Smoking cessation

By Lynn Greig

Between 2007 and 2010 the proportion of Australians who smoke dropped from 16.6% to 15.1%. However, the number of smokers has remained stable at about 3.3 million. Tobacco smoking is the single most preventable cause of illness and death in Australia, contributing to more drug-related hospitalisations and deaths than alcohol and illicit drug use combined. Pharmacists can play an important role in helping people to stop smoking by making them aware of the health risks of smoking and the benefits of stopping, and providing advice on smoking cessation strategies and pharmacotherapy.1,2

The health risks of smoking

Tobacco smoke contains over 4,000 chemical compounds of which more than 60 (including benzene, chromium, cadmium, arsenic, 2-naphthylamine, vinyl chloride and polonium-210) are carcinogenic. In addition to nicotine, other toxic substances in tobacco smoke include tar, hydrogen cyanide, formaldehyde, carbon monoxide, ammonia, acetone, toluene and phenols.3 Smoking harms almost every organ of the body. It causes 80% of all lung cancers and 20% of all cancer deaths in Australia. It can also cause cancers of the throat, mouth, oesophagus, bladder, kidney, liver, pancreas, stomach, colon, rectum, cervix and blood. A number of studies have found a link between smoking and an increased risk of breast cancer.4 Smoking is a major cause of heart disease. Smokers have a higher incidence of angina and heart attacks than non-smokers. They also have heart attacks at a much younger age and are up to four times more likely to die from coronary heart disease than non-smokers. Smoking is strongly related to many other diseases including age-related macular degeneration (AMD); osteoporosis; depression; multiple sclerosis (MS); rheumatoid arthritis and stroke.1–6

In addition to cancer, smoking also increases the likelihood of developing other types of lung disease. Chemicals such as hydrogen cyanide, ammonia, nitrogen dioxide and formaldehyde in tobacco smoke damage the cilia lining the bronchial passages, resulting in an accumulation of mucus and toxins in the lungs. The ability of the lungs to respond to infection is reduced, increasing the risk of bronchitis, bronchiolitis, pharyngitis, influenza and pneumonia. Smoking is the most common cause of chronic obstructive pulmonary disease (COPD). Coughing, phlegm production, dyspnoea and wheezing are common in people who smoke. Smokers who are also asthmatic are more likely to have poorly controlled asthma. Snoring is more common in smokers, and smoking is also associated with hyposmia (impaired sense of smell).5
Women who smoke are more likely to have difficulty conceiving, experience earlier menopause and have an increased risk of cervical and vulval cancer. They also have a poorer response to in vitro fertilisation (IVF). Men who smoke have lower sperm quality and count than non-smokers, and a higher risk of suffering from erectile dysfunction.

Smoking during pregnancy
Smoking is harmful not only to the mother but to the unborn child. Carbon monoxide in cigarette smoke reduces oxygen supply to the fetus. Blood flow to the uterus, placenta and fetus is also reduced because of nicotine’s constricting effect on the uterine and umbilical arteries. Nicotine is present in fetal blood, amniotic fluid and breast milk and affects fetal heartbeat and breathing. Other toxins from tobacco smoke also reach the fetus. For example, cadmium (a carcinogen) accumulates in the placenta and has been detected in umbilical cord blood.

Women who smoke during pregnancy have an increased risk of ectopic pregnancy and miscarriage. Maternal smoking during pregnancy is a major risk factor for sudden infant death syndrome (SIDS). Smoking during pregnancy also increases the risk of:

- stillbirth (fetal death after 28 weeks’ gestation) and neonatal mortality (death of an infant within the first 28 days of life)
- having a baby with a cleft palate
- having a baby with weaker lungs and immune system.

Babies born to women who smoke are twice as likely to be of low birth weight as babies born to non-smokers. Low birth-weight babies have a higher risk of subsequent illness, death, and long-term health problems during childhood and adulthood. A baby exposed to tobacco smoke in-utero, and through second-hand smoke as an infant, is more likely to develop type 2 diabetes, heart disease, kidney disease and to be obese as an adult.

After birth, infant health is affected by exposure to smoke through both passive smoking and breastfeeding. Nicotine is found in the breast milk of mothers who smoke, and cotinine (one of the main metabolites of nicotine) is found in the urine of breastfed infants of smokers. Tobacco smoke also reduces milk quality and quantity.

Passive smoking
Inhalation of second-hand smoke by non-smokers can also lead to health risks. Second-hand smoke contains more than 50 known or suspected carcinogens and a number of respiratory irritants and other toxic chemicals. Even brief exposure can be harmful – there is no safe level of exposure to second-hand smoke.

Babies and children are particularly susceptible to the effects of second-hand smoke. Infants exposed to maternal second-hand smoke have a 2½–3½ times greater risk of dying from SIDS.

A recent study showed that exposure to second-hand smoke during childhood is significantly associated with respiratory problems (e.g. persistent wheeze and cough) which persist into adulthood and increase the risk of developing chronic lung disease. Second-hand smoke exposure during childhood also more than doubles the risk of future lung cancer. Babies and children exposed to second-hand smoke have a greater risk of contracting group: bronchitis; bronchiolitis; pneumonia; meningococcal disease; acute and recurrent otitis media; and chronic middle ear effusion (‘glue ear’). Second-hand smoke also causes and exacerbates asthma in children.

Research has shown that exposure to second-hand smoke during childhood affects cognition and behaviour, increasing the likelihood of behavioural problems and learning difficulties. Some studies have found a possible association between postnatal exposure to second-hand smoke and brain tumours, lymphomas, and acute lymphocytic leukaemia in children but further research is needed.

In adults, passive smoking can increase the risk of lung cancer, COPD, asthma, chronic rhinosinusitis and respiratory infections. Non-smokers who live with a smoker have a 25–30% greater risk of developing coronary heart disease than those who live in a smoke-free environment. The risk of other cancers (including pancreatic, cervical, breast, kidney and bladder cancer) is also increased. In addition, exposure to second-hand smoke may trigger glucose intolerance and diabetes and increase the risk of dementia.

Practice point 1
The 5As Guideline for smoking cessation

- Ask 'Do you smoke?' as a matter of routine, to systematically identify smokers. Keep a record of each person’s smoking status.
- Assess the person’s readiness to quit (stage of change – see Practice point 2) and level of nicotine dependence (see Practice point 3).
- Advise smokers to quit in a way that is clear, yet supportive and non-confrontational (e.g. ‘The best thing you can do for your health is to quit smoking’). Advice should be based on the negative health effects of smoking and the benefits of quitting.
- Assist all smokers to quit in a way that is appropriate to each person’s stage of change. Assistance should include verbal and written information.
- Arrange follow-up visits or phone calls in the first week of the quit attempt and about one month after the quit day, and refer to a doctor if necessary. Follow-up visits to discuss progress and to provide support have been shown to increase the likelihood of successful long-term abstinence.

Related Fact Cards
- Smoking
- Staying a Non-smoker
- Nicotine Replacement Therapy
- Asthma
- Coughs
Practice point 2
Assessing readiness to quit

The type of assistance required to help someone quit depends on the smoker's readiness to quit. The 'stages of change' model is used to describe readiness to quit. The stages are3,4,6:

- Pre-contemplation (not ready) – unconcerned about smoking and not seriously thinking of quitting in the next six months.
  *Assistance: Give brief, clear non-confrontational advice. Discuss the benefits of quitting and the risks of continued smoking. Provide information about not exposing others to passive smoking. Reassure them that help is available when they're ready.

- Contemplation (unsure) – aware of the need to quit and considering quitting in the next six months.
  *Assistance: Discuss pros and cons of quitting (motivational interviewing – see Practice point 4). Explore their doubts and barriers to quitting. Offer written information (e.g. ‘Smoking’ and ‘Staying a non-smoker’ Self Care fact cards) and referral to Quitline.

- Preparation (ready) – planning to quit within the next 30 days.
  *Assistance: Affirm and encourage. Discuss a quit plan. Provide advice about pharmacotherapy. Offer referral to Quitline.

- Action – has quit smoking within the last six months. This is when the risk of relapse is highest.

- Maintenance – quit over six months ago. The person's non-smoking behaviour is established and the threat of smoking gradually diminishes.
  *Assistance: Reinforce counselling for relapse prevention.

- Relapse – has started smoking again. Relapse is common and the person should be helped to see it as part of a learning experience and not a failure.
  *Assistance: Encourage and motivate the person to quit again. Explore reasons for relapse. Offer ongoing support.

The benefits of quitting
Smoking cessation has both immediate and long-term benefits. It reduces the risk of developing diseases caused by smoking and improves health in general. People who quit at age 50 halve their risk of smoking-related death; if they stop by age 30, they avoid almost all of the excess risk.3–5 Women who stop smoking before or during their pregnancy reduce the risk of all complications, pre-term delivery and low birth weight.7

Quitting reduces the risk of cancers of the mouth, throat, oesophagus, stomach, bladder, kidneys, pancreas and cervix. Chronic cough, mucus production and wheeze decrease rapidly within a few months of quitting. Rates of respiratory infections such as bronchitis and pneumonia also decrease. There is a reduction in erectile dysfunction in men, and missed/painful periods and the risk of delayed conception and early menopause in women.1

Cutting down the number of cigarettes smoked each day does not result in any improvement in health outcomes or lifespan.3

See Table 1 for more information about the benefits of quitting.

Nicotine addiction
Nicotine is the component in tobacco responsible for its highly addictive properties. When cigarette smoke is inhaled, nicotine is rapidly absorbed into the pulmonary venous circulation and travels to the brain. Within seconds, it activates the brain’s nicotinic acetylcholine receptors, triggering the release of dopamine and other neurotransmitters and increasing endorphin levels. The brain reward system is activated, promoting pleasure and reinforcing the associated behaviour. Small, rapid doses of nicotine, as received when smoking, produce alertness and arousal. Genetic factors influence each person's susceptibility to developing nicotine addiction.4,9

Nicotine withdrawal symptoms include difficulty concentrating, restlessness, nervousness, headaches, insomnia, irritability, anxiety, depression, and weight gain due to increased appetite. Some people may also experience coughing, sneezing, sore throat, mouth ulcers and gastrointestinal upsets. Symptoms peak in the first few days and can fluctuate in intensity over several weeks. They usually disappear within a month, or a little longer in previously heavy smokers.2,9

A history of major depression is associated with a decreased ability to quit smoking and an increased likelihood of smoking relapse. Major depressive disorders are more than twice as common in smokers as in non-smokers. People with a history of major depression are likely to experience more severe symptoms of nicotine withdrawal following a quit attempt. Therefore, when counselling a person on smoking cessation, it is important to ask about present or past symptoms of depression.9

Considering quitting?
About two-thirds of Australian smokers are currently considering quitting. Pharmacists can play an important role in identifying smokers; educating them about the health risks of smoking and the benefits of quitting; assessing their readiness to quit; and providing help and support with quitting. It is especially important for the pharmacist to raise the issue of smoking cessation if someone presents with a problem which may have been caused or exacerbated by smoking.4

Most smokers make multiple attempts at quitting, interspersed with relapses, before achieving long-term abstinence. Smokers should be reassured that it is normal to make multiple attempts and that they should not give up the idea of quitting if they have previously had a relapse. Lessons learned from each attempt can be used to increase the chance of success in subsequent attempts.4

The 5As guideline (see Practice point 1) is an evidence-based framework which can be used by pharmacists when carrying out smoking cessation interventions. The guideline helps pharmacists to provide support appropriate to each smoker’s readiness to quit.1,2

A high proportion of smokers choose to quit without pharmacotherapy (‘cold turkey’), and many succeed. Smokers who want to try unassisted quitting should be encouraged to do so, especially if they smoke less than 10 cigarettes per day. However, smokers who are nicotine-dependent can increase their likelihood of successfully quitting by using smoking cessation pharmacotherapy.5,7,10,11
Nicotine patches deliver the nicotine dose slowly throughout the day, whereas the other types of NRT are faster-acting. The inhaler may be useful for smokers who miss the hand–mouth action of smoking. For the gum, it is important to use the correct chewing technique. The gum should be chewed slowly until a bitter taste or tingling sensation is felt (10–15 chews), then it should be placed under the tongue or between the cheek and gums until the taste or sensation disappears. This cycle should be repeated for about 30 minutes. Microtabs must not be swallowed. One or two tablets should be placed under the tongue and allowed to dissolve over about 30 minutes.\textsuperscript{2,18} See Table 2 for information on NRT products.

**Nicotine transdermal patches on the PBS**

Nicotine patches (21 mg/24 hours and 15 mg/16 hours) are listed on the Pharmaceutical Benefits Scheme (PBS) as an aid to quitting for people who participate in a support and counselling program. A maximum of one 12-week course of NRT is subsidised per year. They are not subsidised for use at the same time as PBS-subsidised bupropion or varenicline. However, smokers who are unsuccessful at quitting using the patches can access the other PBS-subsidised medicines during the same 12-month period.\textsuperscript{2,4}

**Reduce to quit (cut down then stop)**

Smokers who are not ready to quit abruptly can use NRT to help them reduce the number of cigarettes they smoke before progressing to quitting. Smokers who have not achieved a reduction in the number of cigarettes smoked per day after six weeks of NRT should consult their pharmacist or doctor for further advice. As soon as they feel ready to quit, they should start on the schedule for abrupt cessation. If they have not made a cessation attempt within six to nine months of starting NRT, they should be advised to consult their doctor for further advice.\textsuperscript{2,4,18}

**Combination therapy**

Smokers who are unable to quit or who continue to experience withdrawal symptoms using only one form of NRT can use a combination of patches plus low-strength gum or lozenges. The patches provide a steady background nicotine level and the gum or lozenges can be used when the person has an urge to smoke.
Practice point 4

Motivational interviewing

Motivational interviewing is a person centered counselling technique which may be helpful for motivating smokers who are unsure about quitting. It is designed to help people explore and resolve their ambivalence about behaviour change and guide them towards choosing to change their behaviour. The principles of motivational interviewing are based on collaboration and include expressing empathy (understanding why they may be ambivalent); avoiding arguing and telling them they are wrong; managing resistance without confrontation; and supporting and encouraging the person's self-belief. It involves asking open-ended questioning, reflective listening, summarising and affirming. Ambivalence about smoking (likes and dislikes) should be acknowledged, and the person's beliefs and personal goals (e.g. health and fitness) discussed.1,3,15,16

The following approach can be used to explore the smoker’s ambivalence and to motivate them to consider the need to change. It is important to start with the positives of smoking from the smoker’s point of view, as these are often not acknowledged.12

Step 1:
Ask: ‘What do you like about smoking?’

Step 2:
Ask: ‘What are the things you don’t like about smoking?’

Step 3:
Summarise – repeat back your understanding of the pros and cons.

Step 4:
Ask: ‘Where does this leave you now?’

The combination is more effective than either product alone, increasing the person's chances of quitting.2,4,18

Pre-quit therapy

People who smoke 15 or more cigarettes a day can use Nicabate Pre-Quit patches while preparing to quit. The pre-quit patches should be used for two weeks, after which the person should stop smoking completely and use the patches or combination therapy in accordance with the schedule for abrupt cessation.6,18

Adverse effects of NRT

Many of the adverse effects associated with NRT (e.g. sleep disturbance, dizziness, weight gain, headache, mouth ulcers) may also be related to stopping smoking. Adverse effects specific to the products used are usually minor and transient. The gum, inhaler, lozenges and microtabs can cause hiccups, gastrointestinal discomfort, nausea, throat irritation and a sore mouth. The gum can also cause jaw pain and dental problems, and may stick to dentures. The inhaler, lozenges and microtabs can also cause coughing. The patches can cause skin irritation and abnormal dreams. If abnormal dreams are experienced with the 24-hour patch, the person can remove the patch at bedtime or switch to a 16-hour patch.2,4,17,18

Safety of NRT

Using NRT is always safer than continuing to smoke. All forms of NRT can be used by people with stable cardiovascular disease. However, it should be used with caution in people who have had a recent myocardial infarction or stroke, or with unstable angina or severe arrhythmias.4,13 Other conditions in which certain NRT preparations should be avoided or used with caution include2,4,16:

- Oesophagitis, gastritis or peptic ulcers – may be exacerbated by oral NRT preparations.
- Skin disorders (e.g. psoriasis, chronic dermatitis, urticaria) – avoid patches.
- Oral or pharyngeal inflammation – may be exacerbated by nicotine gum.
- Chronic throat disease or asthma – avoid inhaler.
- Phenylketonuria – lozenges and microtabs (lemon-flavoured) are contraindicated, as they contain aspartame, which is metabolised to phenylalanine.
- Dentures – avoid gum.
- Hypersensitivity to menthol – inhaler is contra-indicated.

Pregnancy and breastfeeding

Ideally, smoking cessation during pregnancy and breastfeeding should be achieved without NRT. A recent randomised controlled trial in the UK comparing nicotine (15 mg/16 hours) and placebo patches in pregnant smokers found no significant increase in the rate of smoking cessation or the risk of adverse pregnancy or birth outcomes in the NRT cohort. Compliance was low – after one month, only 7.2% of women assigned to NRT and 2.8% of those assigned to placebo were still using patches.18

However, for women unable to quit on their own, NRT can be tried. Intermittent NRT products (e.g. gum, inhaler, lozenges, microtabs) are preferred to patches. If a pregnant woman has morning sickness, patches may be used, but they should be removed at night.2,4,18

Nicotine passes from mother to child through breast milk. Breastfeeding mothers should use intermittent NRT products rather than patches, and should breastfeed immediately before using NRT to reduce the transfer of nicotine into breast milk.2,4

Children and adolescents

NRT is contraindicated in children under 12. In adolescents aged 12 and over, NRT (all types) can be used as long as the person is sufficiently nicotine-dependent to warrant its use, is committed to stopping smoking, and is willing to accept counselling. The maximum recommended duration of treatment is 12 weeks.2,18

When to refer

A consumer requesting NRT should be referred to the doctor if:

- The person has cardiovascular disease, diabetes or hepatic or renal impairment. NRT can be used but, because of the potential risks, the person’s doctor should be involved.
- The woman is pregnant. The potential risks and benefits must be explained and understood and the doctor should be consulted.
- The person is <12 years old.
- NRT is contra indicated (e.g. the person is hypersensitive to nicotine) or unsuitable and the person wants to use bupropion or varenicline.
Bupropion

Bupropion was originally developed as an antidepressant. Its mechanism of action in assisting smoking cessation is unknown but it has both dopaminergic and adrenergic actions, and is an antagonist at nicotinic cholinergic receptors. It significantly increases cessation rates compared with placebo, and is as effective as NRT but not as effective as varenicline.4,14,18,20 It is effective in smokers with depression, cardiac disease and respiratory diseases and improves short-term abstinence rates in people with psychiatric illness.4,13,14,20,21 Bupropion can precipitate mania in patients with bipolar disorder, and may precipitate suicidal ideation and suicidal behaviour (even in people with no history of psychiatric illness).4,13,14,20,21

Adverse effects of bupropion include insomnia, nightmares, dizziness, difficulty concentrating, anxiety, tremor, headache, anorexia, nausea, dry mouth, constipation, and hypersensitivity reactions (including itching, urticaria, angioedema, arthralgia, myalgia and fever). Some of these adverse effects may also be related to stopping smoking. Seizures are the most serious adverse effect. They occur in approximately one in 1,000 people taking bupropion. The risk of seizures is increased in people with risk factors for seizures (e.g. head injury; excessive alcohol intake) or who are taking other medicines which reduce the seizure threshold (e.g. antidepressants, antipsychotics, hypoglycaemics, insulin, stimulants and anorectics). Bupropion can precipitate mania in patients with bipolar disorder, and may precipitate suicidal ideation and suicidal behaviour (even in people with no history of psychiatric illness).4,13,14,20,21

Varenicline

Varenicline is a nicotinic acetylcholine-receptor partial agonist. In the absence of nicotine it activates nicotinic acetylcholine receptors (agonist activity – reduces withdrawal symptoms), and in the presence of nicotine (e.g. during smoking) it blocks nicotine’s ability to bind with these receptors (antagonist activity – inhibits the pleasure and reward response).4,14,21 Varenicline can more than double the chance of successful long term smoking cessation.4

Table 2. NRT products available in Australia18

<table>
<thead>
<tr>
<th>Type of NRT</th>
<th>Product examples</th>
<th>Level of nicotine dependence</th>
<th>Starting dose</th>
<th>Approved indications</th>
<th>Duration of therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patch</td>
<td>Nicabate</td>
<td>&lt;10 cigarettes/day</td>
<td>14 mg/24 hr</td>
<td>Smoking cessation</td>
<td>8–12 weeks</td>
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<tr>
<td></td>
<td></td>
<td>&gt;10 cigarettes/day</td>
<td>21 mg/24 hr</td>
<td>Combination therapy</td>
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<tr>
<td></td>
<td>Nicabate Pre-Quit</td>
<td>&gt;15 cigarettes/day</td>
<td>21 mg/24 hr</td>
<td>Reduce to quit</td>
<td></td>
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<tr>
<td></td>
<td>Nicotinell QuitX</td>
<td>&gt;10 cigarettes/day</td>
<td>14 mg/24 hr</td>
<td>Smoking cessation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nicorette</td>
<td>&gt;15 cigarettes/day</td>
<td>21 mg/24 hr</td>
<td>Combination treatment</td>
<td></td>
</tr>
<tr>
<td>Gum</td>
<td>Nicabate Soft</td>
<td>10–20 cigarettes/day</td>
<td>2 mg; 8–12 pieces/day</td>
<td>Smoking cessation</td>
<td>&gt;12 weeks</td>
</tr>
<tr>
<td></td>
<td>Nicorette</td>
<td>&gt;20 cigarettes/day</td>
<td>4 mg; 6–10 pieces/day</td>
<td>Reduce to quit</td>
<td></td>
</tr>
<tr>
<td>Inhaler</td>
<td>Nicorette</td>
<td>&gt;10 cigarettes/day</td>
<td>6–12 cartridges/day</td>
<td>Smoking cessation</td>
<td>&gt;8 weeks</td>
</tr>
<tr>
<td>Lozenge</td>
<td>Nicabate</td>
<td>First cigarette &gt;30 minutes after waking</td>
<td>1.5 mg or 2 mg, 1 lozenge every 1–2 hrs</td>
<td>Smoking cessation</td>
<td>18 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>First cigarette &lt;30 minutes after waking</td>
<td>4 mg; 1 lozenge every 1–2 hrs</td>
<td>Reduce to quit</td>
<td></td>
</tr>
<tr>
<td>Sublingual tablet (microtab)</td>
<td>Nicorette</td>
<td>Low dependence</td>
<td>1 x 2 mg microtab every 1–2 hrs</td>
<td>Smoking cessation</td>
<td>3–6 months</td>
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<tr>
<td></td>
<td></td>
<td>High dependence</td>
<td>2 x 2 mg microtabs every 1–2 hrs</td>
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</table>

Practice point 5

Strategies for a successful quit attempt

Once a smoker has decided on a quitting strategy (‘cold turkey’ or a particular pharmacotherapy), the pharmacist can provide practical advice about how to carry out the quit attempt. The smoker should be encouraged to:4,12:

- Pick a suitable cessation date – ideally within the next two weeks.
- Prepare to stop smoking by trying to reduce the number of cigarettes smoked each day.
- Practice quitting (e.g. quit for a day; try to not smoke at the usual times, such as at the pub or during work breaks).
- Keep a smoking diary for several days before quit day to identify smoking triggers and high-risk situations, and plan alternative activities for when these situations arise.
- Plan strategies for dealing with cravings.

During the early stages of quitting, smokers should be encouraged to:4,12:

- Avoid major triggers (e.g. alcohol, coffee, friends who smoke).
- Modify situations which provide an environmental prompt (e.g. remove the ashtray from the car or the coffee table).
- Seek support from family and friends and contact Quitline for support.

The ‘4Ds’ – some suggested strategies for coping with cravings to smoke and reducing the risk of relapse:4,12:

- Delay acting on the urge to smoke – after five minutes the urge weakens and the resolve to quit will return.
- Deep-breathe – take a long, slow breath in and then slowly release it; repeat three times.
- Drink water slowly and savour the taste.
- Do something else (e.g. exercise) to provide a distraction.
**Practice point 6**

**Medicines and smoking cessation**

Chemicals in tobacco smoke increase the metabolism of drugs metabolised by cytochrome P450 (CYP450) enzymes, particularly CYP1A2. When a smoker stops smoking, this may result in reduced metabolism and a rise in blood levels of these drugs. Monitoring and a reduction in dose may be required, especially for drugs with a narrow therapeutic index (e.g. theophylline, warfarin, clozapine). Other drugs which may be affected include imipramine, olanzapine, haloperidol, fluvoxamine, flecainide, propranolol and chlorpromazine. Caffeine blood levels may also increase on cessation of smoking. Subcutaneous absorption of insulin may be increased due to improved peripheral blood flow, increasing the risk of hypoglycaemia. Careful monitoring of blood glucose is advisable, and a reduction in insulin dose may be required. For people taking warfarin, INR should be carefully monitored during smoking cessation and the dose of warfarin adjusted if necessary.4,14

Nausea is the most common adverse effect of varenicline, affecting up to 30% of smokers.4,30 Other common adverse effects include vomiting, dyspepsia, constipation, flatulence, increased appetite, headache, dizziness, taste disturbance, insomnia, and abnormal dreams.15 Some of these symptoms may also be related to stopping smoking. Varenicline should not be used concurrently with NRT, as this may increase risk of nausea, headache, dizziness and dyspepsia.16

Potentially serious adverse effects include psychiatric symptoms (including mood changes, depression, agitation, anxiety, aggression and suicidal ideation and attempts) and hypersensitivity reactions (including angioedema and Stevens-Johnson syndrome). Consumers should be advised to stop taking varenicline and consult their doctor at the first sign of any of these symptoms.4,15,17,21 Varenicline may also exacerbate pre-existing psychiatric illness (e.g. schizophrenia, bipolar disorder).21 There have been reports of myocardial infarction and other cardiovascular events in people taking varenicline.3,18 A 2011 meta-analysis of the results of trials involving varenicline concluded that varenicline significantly increases the risk of serious cardiovascular events.23 However, a more recent meta-analysis refuted these findings and concluded that there is no significant increase in the risk of serious cardiovascular events attributable to varenicline.24 Varenicline should be started 7–14 days before stopping smoking. To reduce the risk of nausea, the dose should be gradually titrated, starting with 0.5 mg once daily for three days, then 0.5 mg twice daily for four days, then 1 mg twice daily for 11–23 weeks. To reduce the risk of withdrawal symptoms after stopping varenicline, it is recommended that the dose be reduced to 1 mg once daily for two weeks before stopping.14

**Conclusion**

In order to fulfill their professional responsibility to protect the health of consumers, pharmacists need to play an active role in promoting smoking cessation. Use the 5As guidelines for smoking cessation with consumers; ask, assess, advise, assist, arrange.

**References**

7. Quit Victoria; 2012. At: www.quit.org.au
Assessment questions for the pharmacist

Select one correct answer from each of the following questions.

**Answers due 30 September 2012.**

Before undertaking this assessment, you need to have read the Facts Behind the Fact Card article in *inPHARMation*, and the associated Fact Cards. This activity has been accredited by PSA as a Group 2 activity. Two CPD credits (Group 2) will be awarded to pharmacists with four out of five questions correct. PSA is authorised by the Australian Pharmacy Council to accredit providers of CPD activities for pharmacists that may be used as supporting evidence of continuing competence.

**Submit answers online**

To submit your response to these questions online, go to the PSA website www.psa.org.au/selfcare

1. **Which of the following statements about the health risks of smoking is CORRECT?**
   - a. Smoking causes 30% of all lung cancers and 10% of all cancer deaths in Australia.
   - b. A woman who smokes during pregnancy increases her baby’s risk of developing heart and kidney disease during adulthood.
   - c. Smoking is the second most common cause of chronic obstructive pulmonary disease (COPD).
   - d. Infants exposed to maternal second-hand smoke have a 50% greater risk of dying from SIDS.

2. **One year after a woman has stopped smoking:**
   - a. Her risk of cervical cancer is the same as that of a non-smoker.
   - b. Her risk of lung cancer is less than half that of a continuing smoker.
   - c. Her risk of coronary heart disease is half that of a continuing smoker.
   - d. Her risk of stroke is almost the same as that of a non-smoker.

3. **In which stage of change is a smoker who is considering quitting in the next six months?**
   - a. Pre-contemplation.
   - b. Contemplation.
   - c. Preparation.
   - d. Action.

4. **Which of the following would be appropriate assistance to give a smoker who is in the ‘action’ stage of change?**
   - a. Reassure them that help is available when they’re ready.
   - b. Provide advice about pharmacotherapy.
   - c. Discuss a quit plan.
   - d. Review their pharmacotherapy.

5. **Which of the following statements about bupropion is CORRECT?**
   - a. Bupropion acts by activating nicotinic acetylcholine receptors.
   - b. It is as effective as NRT and more effective than varenicline.
   - c. It is contraindicated in people who have taken monoamine oxidase inhibitors in the previous 14 days.
   - d. It causes seizures in approximately 1% of people who take it.