many post-operative risks.

Unlike many other tobacco smoke components, such as carbon monoxide, nicotine is not a significant risk factor for cardiovascular disease or for acute cardiac events.<sup>29</sup> NRT provides less nicotine less rapidly than cigarette smoking and can be safely used by almost all patients.

Hospitals are increasingly recognising the importance of setting up systematic and specialised approaches for identifying, advising and supporting smokers to stop smoking during their hospital stay.

The hospital environment also offers the opportunity for health care workers to talk to parents of hospitalised children about the risks of second-hand smoke to children and young people exposed to smoking in their families and homes.

### Key Points

Hospitalisation is an important opportunity to assist people to stop smoking. This includes not only patients who smoke but also the parents and other family members of hospitalised children.

There is evidence from RCTs that interventions that include at least 1 month of follow-up contact improve 6-month abstinence rates in hospitalised patients who smoke.<sup>54</sup>

There is evidence from RCTs that NRT improves 6-month abstinence rates in hospitalised patients who smoke.<sup>54</sup>

People with stable cardiovascular disease can safely use NRT products.<sup>31</sup>

There is evidence from RCTs that preoperative smoking cessation interventions improve short-term abstinence rates. However, there is insufficient evidence to draw any conclusions regarding 6-month abstinence.<sup>55</sup>

Preoperative smoking cessation decreases the risks of wound infection, delayed wound healing and post-operative pulmonary and cardiac complications.<sup>56</sup>

Recommendations	
A	Provide brief advice to stop smoking to all hospitalised people who smoke.
A	Arrange multi-session intensive support, medication and follow-up for at least 1 month for all hospitalised patients who smoke.
A	Briefly advise people awaiting surgery who smoke to stop smoking and arrange support (such as NRT) prior to surgery.
B	<p>NRT can be provided to people with cardiovascular disease. However, for those who have suffered a cardiovascular event (for example, a myocardial infarction or a stroke) in the past 2 weeks or who have a poorly controlled disease, treatment should be discussed with a physician.</p> <p>In these cases, oral NRT products rather than patches are recommended as the preferred option.</p>
B	All hospitals should have systems set up for helping patients to stop smoking. This includes routinely providing advice to stop smoking and either providing a dedicated smoking cessation service within the hospital or arranging for smoking cessation treatment to be provided by an external service.
✓	Advise parents and family members of hospitalised children to stop smoking and offer support to help them.

#### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Smoking cessation interventions for people who use mental health services

People with mental health disorders have particularly high smoking prevalence rates. The recent New Zealand mental health survey Te Rau Hinengaro found a higher prevalence of current smoking in people with any mental disorder (32%; non-institutionalised) compared with people without mental disorder (21%).<sup>57</sup> Furthermore, those who smoke are typically highly dependent and find it very difficult to stop smoking.<sup>58–61</sup> People with mental health disorders have not often been advised to stop smoking. This is despite the fact that they will often see significant benefit to their condition as a result of stopping smoking.

More intensive smoking cessation interventions appear to be beneficial in this group. Such interventions should include multi-session support and medication.

It should be noted that tobacco smoke may speed up the metabolism of some medications used to treat mental health disorders and so may alter their effects (see Appendix 9).<sup>62, 63</sup> Therefore dosage adjustments for these medications and/or drug level monitoring may be needed when people using the medications stop smoking.

### Key Points

There is evidence that interventions known to work in the general population (for example, support and medication) are effective for mental health service users.<sup>22, 64, 65</sup>

There is evidence from two RCTs that bupropion improves short-term abstinence rates and that it has a good safety profile in this population group.<sup>32 33</sup>

Most people with mental health disorders do not experience a worsening in the symptoms of their illness when they stop smoking.<sup>65</sup> Smoking cessation can precipitate a relapse of depression in some people, but this is rare<sup>66</sup> and is not a sufficient reason to not support people to stop smoking. Rather it is a reason for closer monitoring such people's mental health.

Smoking cessation may affect the metabolism of a number of medications, including those used to treat mental health illness.<sup>63</sup> Some people using such medications may need dosage adjustments.<sup>67</sup>

### Recommendations

A	Provide brief advice to stop smoking to all users of mental health services who smoke.
✓	Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to people with mental health disorders who smoke.
A	People with mental health disorders who stop smoking while taking medications for their illness should be monitored to determine if dosage reductions in their medication are necessary.

### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).



## Smoking cessation interventions for users of addiction treatment services

In New Zealand, approximately 56% of non-institutionalised people with substance use disorders smoke tobacco.<sup>57</sup> However, a higher smoking prevalence does not mean that people with substance use disorders are less likely to quit smoking. For example, despite having higher nicotine dependence, people with alcohol dependence do not appear to have more difficulty quitting on a given attempt than smokers without alcohol problems.<sup>68</sup>

Addiction service users should have access to smoking cessation services that combine multi-session support and medication.

### Key Points

Overall there is evidence that smoking cessation interventions can be effective at increasing short-term quit rates in people with substance use disorders.<sup>69, 70</sup>

Smoking cessation can precipitate a relapse of a substance use disorder in a minority of clients.<sup>71 72</sup> However, this should not be seen as a reason not to encourage quitting in all clients, but rather it is a reason for monitoring closely and providing intensive support.

### Recommendations

- |   |   |
|---|---|
| A | Provide brief advice to stop smoking to all users of addiction services who smoke.  |
| ✓ | Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to people who smoke tobacco and who use addiction services. |

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

# People Who Make Repeat Attempts to Stop Smoking

The majority of successful attempts to stop smoking are unplanned or spontaneous, so people should be enabled to stop whenever they are ready.<sup>73</sup> Lessons can be learned from previous attempts, and factors associated with a failed attempt (such as high nicotine dependence) should be addressed at the next attempt.

## Key Points

There is evidence from RCTs that bupropion and NRT can be used successfully by people who have tried medications in the past.<sup>74-76</sup>

Treatment choice should be guided by learning from prior failures and individual preference. It is likely that a more intensive treatment is required on a subsequent attempt.

There is insufficient evidence to recommend a minimum time between attempts.<sup>77, 73</sup>

## Recommendations

A	Provide brief advice to stop smoking to all people who have relapsed.
A	Offer smoking cessation interventions that incorporate known effective components (such as those identified in the previous sections) to people making another quit attempt.
✓	Services should be able to offer support to people who have relapsed as soon as they request support.

### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

# Relapse Prevention

Despite the existence of a number of studies testing interventions for relapse prevention, there is no evidence for the effectiveness of interventions for relapse prevention.<sup>19</sup> Most interventions have tried a skills-based approach, where recent quitters are taught to recognise high-risk situations and acquire the skills to withstand the temptation to smoke. Many interventions have been brief and of a one-off nature. Given the characteristics of tobacco dependence, this is unlikely to be sufficient.

## Key Points

Despite the existence of a number of good quality studies, there is no conclusive evidence for the efficacy of specific interventions in preventing relapse.<sup>19</sup>

## Recommendations

I There is insufficient evidence to recommend any specific relapse prevention interventions.

### Key to Grades of Recommendations

- A:** The recommendation is supported by GOOD (strong) evidence.
- B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.
- C:** The recommendation is supported by EXPERT opinion (published) only.
- ✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

## Other Treatments and Interventions

There are many other treatments and interventions that people may ask about or want to use, such as hypnosis and acupuncture. However, there is evidence that some of these interventions do not help people to stop smoking, and for other interventions, there is insufficient evidence as to their effectiveness (see Appendix 10).

### Key Points

#### Evidence of effectiveness

There is evidence that clonidine is helpful for smoking cessation, however, due to its adverse effect profile, it is not recommended for use.<sup>13</sup>

#### Evidence of no effectiveness

There is evidence that hypnosis does not improve long-term abstinence rates over any intervention providing the same amount of time and attention to the participant.<sup>78</sup>

There is evidence that acupuncture, acupressure, laser therapy and electrostimulation do not improve long-term abstinence rates over that of a placebo effect.<sup>79, 22</sup>

There is no evidence that anxiolytics (for example, diazepam) are helpful for smoking cessation.<sup>11</sup>

Offering incentives or competitions as part of smoking cessation programmes do not increase long-term abstinence rates.<sup>80</sup>

#### Some evidence of effectiveness

There is evidence from RCTs that rapid smoking improves 6-month abstinence rates.<sup>81, 22</sup>

The evidence available to date suggests that cytisine could be a useful smoking cessation aid.<sup>82, 83</sup> However more robust research is needed to confirm this.

There is some evidence that glucose improves short-term but not long-term abstinence. The short-term effect seems stronger when used concomitantly with NRT or bupropion.<sup>84 85</sup>

There is some evidence that exercise improves short-term but not long-term abstinence.<sup>86</sup>

#### Insufficient evidence

There is insufficient evidence on the following methods to draw any conclusions:

Allen Carr's method

Nicobrevin<sup>87</sup>

NicoBloc<sup>88</sup>

St John's wort<sup>89 90</sup>

Lobeline<sup>91</sup>

Quit and win contests<sup>92</sup>

Incentives and competitions<sup>80</sup>

# Written Self-help Materials

Self-help materials, such as leaflets and books, are a relatively inexpensive means of communicating cessation advice to a potentially large number of smokers. However, the content of these materials is of widely differing quality.<sup>93</sup>

## Key Points

Self-help materials have only a small effect on long-term cessation rates in comparison with no intervention (that is, to assist ‘cold turkey’ quit attempts).<sup>94</sup>

Approximately 1 out of 100 people who would not otherwise have stopped smoking will do so for at least 6 months after receiving written self-help materials (and no other form of assistance).

Adding self-help materials to other effective interventions, such as brief advice, face-to-face or telephone support and medications, does not appear to increase the effectiveness of those interventions.<sup>94</sup>

Self-help materials that are tailored to the individual are likely to be more effective than non-tailored materials.<sup>94</sup>

## Recommendations



Make self-help materials available, particularly those that are tailored to individuals, but such materials should not be the main focus of efforts to help people stop smoking.

### Key to Grades of Recommendations

**A:** The recommendation is supported by GOOD (strong) evidence.

**B:** The recommendation is supported by FAIR (reasonable) evidence, but there may be minimal inconsistency or uncertainty.

**C:** The recommendation is supported by EXPERT opinion (published) only.

✓: GOOD PRACTICE POINT (in the opinion of the guideline development group).

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## Appendix 1: Benefits of Stopping Smoking

Stopping smoking is the best thing that a person can do to improve their current and future health. The earlier a person can stop the better. However, it is never too late to stop. People who stop smoking have:

- a reduced risk of dying early
- a reduced risk of developing lung cancer
- a reduced risk of coronary heart disease and stroke
- a reduced risk of dying from chronic bronchitis and emphysema
- improvement in respiratory symptoms, such as cough and shortness of breath
- reduced risks of other cancers related to smoking (for example, upper respiratory tract, oesophagus, bladder and pancreas)
- reduced risks of complications in pregnancy and childbirth (for example, placenta previa and placental abruption)
- improvement in some mental health symptoms
- fewer sick days off work
- improvement in recovery from surgery and reduced perioperative risk
- a reversal of the risks of smoking if cessation is achieved by the age of 35.

Stopping smoking will also:

- set a good example for children and young people (children of non-smokers are less likely to become regular smokers)
- improve the health of young children of parents who have ceased smoking
- save money.

For further information, see Tobacco Trends.<sup>1</sup>

## Appendix 2: Assessing Nicotine Dependence

Measuring the degree of nicotine dependence can help identify those who would benefit from extra assistance to stop smoking. One of the most frequently used tools for assessing nicotine dependence is the six-item, Fagerström Test for Nicotine Dependence (FTND) questionnaire. However the best question to ask is:

**‘How soon after you wake up do you usually have your first cigarette?’**

If the person smokes within 30 minutes of waking, then they have a higher degree of nicotine dependence and are likely to benefit from more intensive smoking cessation treatments, particularly those utilising medications.

Cigarette consumption is often used on its own to measure dependence, but it does not always correlate well with the degree of dependence because of the way people smoke their cigarettes. For example, people can cut down the number of cigarettes they smoke each day but can get a similar amount of nicotine out of fewer cigarettes by taking deeper puffs, blocking the vent holes on the cigarette, increasing puff frequency and smoking more of each cigarette.

In New Zealand, the average cigarette consumption is down to 12 cigarettes per day (cpd),<sup>1</sup> but the level of nicotine dependence may not have reduced. In recent years, there has been an increase in the percentage of smokers smoking roll-your-own tobacco, where people can use varying amounts of tobacco (a standard cigarette contains 1 gram of tobacco). This makes it difficult to assess the degree of dependence from cigarette consumption alone.

# Appendix 3: Tobacco Withdrawal Symptoms and Weight Gain

## Withdrawal symptoms

Many people experience withdrawal symptoms and other effects when they stop smoking. Symptoms include such things as urges to smoke, irritability, depression, increased appetite, anxiety, poor concentration, restlessness and sleep disturbance. Mouth ulcers and constipation may also occur when people stop smoking.

It is thought that the occurrence of these symptoms is related, at least in part, to the difficulty that people have in abstaining from smoking. In some studies, depression and urges to smoke, or cravings, are related to cessation relapse. Most of these symptoms disappear within four weeks of abstinence.<sup>95</sup>

However, people may report urges to smoke for many months after stopping. These urges can be just as strong as they were in the early stages of the attempt to stop, but they occur less frequently as the period of abstinence increases. Urges to smoke are typically precipitated by cues such as stress, seeing others smoke, taking part in social gatherings and drinking alcohol. Urges to smoke do pass and can be controlled. The key advice is to resist these urges by adopting coping strategies, such as distraction, exercise and avoidance of situations such as social events where there may be many cues to smoke.<sup>96</sup>

## Weight gain

Weight gain is another effect of stopping smoking for many people. Women in particular may be concerned about increased appetite and subsequent weight gain. On average, people may expect to gain between 4 and 5 kilograms in the first year of abstinence.<sup>97</sup> Although this is a significant gain, the benefits of stopping smoking outweigh the health risks of the additional weight gain. Dieting at the same time as stopping smoking may increase the risk of relapse,<sup>98</sup> therefore people should concentrate on achieving and maintaining abstinence from smoking first and then tackle the issue of weight gain. However, people with other conditions such as diabetes and morbid obesity may need special attention regarding weight gain during their quit attempt. Medications such as NRT can reduce weight gain, thus allowing people to deal with quitting first. Increasing physical activity is also a helpful way of limiting the amount of weight gained.

## Appendix 4: Prescribing Information for Nicotine Replacement Therapy

<p>Transdermal patches</p>	<ul style="list-style-type: none"> <li>• Two types of patches are available: 16-hour and 24-hour patches (there is no difference in efficacy between the two).</li> <li>• Three strengths of each type are available: 5, 10 and 15 mg/16 hours and 7, 14 and 21 mg/24 hours.</li> <li>• The 16-hr patch is recommended for pregnant women where the use of a patch is judged appropriate.</li> <li>• The advantages of patches are that they are very simple to use and people generally use them reliably as instructed.</li> <li>• They are applied to a clean, dry, hairless area of skin and removed at the end of the day (16 hours) or the next day (24 hours).</li> <li>• Skin irritation is the most common side effect.</li> <li>• Patches should be used for at least 8 weeks.</li> <li>• There is no evidence that ‘weaning’ patches are necessary – people can stop from a full-strength patch straight away. However, some people may prefer to ‘wean’ themselves off.</li> </ul>
<p>Gum*</p>	<ul style="list-style-type: none"> <li>• Two strengths of NRT gum are available: 2 mg and 4 mg; people who are highly dependent should use 4 mg gum.</li> <li>• Not all of the nicotine from the gum is absorbed (the 2 mg gum yields only about 1 mg of nicotine, whereas the 4 mg gum yields about 2 mg).<sup>99</sup></li> <li>• People should aim to use between 10 and 15 pieces of gum a day.</li> <li>• Instructing them to use one piece of gum per hour is a convenient way to encourage the correct dosage.</li> <li>• Each piece should be chewed slowly to release the nicotine, and a hot peppery taste will be experienced. The gum should then be ‘parked’ between the cheek and gums so that the nicotine can be absorbed. After a few minutes, the gum can be chewed again, then parked and the process repeated, for 20–30 minutes.</li> <li>• Gum therapy should be used for at least 8 weeks.</li> </ul>
<p>Sublingual tablets (Microtabs)*</p>	<ul style="list-style-type: none"> <li>• Sublingual tablets are available as 2 mg tablets placed under the tongue.</li> <li>• Hourly use should be recommended to achieve the best effect, but the tablets can be used more frequently if desired. Up to 40 microtabs can be used per day.</li> <li>• The tablet is designed to dissolve completely.</li> <li>• Tablets should be used for at least 8 weeks.</li> </ul>



## Inhalers\*

- The inhaler is a small plastic tube containing a replaceable nicotine cartridge.
- This method may provide more behavioural replacement than the other products (some people miss the hand-to-mouth action of smoking when they quit), but there is no strong evidence supporting this.
- The user should puff on the inhaler for 20 minutes each hour. After four 20-minute puffing sessions, the cartridge should be changed.
- The average person should aim to use four to six cartridges a day.
- In cold weather, it is advisable to keep the inhaler warm to help the nicotine vapour be released from the cartridge.
- Inhalers should be used for at least 8 weeks.

Only patches and gum are currently subsidised.

### \*Notes on oral products

- Nicotine absorption from oral NRT products, including the inhaler, is via the buccal mucosa (lining of the mouth).
- While these products can be used on a regular (for example, hourly) basis, they can all be used more frequently or when urges to smoke are more intense or more frequent.
- An initial unpleasant taste is common to all these products, and this can be a barrier to correct use. People can be reassured that they will become tolerant of this taste after a short period (usually a couple of days).
- Incorrect use of oral products, for example, chewing gum too vigorously, usually results in more nicotine being swallowed. This is not hazardous but means that less nicotine is absorbed and may cause local irritation and hiccups.
- Drinking fluids while using these oral products should be avoided.

### Combination therapy

Combining NRT products increases abstinence rates. The patch is usually combined with one of the oral products (gum, microtab, inhaler). In this way, users will receive a steady supply of nicotine from the patch and can obtain a more rapid 'top up' of nicotine from the oral products.

Note: The highest quit rates are achieved when medications such as NRT are combined with support.



## Using NRT to reduce cigarette consumption prior to quitting

NRT is currently being marketed to help people reduce the number of cigarettes smoked before quitting. This strategy is not suitable for everyone but may be useful for people who are not ready to quit right now.

If this strategy is used, the person should aim to reduce consumption by at least 50% in the first 6 weeks, and then over the next 18 weeks, this reduction can either be maintained, the person can continue to reduce or they can quit completely. The person should aim to stop smoking completely within 6 months.<sup>100</sup> If a reduction of at least 50% is not achieved in the first 6 weeks, then little may be gained from continuing this treatment strategy.<sup>100</sup>

NRT should be used as normal once the quit attempt has started.

At the present time, only Nicorette® gum and inhalers have been licensed for this method. However, there is no reason why a sublingual tablet or gum produced by other manufacturers can not be used.<sup>100</sup>

There are no safety concerns when using this strategy in the general population of people who smoke. However, there is no evidence to recommend its use by those with unstable cardiovascular disease or by those who have suffered a recent cardiac event or by pregnant women who smoke.

**It should be noted that decreasing smoking and not stopping completely does not reduce the health risks of smoking.**

## Appendix 5: Prescribing Information for Bupropion

Bupropion HCL SR 150 mg tablets (Zyban)	
Contraindications	<ul style="list-style-type: none"> <li>• Seizure disorders (or history)</li> <li>• CNS tumour</li> <li>• Abrupt alcohol or sedative withdrawal</li> <li>• Bulimia, anorexia nervosa (or history)</li> <li>• Monoamine Oxidase Inhibitors (MAOIs) within 14 days</li> <li>• Concomitant bupropion containing preparations</li> <li>• Lactation</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• Hepatic, renal impairment</li> <li>• Hepatic cirrhosis</li> <li>• Predisposition to seizures, including a history of head trauma</li> <li>• Diabetes</li> <li>• History of psychiatric illness, especially bipolar disorder</li> <li>• Autoimmunity</li> <li>• Epstein Barr virus</li> <li>• HIV</li> <li>• Older people (see below)</li> <li>• Pregnancy</li> <li>• Children &lt;18 years</li> </ul>
Drug interactions	<ul style="list-style-type: none"> <li>• Drugs lowering seizure threshold (including antipsychotics, antidepressants, antimalarials, tramadol, theophylline, systemic steroids, quinolones, sedating antihistamines)</li> <li>• Drugs affecting CYP2B6 (including orphenadrine, cyclophosphamide, ifosfamide, ticlopidine, clopidogrel)</li> <li>• CYP2D6 substrates (including antidepressants, antipsychotics, beta-blockers, type 1C antiarrhythmics; stimulants)</li> <li>• Anorectic drugs</li> <li>• Citalopram</li> <li>• Carbamazepine</li> <li>• Phenobarbitone</li> <li>• Phenytoin</li> <li>• Levodopa</li> <li>• Amantadine</li> <li>• Ritonavir</li> <li>• Alcohol</li> </ul>

Dosage	<ul style="list-style-type: none"> <li>• Days 1–3: one tablet (150 mg) daily; from day 4: one tablet twice a day, keeping at least 8 hours between each dose.</li> <li>• The quit date should be set between the 8th and 14th day. The person continues to smoke as normal up to their quit date and then stops completely, aiming not to have a single puff after this.</li> <li>• A total course of 120 tablets should be prescribed, but it is sensible to give a smaller quantity initially so there is no wastage if the person experiences adverse events or does not manage to achieve abstinence.</li> </ul>
Dosage adjustments	<ul style="list-style-type: none"> <li>• Older people: 150 mg once daily is recommended.</li> <li>• Hepatic/Renal insufficiency: 150 mg once daily is recommended.</li> <li>• Diabetes: If the condition is controlled, the standard dose can be prescribed. If the condition is well controlled with insulin or oral hypoglycaemics, prescribe 150 mg once daily. If the condition is poorly controlled, use NRT.</li> <li>• Lowered seizure threshold: consider maximum: 150 mg/day.</li> </ul>
Adverse effects	<ul style="list-style-type: none"> <li>• Common (occurrence &gt;1:100): dry mouth, insomnia, nausea, headache</li> <li>• Rare (occurrence &gt;1:10,000 and &lt;1:1000): seizure, severe hypersensitivity.</li> </ul>
<p>For further prescribing information, see Mims (NZ) abbreviated medical information.</p>	

## Appendix 6: Prescribing Information for Nortriptyline

<p>Contraindications</p>	<ul style="list-style-type: none"> <li>• Hypersensitivity to other tricyclic antidepressants</li> <li>• Transfer from MAOIs (within 14 days)</li> <li>• Acute recovery phase following MI</li> <li>• Lactation</li> <li>• Children <math>\leq</math> 12 years</li> </ul>
<p>Precautions</p>	<ul style="list-style-type: none"> <li>• Pre-treatment ECG, monitor BP</li> <li>• Suicidal ideation</li> <li>• Bipolar disorder; agitated, overactive patients</li> <li>• Cardiovascular disease</li> <li>• Hyperthyroidism</li> <li>• Glaucoma</li> <li>• History of urinary retention, head trauma, seizures</li> <li>• Diabetes</li> <li>• Poor CYP2D6 metabolisers</li> <li>• Surgery</li> <li>• ECT</li> <li>• Abrupt withdrawal</li> <li>• Older people</li> <li>• Women of childbearing age</li> <li>• Pregnancy</li> <li>• Lactation</li> <li>• Children <math>\leq</math> 18 years</li> </ul>
<p>Drug interactions</p>	<ul style="list-style-type: none"> <li>• Alcohol; sedatives; cimetidine; reserpine; anticholinergics; sedating antihistamines; sympathomimetics; stimulants; anorectics; guanethidine; CYP2D6 substrates, inhibitors, for example, other antidepressants, phenothiazines, carbamazepine, type 1C antiarrhythmics, quinidine; drugs lowering seizure threshold, for example, antipsychotics, tramadol, theophylline, steroids, quinolones; insulin, oral hypoglycaemics; thyroid hormones.</li> </ul>
<p>Dosage</p>	<ul style="list-style-type: none"> <li>• Adults: initially 25 mg/day, begin 10–28 days before quit date; increase gradually to 75–100 mg/day over 10 days–5 weeks; continue for total of 12 weeks.</li> <li>• The dose should be tapered at the end of treatment to avoid withdrawal symptoms that may occur if it is stopped abruptly.</li> <li>• There is limited evidence of any benefit of extending treatment past 3 months.</li> </ul>
<p>Dosage adjustments</p>	<ul style="list-style-type: none"> <li>• Older people: reduce frequency of dose.</li> </ul>

## Adverse effects

- These are common and include: drowsiness; GI upset; bone marrow depression; anticholinergic effects; confusion; delusions; hallucinations; restlessness; anxiety; incoordination; convulsions; extrapyramidal symptoms; allergic reactions; SIADH; blood glucose changes; hypo/hypertension; MI; arrhythmias; stroke; hepatitis; serotonin syndrome.

Adapted from Mims Online Prescribing Information. For further information, see Mims (NZ) abbreviated medical information.

## Appendix 7: Prescribing Information for Varenicline

Contraindications	<ul style="list-style-type: none"> <li>• Children under the age of 18 years</li> <li>• Women who are pregnant or breastfeeding</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• Those with renal impairment.</li> <li>• Smoking cessation, with or without medication, has been associated with the exacerbation of underlying psychiatric illness (for example, depression). Care should be taken with patients with a history of psychiatric illness, and patients should be advised accordingly.</li> <li>• There is no clinical experience with varenicline in patients with epilepsy.</li> </ul>
Drug interactions	<ul style="list-style-type: none"> <li>• None known</li> </ul>
Dosage	<ul style="list-style-type: none"> <li>• People need to commence varenicline one week prior to their quit date.</li> <li>• Days 1–3: 0.5 mg once daily; days 4–7: 0.5 mg twice daily; days 8 to end of treatment (12 weeks): 1 mg twice daily.</li> <li>• For patients who have successfully stopped smoking at the end of 12 weeks, an additional course of 12 weeks treatment with varenicline at 1 mg twice daily may be considered.</li> </ul>
Dosage adjustments	<ul style="list-style-type: none"> <li>• Patients who cannot tolerate adverse effects of varenicline may have the dose lowered temporarily or permanently to 0.5 mg twice daily.</li> <li>• No dosage adjustment is necessary for patients with mild (estimated creatinine clearance &gt; 50 ml/min and ≤ 80 ml/min) to moderate (estimated creatinine clearance ≥ 30 ml/min and ≤ 50 ml/min) renal impairment.</li> <li>• For patients with moderate renal impairment who experience adverse events that are not tolerable, dosing may be reduced to 1 mg once daily.</li> <li>• For patients with severe renal impairment (estimated creatinine clearance &lt; 30 ml/min), the recommended dose of varenicline is 1 mg once daily. Dosing should begin at 0.5 mg once daily for the first 3 days then increased to 1 mg once daily. Based on insufficient clinical experience with varenicline in patients with end stage renal disease, treatment is not recommended in this patient population.</li> </ul>
Adverse effects	<ul style="list-style-type: none"> <li>• The most commonly reported adverse event is nausea (experienced by approximately 30%). In the majority of cases, nausea occurred early in the treatment period, was mild to moderate in severity and seldom resulted in discontinuation of the medication. Furthermore, the nausea dissipated over time.</li> <li>• Those receiving varenicline compared to placebo more frequently reported sleep disturbance and constipation. Most of the symptoms are reported as mild and dissipate within a few weeks.</li> </ul>

Adapted from electronic Medicines Compendium.<sup>101</sup>

## Appendix 8: Assessing the Risks and Benefits of Using NRT in Pregnancy Compared with Smoking

### Risks of smoking during pregnancy

Cigarette smoking during pregnancy substantially increases the risk of:

- abnormalities of the placenta, for example, placental abruption and placenta previa
- miscarriage
- stillbirth
- birthing complications
- premature rupture of membranes
- low birth weight
- sudden infant death syndrome (SIDS)
- behavioural problems in the child
- impaired intellectual development in the child
- respiratory problems in the child
- increased risk of the child becoming a smoker.

Cigarette smoke delivers thousands of chemicals, some of which are known to be toxic, such as carbon monoxide and cadmium, to the developing fetus. Carbon monoxide impairs oxygen delivery to the fetus.

Stopping smoking as early as possible in pregnancy reduces these risks.

### Risks of nicotine during pregnancy

- Studies on animals suggest that nicotine affects the development of the central nervous system.
- Nicotine may also play a role in sudden infant death syndrome (SIDS).

However, experts have concluded that the various toxins in *cigarette smoke* (as opposed to the nicotine itself) are most likely to be responsible for the harm associated with smoking in pregnancy.<sup>30</sup>

Even if nicotine is associated with harm in pregnancy, there are some differences between NRT and smoking.<sup>51</sup> For example, blood nicotine levels are typically lower when using NRT, and NRT delivers nicotine more slowly compared with smoking.<sup>102</sup> Of course, NRT delivers only nicotine, without the many other substances contained in tobacco smoke.

For further reading, see Benowitz and Dempsey 2004.<sup>30</sup>

## Appendix 9: Effect of Smoking Abstinence on Medications

Smoking tobacco can alter the metabolism of a number of medicines. This is primarily due to substances in tobacco smoke, such as hydrocarbons or tar-like products that cause induction (speeding up) of some liver enzymes (CYP 1A2 in particular). Therefore, medicines metabolised by these enzymes are broken down faster and can result in reduced concentrations in the blood (see table below). When a person stops smoking, the enzyme activity returns to 'normal' (slows down), which may result in increased levels of these medicines in the blood. Monitoring and dosage reduction may often be required.<sup>103</sup>

### Smoking affects the following medications

Medication	Effect of smoking
Caffeine	Increased clearance (by 56%)
Chlorpromazine	Decreased serum concentrations (by 24%)
Clozapine	Decreased plasma concentrations (by 28%)
Estradiol	Possibly anti-estrogenic effects
Flecainide	Increased clearance (by 61%)
Fluvoxamine	Decreased plasma concentrations (by 47%)
Haloperidol	Decreased serum concentrations (by 70%)
Heparin	Increased clearance
Imipramine	Decreased serum concentrations
Insulin	Decreased subcutaneous absorption due to poor peripheral blood flow
Lidocaine	Decreased oral bioavailability
Olanzapine	Increased clearance (by 98%)
Propranolol	Increased oral clearance (by 77%)
Tacrine	Decreased mean plasma concentrations (3-fold)
Theophylline	Increased metabolic clearance (by 58 to 100%); within 7 days of smoking cessation, theophylline clearance falls by 35%
Warfarin	Decreased plasma concentrations (by 13%). No effect on prothrombin time

**Stopping smoking** can result in the **opposite** of the effects noted above.

*Health care workers should be aware of the potential for increased blood levels of some of these medicines when smoking is stopped. Blood levels of some (for example, clozapine, theophylline) may need to be monitored.*



### Smoking/Smoking cessation does not affect the following medications

Benzodiazepines (diazepam,lorazepam, midazolam,chlordiazepoxide)

Bupropion

Ethinyl estradiol (levonorgestrel)

Glucocorticoids (prednisone, prednisolone, dexamethasone)

Paracetamol

Quinidine

### Effects of smoking/ smoking cessation on the following medications is unclear

Nortriptyline

Adapted from Zevin and Benowitz 1999.<sup>104</sup>

## Appendix 10: Other Treatments and Interventions

Allen Carr Method	There is little published literature regarding the efficacy of this smoking cessation method. There are no RCTs, but there are some data from cohort studies reporting the outcome of using the Allen Carr technique in workplace settings. <sup>105</sup> However, data from RCTs are needed to assess the true efficacy of this method.
Cytisine	Cytisine is a plant alkaloid that has been studied and used for smoking cessation in Eastern European countries. <sup>106–109</sup> However, these studies are old and suffer limitations, and the current dosing regimen, contraindications and precautions are not well researched. Further research is needed before cytisine can be recommended for use in standard practice.
Exercise	The current evidence does not show a beneficial effect of exercise on long-term smoking quit rates. However, there is some evidence to suggest that exercise may alleviate some of the symptoms of tobacco withdrawal and assist in the short term. <sup>110–113</sup> It may also help by increasing self-esteem and may have a positive effect on managing post-cessation weight gain. <sup>114</sup> Although there is little evidence to support the use of exercise as a stand-alone smoking cessation intervention, people should not be discouraged from adopting exercise during their cessation attempt as it has many other health benefits.
Glucose	Using glucose to help smokers stop smoking was first proposed by West in 1990. <sup>115</sup> It was initially hypothesised that due to the hunger suppressing effects of smoking and other physiological mechanisms (for example, effects of smoking on glucoregulation), hunger may become a cue for smoking. Glucose might alleviate the urge to smoke by satisfying the need for carbohydrates and satiating appetite. Glucose appears to improve abstinence only when used in combination with NRT or bupropion. <sup>84, 85</sup> On the available evidence, it is unlikely to be an effective smoking cessation agent when used on its own. Glucose is generally safe but cannot be used by people with diabetes.
Incentives and competitions	Incentives have been shown to improve participation rates in smoking cessation interventions. However, this does not necessarily lead to more people quitting smoking. As soon as incentives cease, the normal relapse pattern occurs. <sup>80</sup> Large incentives may also be a motivating factor for deception. Although there is evidence from non-randomised trials that some people benefit from ‘quit and win’ interventions, the impact on population smoking prevalence is low.
St John’s wort	St John’s wort ( <i>Hypericum perforatum L</i> ) extracts are known to have antidepressant properties and have been used for many years to treat mild to moderate depression, anxiety and sleep disorders. St John’s wort is also said to have antidepressant effects, and it is this property that has led some to believe that it might be a useful aid for smoking cessation. In a review of natural and complementary therapies for substance use disorders, <sup>116</sup> St John’s wort was identified as a potential treatment for nicotine withdrawal. Two small studies suggest that St John’s wort, at doses up to 600 mg per day, has no effect on smoking cessation. <sup>89, 90</sup>

Lobeline	Lobeline is a partial nicotine agonist and comes from the plant, Lobelia inflata, (also known as Indian Tobacco). It is structurally similar to nicotine, which is why it has been promoted as a smoking cessation aid. A Cochrane review <sup>91</sup> has been undertaken, but none of the studies available met the inclusion criteria, mostly because studies with long-term outcome lacked a control group. The review identified a number of controlled trials that reported on short-term outcome, but none showed any advantage of lobeline over the control.
Nicobrevin	Nicobrevin is a product that was developed in Germany in the late 1960s and has been marketed for smoking cessation in a number of countries for some years. It is composed of four main ingredients each with an action claimed (without any supporting evidence) to facilitate smoking cessation: (1) menthyl valerate, to help via its sedative and anxiolytic effects; (2) quinine, to relieve withdrawal; (3) camphor and (4) eucalyptus oil, to relieve 'airway symptoms'. A Cochrane review <sup>87</sup> identified two studies, but as neither provided 6-month or longer follow-up, they were not entered into the meta-analysis. Two trials suggest that Nicobrevin may have an effect on short-term outcome, but both studies had problems with the methodology used, and so the results need to be considered with caution. We could not find any evidence to show that Nicobrevin helps smokers stop long term.
NicoBloc	NicoBloc is marketed in a number of countries as a smoking cessation aid and is often sold through community pharmacies. It comes in the form of liquid, containing a sugar compound, which is dropped onto the filter of the cigarette. It then dries and forms an occlusive barrier to nicotine and tar thereby reducing the delivery of these substances to the smoker. One small, well-designed, randomised, double-blind, placebo-controlled trial showed no benefit of NicoBloc over placebo. <sup>88</sup>
Rapid smoking	Rapid smoking aims to link smoking with an unpleasant stimulus (nausea and irritant effects on the oral mucus membranes, throat and airways) to reduce its desirability. Although this method is safe for use by the majority of healthy people, there is always the possibility of harmful effects due to increased heart rate, systolic blood pressure and carboxyhaemoglobin. Therefore, even if there is an effect on withdrawal and cessation outcome, this method is unlikely to be recommended for use in standard smoking cessation treatment. <sup>81, 22</sup>

# Smoking Cessation Providers

National providers	
<p><b>Quitline</b> – a national telephone service for people who want help in stopping smoking. The service provides support over the telephone and offers subsidised nicotine replacement therapy.</p>	<p>Tel: 0800 778 778 Website: <a href="http://www.quit.org.nz">http://www.quit.org.nz</a></p>
<p><b>Aukati Kai Paipa</b> – smoking cessation service provided by Māori organisations for Māori who smoke. This service provides support and subsidised nicotine replacement therapy.</p>	<p>Tel: (09) 638 5800 Website: <a href="http://www.tehotumanawa.org.nz">http://www.tehotumanawa.org.nz</a></p>
Local providers	
Name	Contact details