SMOKING is the single greatest cause of preventable illness and death in Australia. About half of all lifelong smokers die prematurely from their habit and smokers live 10 years less than non-smokers on average.1

Although the number of smokers is slowly falling, 18% of Australians aged 14 or over still smoked in 2010 (3.3 million people).1 Smoking is especially common in people with mental illness, in Indigenous communities in people with substance abuse disorders and in lower socioeconomic groups.

Most smokers want to quit, and most make repeated attempts to do so. About 40% try to stop smoking at least once each year.1 However, long-term quitting is an elusive goal for many smokers. Only 3-5% of unaided quit attempts are successful 6-12 months later.1 Most smokers need assistance to quit and GPs are well placed to assist them.

Quitting is an urgent health priority for all smokers. After the age of 35 years, three months of life is lost for each year of continued smoking.1 The risk of most smoking-related diseases also diminishes rapidly after quitting.

Smoking is no longer seen as a habit or lifestyle choice of the weak-willed. The new paradigm of smoking defines it as a powerful drug dependence with a strong genetic basis. Smokers deserve an empathic, non-judgemental and supportive approach.

This article presents an update on nicotine dependence. It discusses the role of nicotine metabolism, the importance of nicotine dependence and the overlooked issue of drug interactions with smoking. The latest evidence-based strategies for GPs to help smokers quit are provided with a comprehensive update of pharmacotherapy.

THE AUTHOR

DR COLIN MENDELSOHN
Tobacco treatment specialist, Brain & Mind Research Institute, Camperdown, NSW.

Copyright © 2013 Australian Doctor
All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means without the prior written permission of the publisher.
For permission requests, email howtotreat@cirrusmedia.com.au
Ask all patients

26

Dopamine levels fall within a few minutes of waking is a reliable sign of the day. As most nicotine is cleared overnight (the half-life of nicotine is two hours), smokers wake in a state of nicotine deprivation. Smoking within 30 minutes of waking is a reliable sign of nicotine dependence. Smoking as a chronic disease

Smoking dependence

Smoking as a chronic disease

Smoking as a substance abuse disorder

The level of nicotine dependence helps predict the severity of withdrawal symptoms and is a guide to the intensity of treatment required. It is also a powerful predictor of success.

The single most reliable indicator is the time to the first cigarette urge to smoke again. Chronic nicotine exposure upregulates nicotine receptors. Over time, there are more receptors releasing dopamine, making quitting even more difficult.

Smoking is further reinforced by specific behaviours and situations that are associated with smoking, such as drinking a cup of coffee or the smell of smoke. Exposure to these smoking cues can trigger a strong craving for a cigarette.

Smokers also smoke for the other positive effects of nicotine. Nicotine can generate arousal, heightened alertness, relief of anxiety or depression, reduced hunger and control of body weight.

The pathway to quitting can be gradual or sudden. Many smokers move through the different stages of readiness to quit, building motivation, and ultimately planning and attempting to quit. However, almost half of all quit attempts are abrupt or spontaneous and involve no planning or assistance.

Failed attempts are a normal part of the quitting process. They are valuable learning experiences, making the next attempt more likely to succeed. Smokers should be encouraged to keep trying to quit. Most smokers make repeated attempts to quit before finally achieving long-term abstinence.

The role of nicotine metabolism

The individual's rate of nicotine metabolism has an important impact on smoking behaviour and response to treatment. Most nicotine is metabolised in the liver by the cytochrome P450 2A6 enzyme. Genetic variations in the enzyme determine the rate of nicotine breakdown, which can vary by up to fourfold.

Slower metabolisers have lower nicotine dependence, smoke fewer cigarettes, respond better to nicotine replacement therapies and are able to quit more easily.

Rates of nicotine breakdown also vary considerably across gender and race. For example, men metabolise nicotine more slowly than premenopausal women and Asian populations are slower metabolizers of nicotine than Caucasians.

The number of daily cigarettes is a less useful guide to nicotine dependence because self-reports are often unreliable and smoking behaviour varies from one smoker to the next.

Nevertheless, the level of nicotine dependence rises with higher daily consumption. Smoking more than 10 cigarettes a day is generally associated with a greater likelihood of dependence.

Classifying smoking

Smoking as a substance abuse disorder

IN the DSM IV-TR (Text Revision), smoking (nicotine dependence) is classified as a substance abuse disorder mediated by powerful neurochemical processes.3 Twin studies have demonstrated that genetic factors account for 50-60% of the chance of becoming nicotine dependent or starting to smoke.

Like other drugs of abuse, nicotine activates the reward pathway in the brain, releasing dopamine that generates the pleasurable sensation associated with smoking.

A chronic disease model is more appropriate for nicotine dependence than an acute care approach. Like patients with diabetes, smokers need to be reassessed and engaged at regular intervals over the long term.

Twin neurochemical processes.5 Twin abuse disorder mediated by power-

ence) is classified as a substance

How To Treat – Nicotine dependence

The role of the GP

The 5A framework (figure 1, right)6

Assess nicotine dependence

• Nicotine dependence can be assessed by asking:
  1. “How many minutes after waking do you have your first cigarette?”
  2. “How many cigarettes per day?”
  3. “What cravings or withdrawal symptoms in previous quit attempts?”
  4. “Smoking within 30 minutes of waking, smoking more than 10 cigarettes a day and history of withdrawal symptoms in previous quit attempts are all markers of nicotine dependence.”
  5. “Pharmacotherapy for dependent smokers is proven to double the chances of successfully quitting.”

Assist

Assist smokers who are ready to quit are offered advice, pharmacotherapy and support.

Arrange

Provide follow up visits for additional advice and support.

Assessing nicotine dependence

The level of nicotine dependence helps predict the severity of withdrawal symptoms and is a guide to the intensity of treatment required. It is also a powerful predictor of success.

The single most reliable indicator is the time to the first cigarette urge to smoke again. Chronic nicotine exposure upregulates nicotine receptors. Over time, there are more receptors releasing dopamine, making quitting even more difficult.

Smoking is further reinforced by specific behaviours and situations that are associated with smoking, such as drinking a cup of coffee or the smell of smoke. Exposure to these smoking cues can trigger a strong craving for a cigarette.

Smokers also smoke for the other positive effects of nicotine. Nicotine can generate arousal, heightened alertness, relief of anxiety or depression, reduced hunger and control of body weight.

The pathway to quitting can be gradual or sudden. Many smokers move through the different stages of readiness to quit, building motivation, and ultimately planning and attempting to quit. However, almost half of all quit attempts are abrupt or spontaneous and involve no planning or assistance.

Failed attempts are a normal part of the quitting process. They are valuable learning experiences, making the next attempt more likely to succeed. Smokers should be encouraged to keep trying to quit. Most smokers make repeated attempts to quit before finally achieving long-term abstinence.

The role of nicotine metabolism

The individual's rate of nicotine metabolism has an important impact on smoking behaviour and response to treatment. Most nicotine is metabolised in the liver by the cytochrome P450 2A6 enzyme. Genetic variations in the enzyme determine the rate of nicotine breakdown, which can vary by up to fourfold.6 Slower metabolisers have lower nicotine dependence, smoke fewer cigarettes, respond better to nicotine replacement therapies and are able to quit more easily.

Rates of nicotine breakdown also vary considerably across gender and race. For example, men metabolise nicotine more slowly than premenopausal women and Asian populations are slower metabolizers of nicotine than Caucasians.

The 5A framework (figure 1, right)6

Assess nicotine dependence

• Nicotine dependence can be assessed by asking:
  1. “How many minutes after waking do you have your first cigarette?”
  2. “How many cigarettes per day?”
  3. “What cravings or withdrawal symptoms in previous quit attempts?”
  4. “Smoking within 30 minutes of waking, smoking more than 10 cigarettes a day and history of withdrawal symptoms in previous quit attempts are all markers of nicotine dependence.”
  5. “Pharmacotherapy for dependent smokers is proven to double the chances of successfully quitting.”

Assist

Assist smokers who are ready to quit are offered advice, pharmacotherapy and support.

Arrange

Provide follow up visits for additional advice and support.

Assessing nicotine dependence

The level of nicotine dependence helps predict the severity of withdrawal symptoms and is a guide to the intensity of treatment required. It is also a powerful predictor of success.

The single most reliable indicator is the time to the first cigarette urge to smoke again. Chronic nicotine exposure upregulates nicotine receptors. Over time, there are more receptors releasing dopamine, making quitting even more difficult.

Smoking is further reinforced by specific behaviours and situations that are associated with smoking, such as drinking a cup of coffee or the smell of smoke. Exposure to these smoking cues can trigger a strong craving for a cigarette.

Smokers also smoke for the other positive effects of nicotine. Nicotine can generate arousal, heightened alertness, relief of anxiety or depression, reduced hunger and control of body weight.
SMOKERS typically have concerns or barriers that undermine successful quitting, such as weight gain, stress, withdrawal, peer pressure and a fear of failure. It is useful to explore these barriers, providing accurate information and strategies to address them.

Weight gain
Fear of weight gain is a major barrier to quitting smoking, especially for women, and this issue should be raised in the consultation. The mean weight gain due to quitting is 4.5 kg after 12 months. A further 2-3 kg is typically gained over the next few years. However, 10% of men and 13% of women are at risk of major weight gain (>13 kg).

Weight gain after quitting is mostly due to the loss of the appetite-suppressing effect of nicotine and the lower metabolic rate after quitting.

Smoking cessation medications can reduce weight gain during treatment (0.5-1.5 kg), but this small benefit is not maintained at 6-12 months.

Two recent reviews of weight gain prevention strategies concluded that interventions are of borderline clinical benefit and are not justified on current evidence. There was mixed evidence for exercise in reducing weight gain. Giving general advice about reducing kilojoules was not shown to be effective in controlling weight or in achieving abstinence and is not recommended.

A pragmatic solution is to advise patients to eat sensibly, exercise regularly and to accept some weight gain. Explain that one in four quitters will lose weight or stay the same and that the health benefits of quitting are almost always greater than the health effects of the extra weight.

Coping with stress
Smokers often report using smoking to help them cope with stress. However, the latest research consistently shows that smoking actually increases stress levels. As nicotine levels fall between cigarettes, smokers repeatedly slip into nicotine withdrawal, resulting in frequent episodes of anxiety and restlessness. When a cigarette relieves these symptoms, it is easy to see why smokers think cigarettes reduce stress. In fact, the cigarette is simply relieving the nicotine withdrawal it has created. Many people also feel guilty or ashamed of smoking and worry about the damage to health from smoking, and this creates additional stress. Furthermore, nicotine releases stress hormones in the body such as adrenaline that increase feelings of anxiety further.

A number of studies have found that 6-12 months after quitting, ex-smokers are more relaxed than continuing smokers.

Short-term anxiety may occur in the first few days after quitting due to withdrawal from nicotine. However, this effect can usually be well controlled by smoking cessation medication.

There are much healthier and more effective ways to relax than smoking. Alternative strategies include exercise, a relaxation technique, and to reduce their alcohol intake subsequently.

Social support
Suggest patients tell family and friends they are quitting and ask for their support.

Set rewards
Smokers often feel deprived when they quit and setting short- and long-term rewards can help motivation. Cigarette money can be used to purchase well-deserved treats.

Set an appropriate quit day
The nicotine patch works best if started about two weeks before quit day. Varenicline and bupropion are started at least one week before quit day. Agree on a quit day in the following two weeks. It is best to pick a day without too much pressure but one that still has activities to keep busy. A firm quit day is not essential, and some smokers chose to work towards quitting and quit when they feel ready.

Smokers can decide whether to stop abruptly on quit day or cut down gradually. Both methods are equally effective.

Advise patients to throw away all their cigarettes before bed on the day before quit day. Get rid of all ashtrays, matches, and other smoking paraphernalia. Don’t leave a pack around “just in case”.

Quit day
See the patient on quit day to review the quitting strategy and boost motivation. Check that the medication is being taken correctly and emphasise that it should be continued for a full course.

Most relapses occur in the first week after quitting and are usually due to nicotine withdrawal. This period requires special vigilance and full doses of medication. Advise patients to take special care to avoid their personal triggers and situations that are high risk for smoking. For example, consider avoiding the pub on Friday nights if that is a powerful smoking trigger.

If the patient is using the nicotine patch, instruct them to leave it on if a lapse occurs.

After quit day
Follow-up visits to discuss progress and provide support have been shown to increase the chance of success. As the risk of relapse is greatest in the weeks after quitting, it is best to see the patient more frequently early on. Start by seeing the patient within a week of quitting.

At follow-up visits:
• Give the patient genuine praise and encouragement.
• Discuss smoking triggers. Review slips in detail and plan more effective coping strategies.
• Review medication. Is it being used correctly? Are there side effects? Does the dose need to be increased?
• Review any improvements in wellbeing.
• Advise patients:
  • Not to have even one puff
  • To keep busy and active
  • To take one day at a time.

Negotiate further follow-up visits as required.
How To Treat – Nicotine dependence

Pharmacotherapy

PHARMACOTHERAPY eases the physical discomfort of nicotine withdrawal and reduces cravings. It is recommended for all nicotine-dependent smokers who are ready to quit, unless there are contraindications.

The three first-line treatments are nicotine replacement therapy, varenicline and bupropion. Of these medications result in quit rates about double that in those who attempt without pharmacotherapy.1

The choice for individual patients is based on past experience, side effects, efficacy, contraindications, drug interactions (in particular with bupropion), patient preferences and cost. Due to genetic and other variables, patients have individual responses to all of the smoking pharmacotherapies. If a medication has worked well in the past and been well tolerated, it is good practice to use it again. Nicotine patches, varenicline and bupropion are available on the PBS with an authority prescription (table 1).

PBS requirements for prescribing are:

• Short-term, sole PBS therapy
• Patient ready to stop smoking
• Patient entered a comprehensive support and counselling program

Nicotine patches, varenicline and bupropion can be prescribed in the same 12-month period, but only one at a time. The period between commencing varenicline and bupropion must be at least six months.

Nicotine replacement therapy

Nicotine replacement therapy is the most widely used pharmacotherapy and is the only one approved in pregnancy, lactation and adolescence.2 3 Two different forms of therapy are available:

• Long-acting forms: The nicotine patch provides a steady background level of nicotine throughout the day.
• Quick-acting oral forms: Nicotine gum, lozenge, inhaler and mouth spray (the microtab has been discontinued) provide faster relief of cravings for a shorter duration.

Patient compliance and nicotine safety

Compliance with nicotine replacement therapy is generally poor. Most smokers use less than the prescribed dose of medication and do not take the full course of treatment.

A major cause of poor compliance is misinformation about nicotine replacement therapy. Many smokers believe that it is unsafe, is not effective or is addictive. Addressing these concerns with scientific information greatly increases the therapy’s uptake and improves compliance.4

Although nicotine is the main cause of dependence on tobacco, it is not carcinogenic, does not cause respiratory disease and has only minor haemodynamic effects. However, it can delay wound healing, increase insulin resistance and is associated with harmful effects on the fetal brain and lungs. Nevertheless, nicotine replacement therapy is always safer than continuing to smoke.

This therapy can be used by patients with stable cardiovascular disease, but should be used with caution in people with recent MI, unstable angina, severe arrhythmias, drug interactions associated with smoking, and patients with stable cardiovascular disease, but should be used with caution in people with recent MI, unstable angina, severe arrhythmias, and recent cerebrovascular events.

Correct use

The oral, quick-acting forms of nicotine replacement therapy (lozenges, gum, inhalator, mouth spray) are often used incorrectly, resulting in lowered effectiveness and more side effects. It is vital to instruct patients on their correct use and to review their technique at follow-up visits (table 2).

Adequate dose

In general, patients using nicotine replacement therapy receive too little nicotine, partly due to misguided concerns about safety. The dose of nicotine needs to be titrated upwards to provide adequate relief of cravings and withdrawal symptoms for each individual.

Smokers of 10 or more cigarettes per day should normally start with a full-strength patch (21mg/24-hours or 15mg/16-hours). If cravings or withdrawal symptoms are not controlled, an oral form of nicotine replacement therapy should be added.

Smokers who smoke within 30 minutes of waking are advised to use the 4mg lozenge or the 2mg patch, regardless of their cigarette consumption.

Smokers who are more nicotine dependent or those who metabolise nicotine more quickly generally need larger doses.

Side effects

Adverse effects with nicotine replacement therapy depend on the delivery system. For the patch, they include skin irritation, disturbed sleep and abnormal dreams. For oral treatments, side effects include dyspepsia and nausea, hiccups, jaw pain (gum) and mouth and throat irritation (inhaler and mouth spray).

Combination therapy

Combining the nicotine patch with an oral form of nicotine replacement has been shown to increase quit rates by about 50% compared with using the patch alone. The patch provides a steady protection against background cravings and the oral forms give quick, flexible relief for breakthrough cravings as a result of smoking triggers, such as the smell of smoke.

Many smoking cessation experts now recommend combination therapy for all nicotine-dependent smokers using nicotine replacement, rather than monotherapy.

Multiple nicotine patches have a more modest benefit, increasing quit rates by 15% compared with single patch use.

Pre-cessation use of nicotine patch

Best practice for using nicotine patches is to start two weeks before quit day as this increases success rates over and above the traditional quit day application by 35%. Smoking while using nicotine replacement therapy is safe and is not associated with any additional adverse reactions. Patients need to be reassured about this.

Continuing nicotine patch after a lapse

Studies show that even a single episode of smoking almost inevitably leads to relapse. When a lapse occurs, about half of patch users stop using their patches within two days, usually due to misguided concerns about safety.

However, smokers who continue to use the nicotine patch after a lapse are 4-5 times more likely to be abstinent at the end of treatment. When prescribing the patch, advise patients to continue using it if a lapse occurs and emphasise that concurrent patch use and smoking is safe.

Cue-induced cravings

Most lapses are triggered by situations associated with smoking, such as exposure to alcohol, coffee or stress. Oral forms of nicotine replacement significantly reduce the intensity and the duration of

Compliance with nicotine replacement therapy is generally poor.

Table 1: Smoking cessation medications on the PBS

<table>
<thead>
<tr>
<th>Product</th>
<th>Strength</th>
<th>Quantity</th>
<th>Notes</th>
<th>Max per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine patch</td>
<td>Nicotinell Step 1, 21mg/24 hours</td>
<td>28 Rx0</td>
<td>12-week course PBS and DVA</td>
<td>PBS, One 12-week course</td>
</tr>
<tr>
<td></td>
<td>Nicorette 15mg/16 hours</td>
<td>28 Rx0</td>
<td>12 week course PBS and DVA</td>
<td>DVA, Two 12-week courses</td>
</tr>
<tr>
<td>Nicabate QO, Quil, 21mg/24 hours, Nicorette 15mg/16 hours</td>
<td>14 Rx0</td>
<td>DVA only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicabate QO, Quil, 14mg/24 hours, Nicorette 15mg/16 hours</td>
<td>14 Rx0</td>
<td>DVA only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicotine patch (Step down course)</td>
<td>Nicotinell step 1, 21mg/24 hours</td>
<td>28 Rx0</td>
<td>Step down course. Four weeks at 14mg and four weeks of 7mg PBS and DVA</td>
<td></td>
</tr>
<tr>
<td>Nicotinell step 2, 14mg/24 hours</td>
<td>28 Rx0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicotinell step 3, 7mg/24 hours</td>
<td>28 Rx0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Varenicline</td>
<td>500µg x 11 tablets, 1mg x 42 tablets</td>
<td>1 pack</td>
<td>Initiation pack</td>
<td>24 weeks</td>
</tr>
<tr>
<td></td>
<td>1mg tablets</td>
<td>112</td>
<td>Continuation pack, after completing initiation pack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1mg tablets</td>
<td>56 Rx0</td>
<td>Additional 12-week course for patients abstinent after the initial 12 weeks.</td>
<td></td>
</tr>
<tr>
<td>Bupropion</td>
<td>Initial pack</td>
<td>150mg tablets</td>
<td>30</td>
<td>Initiation pack</td>
</tr>
<tr>
<td></td>
<td>Continuation pack</td>
<td>150mg tablets</td>
<td>90</td>
<td>Continuation pack, after completing the initiation pack</td>
</tr>
<tr>
<td>Oral NRT: Lozenge, gum, mouth spray, inhalator</td>
<td>Not available on the PBS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Correct instructions for use of oral nicotine replacement therapy

<table>
<thead>
<tr>
<th>Product</th>
<th>Instructions</th>
<th>Daily dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gum</td>
<td>Chew slowly until taste becomes strong then rest between gum and cheek. Chew again several times slowly when taste fades. Try not to swallow excessively. Repeat for 30 minutes or until the taste fades</td>
<td>2mg gum: 8-20 pieces 4mg gum: 4-10 pieces</td>
</tr>
<tr>
<td>Lozenge</td>
<td>Allow to dissolve in mouth (about 20-30 minutes), moving from side to side from time to time. Try not to swallow excessively. Do not chew or swallow whole</td>
<td>2mg and 4mg lozenges: 9-15 pieces</td>
</tr>
<tr>
<td>Mini lozenge</td>
<td>Allow to dissolve in mouth (about 10-13 minutes), moving from side to side from time to time. Try not to swallow excessively. Do not chew or swallow whole</td>
<td>1.5mg mini lozenges: 9-20 pieces 4mg mini lozenges: 9-15 pieces</td>
</tr>
<tr>
<td>Inhalator</td>
<td>Take shallow puffs about every two seconds or alternatively take four puffs every minute. Continue for up to 20-30 minutes</td>
<td>3-6 cartridges</td>
</tr>
<tr>
<td>Mouth spray</td>
<td>Spray into the mouth, avoiding the lips. Do not inhale while spraying. Use when cigarettes would normally be smoked or if cravings emerge. Do not swallow for a few seconds after spraying</td>
<td>1-2 sprays every 30-60 minutes. Maximum four sprays an hour or 64 sprays a day</td>
</tr>
</tbody>
</table>
A second course of varenicline significantly increases quit rates further at 12 months.

**Bupropion**

**Bupropion** is an antidepressant that is also an effective aid to quitting.13 It is started with a 150mg tablet daily for three days, followed by one tablet twice daily. The patient is advised to quit smoking in the second week and continue the medication for a full eight-week course.

**Adverse events**

Side-effects include insomnia, headache, dry mouth, nausea, dizziness and anxiety. As with varenicline, there have been reports of depression, suicidal and behaviour changes from bupropion, but no causal link has been confirmed. The main risk from bupropion is a one-in-a-thousand incidence of seizures. The drug is contraindicated in patients with a raised seizure risk, such as patients with past seizures, CNS tumours, excessive alcohol or benzodiazepine use, eating disorders, past head trauma and monoamine oxidase inhibitors, as well as in pregnancy. Bupropion should be used with caution in people taking medications that lower the seizure threshold, such as antidepressants and oral hypoglycaemic agents.

**Smoking reduction with nicotine replacement therapy**

Although quitting completely is the preferred option, many smokers are not ready to quit at the time of the consultation or are unable to do so. However, many of these smokers are willing to reduce their smoking if possible or otherwise cue-induced cravings and help prevent lapses. Oral therapies should be taken in anticipation of a smoking trigger if possible or otherwise when cravings are experienced.

**Chemicals in tobacco smoke accelerate the metabolism of many common drugs by inducing the cytochrome P450 enzyme, CYP1A2. This can substantially lower the serum concentrations and effectiveness of these drugs in smokers.** Conversely, blood levels of these medications may increase when smoking is stopped. Patients should be monitored for adverse effects, and dose reductions may be required. Immediate dose reductions should be considered for drugs with a narrow therapeutic index such as olanzapine, clozapine and warfarin to avoid drug toxicity.

**Drug interactions and smoking**

**Table 3: Drugs that interact with smoking, Blood levels rise after cessation of smoking**

<table>
<thead>
<tr>
<th>Class</th>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antipsychotics</td>
<td>Olanzapine, clozapine</td>
</tr>
<tr>
<td></td>
<td>Haloperidol, chlorpromazine, fluphenazine</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>Duloxetine, fluvoxamine, tricyclic antidepressants, mirtazapine</td>
</tr>
<tr>
<td>Anti-anxiety agents</td>
<td>Alprazolam, oxazepam, diazepam</td>
</tr>
<tr>
<td>Cardiovascular drugs</td>
<td>Warfarin, propranolol, verapamil, felodipine</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Insulin, metformin</td>
</tr>
<tr>
<td>Other</td>
<td>Naratriptan, oestradiol, ondansetron, theophylline, dextropropoxyphene</td>
</tr>
</tbody>
</table>

**References**

E-cigarettes

SOME smokers are ordering e-cigarettes online to assist with quitting or to reduce cigarette intake. E-cigarettes are battery operated cigarette-shaped devices that contain a cartridge of liquid nicotine. The nicotine is vaporised when the patient breathes in and is rapidly delivered to the lungs as a fine mist without smoke or carbon monoxide.

There is still very little research on the safety, quality control and efficacy of e-cigarettes. Although it is highly likely that they are much less harmful to health than cigarettes, nor enough is known about e-cigarettes to recommend them to patients. Smokers who are interested in quitting should be strongly directed towards evidence-based treatments.

How to Treat Quiz

Nicotine dependence — 7 June 2013

1. Which TWO statements are correct regarding the epidemiology of smoking and nicotine dependence?
   a) About 40% of smokers try to stop smoking at least once a year
   b) Every year of smoking after the age of 35 years shortens the smoker’s lifespan by three months
   c) About 25% of lifelong smokers die prematurely, with an average lifespan five years shorter than that of non-smokers
   d) In 2010, 5% of Australians aged 14 or over smoked

2. Which TWO statements are correct regarding the pathophysiology of smoking and nicotine dependence?
   a) Genetic variations of cytochrome P450 2A6 can vary by up to fourfold, affecting the rate of nicotine breakdown
   b) Smoking addiction is primarily driven by psychosocial habituation
   c) The nicotine reward is mediated by pituitary endorphins that degrade within a few hours
   d) Chronic nicotine exposure upregulates nicotine receptors that over time makes quitting more difficult

3. Which TWO statements are correct regarding nicotine replacement therapies?
   a) Patients who smoke more than 10 cigarettes a day require a full-strength nicotine patch
   b) Nicotine mouth spray may vary more than double the quit rate of placebo at 12 months
   c) Patients should avoid combining different forms of nicotine replacement
   d) Smoking should stop before starting nicotine replacement to prevent overdose

4. Which THREE common medications may have an increased level in the blood after smoking cessation?
   a) Metformin
   b) Alfuzosin
   c) Diazepam
   d) Amoxycillin

5. You ask Samantha, a 34-year-old woman who smokes a pack a day, about her smoking. Which TWO statements are correct?
   a) GPs are shown to identify 95% of their patients who smoke
   b) Brief three-minute advice by the GP is effective in increasing quit rates
   c) Patients should avoid combining different forms of nicotine replacement
   d) Smoking should stop before starting nicotine replacement therapy

6. You assess Samantha’s level of nicotine dependence. Which TWO statements are correct?
   a) Self-reported smoking history is a reliable guide to nicotine dependence
   b) The single most reliable indicator for nicotine addiction is the time to the first cigarette of the day
   c) History taken about past failed attempts at quitting does not help inform future management
   d) The level of nicotine dependence is a powerful predictor of success of nicotine replacement therapy

7. You discuss weight gain as a barrier to smoking cessation with Samantha. Which TWO statements are correct?
   a) The mean weight gain due to quitting is 4-5kg in the first 15 months
   b) 25% of smokers who quit will lose weight or stay the same
   c) Smoking cessation medications can normalise weight gain from smoking cessation
   d) Detailed dietary advice is effective in controlling weight after quitting

8. You discuss stress as a barrier to smoking cessation with Samantha. Which TWO statements are correct?
   a) Smoking reduces stress levels
   b) Smoking relieves symptoms of nicotine withdrawal as opposed to actually reducing stress

9. You discuss nicotine withdrawal with Samantha. Which TWO statements are correct?
   a) Chewing a nicotine lozenge provides the fastest craving relief
   b) Cravings become weaker and less frequent over time but can last for many years
   c) Smoking cessation medications provide effective relief from cravings and withdrawal symptoms
   d) Withdrawal symptoms are worst at 10-14 days, which is when lapses occur

10. You discuss the use of smoking cessation medications with Samantha. Which TWO statements are correct?
    a) A second course of varenicline significantly increases quit rates at 12 months
    b) Varenicline is safe in pregnancy and lactation
    c) Bupropion has a one-in-a-thousand incidence of seizures
    d) Bupropion has a one-in-a-thousand incidence of seizures

INSTRUCTIONS
Complete this quiz online and fill in the GP evaluation form to earn 2 CPD or PDP points. We no longer accept quizzes by post or fax. The mark required to obtain points is 80%. Please note that some questions have more than one correct answer.

GO ONLINE TO COMPLETE THE QUIZ

CPD QUIZ UPDATE
The RACGP requires that a brief GP evaluation form be completed with every quiz to obtain category 2 CPD or PDP points for the 2011-13 triennium. You can complete this online along with the quiz at www.australiandoctor.com.au. Because this is a requirement, we are no longer able to accept the quiz by post or fax. However, we have included the quiz questions here for those who like to prepare the answers before completing the quiz online.

NEXT WEEK
There are many causes of painful mouth, with the most common being from dental or periodontal disease. Left untreated, painful mouth may compromise eating and swallowing.