Providing support to patients who wish to quit smoking

Elizabeth Pang MSc and Myra Stern PhD, FRCP

Smoking remains one of the biggest killers in our society, causing premature death in more than half of smokers. Smoking is the primary cause of preventable illness and premature death, accounting for 81,400 deaths in England in 2009. Smoking harms nearly every organ of the body and dramatically reduces both quality of life and life expectancy. It causes lung cancer, respiratory disease and heart disease, as well as numerous cancers in other organs including lip, mouth, throat, bladder, kidney, stomach, liver and cervix.

Adults with mental health problems are at particular risk. This group smokes 42 per cent of all tobacco in England and die on average 16–25 years sooner than the general population, largely due to higher rates of respiratory and cardiovascular illness and poor survival outcomes due to smoking-related illnesses like COPD, which is largely undiagnosed and untreated.

Patients with schizophrenia, for example, have a 28 per cent five-year mortality from COPD compared to a 12 per cent five-year mortality in an age-adjusted population, and this is despite the fact that over 50 per cent of patients with mental health disorders want to stop smoking.

Stop smoking support, across the board, has been shown to be an effective and highly cost-effective long-term intervention for people with smoking-related long-term disease.

Available strategies

Strategies for stopping smoking are outlined in Table 1. Stopping smoking unassisted using neither behavioural support nor medication has a poor success rate: only 4 per cent of people can quit successfully for at least one year going ‘cold turkey’. Over-the-counter (OTC) nicotine replacement therapy (NRT) has the same success rate as going unassisted (see Figure 1).

Getting stop smoking medication on prescription alone can almost double the chances of quitting successfully compared to stopping unassisted or getting OTC NRT.

Figure 1. Success rates achieved with available strategies for smoking cessation

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Odds ratio (relative to no aid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHS support and medication</td>
<td>3.5</td>
</tr>
<tr>
<td>medication on prescription</td>
<td>2.5</td>
</tr>
<tr>
<td>nicotine OTC</td>
<td>1.5</td>
</tr>
<tr>
<td>unassisted</td>
<td>1.0</td>
</tr>
</tbody>
</table>
The chances double again using medication together with support from a stop smoking specialist.

NHS stop smoking services provide guidance on the most appropriate stop smoking pharmacotherapy as well as behavioural support, advice and information about coping without a cigarette and managing withdrawal symptoms, making it the most successful strategy for stopping smoking.

Stop smoking pharmacotherapy
The three stop smoking medications approved by NICE are NRT, varenicline (Champix) and bupropion (Zyban). These are extremely cost-effective and all three medications should be offered as first-line products to smokers who want to stop smoking. None of these medications should be favoured over another unless there are contraindications.

Although NRT can be bought OTC, varenicline and bupropion are prescription-only medications. All three medications should only be prescribed as part of an abstinence-contingent treatment in which the smoker sets a quit date and commits to stopping smoking.

Only two weeks of medication should be prescribed and further prescriptions should only be given to people who have shown on reassessment they have remained abstinent or the clinician and patient feels there is a high chance that abstinence will be achieved.

Abstinence can be validated either by self-report or by measuring a person’s carbon monoxide level.

Nicotine replacement therapy
NRT is available as a patch (16 hours and 24 hours duration), mouth spray, chewing gum, lozenge and mini lozenge, inhalator, nasal spray and microtabs (see Table 2). They come in different strengths and are safe and effective.

There are very few contraindications to NRT as it delivers nicotine in a safe form instead of in a cigarette where you would get nicotine plus tar, carbon monoxide and over 4000 toxic chemicals, many known to be carcinogenic.

Risks and benefits of using NRT should be discussed with pregnant and breastfeeding women and children under the age of 18 years old.

The odds ratio (OR) of maintaining long-term abstinence compared to a placebo with NRT is 1.84. There is little significant difference between the effectiveness of each NRT product. The effectiveness of each product is based on individual preference; however, there is good evidence that using a combination of NRT, preferably a combination of slow release (eg a patch) and fast acting (eg an inhalator or mouth spray), is more effective than using just single NRT.

The most common reason for poor efficacy and relapse is that an inadequate amount of NRT has been used. NRT delivers approximately half the amount of nicotine that a cigarette would deliver, therefore it is important for people to use the product frequently (on an hourly basis) and use the maximum dose to maintain blood nicotine levels to make their quit attempt more comfortable and minimise withdrawal symptoms.

Withdrawal from nicotine can be profoundly unpleasant, coming on two to three hours after the last cigarette and peaking two to three days later. Symptoms include an intense craving for nicotine, coupled with anxiety, depression, drowsiness or trouble sleeping, bad dreams and nightmares, feeling tense, restless or frustrated, headaches, increased appetite and weight gain, and problems concentrating.

Poor technique and incorrect usage of NRT is another common reason for failure. For example, with the gum, the technique is to chew the gum, then rest it between the gum and cheek and then chew again when the taste has faded. Resting the gum allows the nicotine to be absorbed through the lining of the mouth.

If the gum is just continuously chewed the nicotine is released too quickly and is then just swallowed, providing only minimal therapeutic effect.

It is therefore highly important for people to seek advice and support with an NHS stop smoking service who can advise them the best ways of maximising the use of their NRT. Providing smokers with a choice of pharmacotherapy by demonstrating the actual products available facilitates better uptake of treatment by empowering smokers to decide what would work best for them (see Figure 2).

NRTs were originally only licensed for abrupt quitting from smoking and have also now been granted a further licence indication called ‘cut down to quit’. This is aimed at smokers who express unwillingness to or inability to stop smoking in the short term but enabling them to gradually cut down over an extended period while supported by NRT.

Varenicline
Varenicline is a nicotine receptor partial agonist that helps people to stop smoking by binding the alpha beta subtype of nicotinic acetylcholine receptors, blocking the ability of nicotine to bind (reducing smoking satisfaction) and stimulating the mesolimbic dopamine system (maintaining moderate levels of dopamine to counteract withdrawal symptoms).

Varenicline is indicated for smoking cessation in adults over 18 years old who...
### Table 2. Types of NRT and their properties

<table>
<thead>
<tr>
<th>Product</th>
<th>What it does</th>
<th>Who should use</th>
<th>What to prescribe</th>
<th>Pros</th>
<th>Cons</th>
<th>Contra-indications</th>
<th>Side-effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patch</strong></td>
<td>Steady flow of nicotine into the blood stream</td>
<td>Any daily smoker</td>
<td>Up to 25mg per 16hr</td>
<td>Easy to use, widely tolerated, steady blood levels of nicotine</td>
<td>Does not offer replacement activity for smoking</td>
<td>Skin problems (e.g. eczema), excessive sweating, previous allergic reaction</td>
<td>Possible slight skin marking/irritation</td>
</tr>
<tr>
<td><strong>Gum</strong></td>
<td>Nicotine absorbed through lining of the mouth when gum ‘parked’ after chewing</td>
<td>Any smoker (need good natural teeth)</td>
<td>4mg nicotine gum prn, up to 15 daily</td>
<td>Can titrate to nicotine needs, offers replacement for smoking</td>
<td>Poor dentition, peptic ulcer disease</td>
<td>Can cause indigestion especially if not used correctly</td>
<td></td>
</tr>
<tr>
<td><strong>Lozenge</strong></td>
<td>Nicotine absorbed through lining of the mouth when parked ‘in cheek and allowed to dissolve'</td>
<td>Any smoker</td>
<td>4mg nicotine lozenge prn, up to 15 daily</td>
<td>Can titrate to nicotine needs, offers replacement for smoking</td>
<td>Peptic ulcer disease</td>
<td>Can cause indigestion</td>
<td></td>
</tr>
<tr>
<td><strong>Microtabs</strong></td>
<td>Nicotine absorbed through lining of the mouth/tongue</td>
<td>Smokers wanting discrete oral product</td>
<td>2mg nicotine microtab prn, up to 40 daily</td>
<td>Discrete, can titrate to needs</td>
<td>Tastes unpleasant</td>
<td>Peptic ulcer disease</td>
<td>Indigestion</td>
</tr>
<tr>
<td><strong>Nasal spray</strong></td>
<td>Nicotine absorbed through the lining of the nose</td>
<td>Long-term, high dependent smokers; gives rapid increase in blood levels closest to cigarette effect</td>
<td>10ml nasal spray prn, up to 64 sprays daily</td>
<td>Very strong, quick, can titrate to nicotine needs</td>
<td>Difficult to use at start, sneezing, eyes watering, temporary nasal irritation</td>
<td>Nasal irritation</td>
<td></td>
</tr>
<tr>
<td><strong>Inhalator</strong></td>
<td>Nicotine absorbed directly through the mouth</td>
<td>Any smoker as a secondary product to any of the others or as a main product for occasional smokers</td>
<td>15mg cartridge prn, up to 12 cartridges daily</td>
<td>Offers very useful replacement activity for smoking; can titrate to nicotine needs</td>
<td>Sore throat, especially if not used correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Varenicline</strong></td>
<td>Partial agonist to nicotine receptors</td>
<td>Long-term/highly dependent smokers</td>
<td>2mg daily maintenance dose for 3 months</td>
<td>Very effective treatment when combined with counselling/support; can smoke for first week</td>
<td>Not for under 18s, pregnant or lactating women, non-daily smokers, end-stage renal disease</td>
<td>Nausea, sickness, abdominal bloating, flatulence, suicidal ideation (rare but described)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Types of NRT and their properties
are not pregnant and not in renal failure. It is unknown whether varenicline is secreted in human breast milk therefore caution and clinical judgement needs to be taken with pregnant and breastfeeding women. Every smoker who takes varenicline should also receive behavioural support.

The OR of achieving long-term abstinence (six months or longer) using varenicline compared to a placebo is 2.88. This is comparable to using combination NRT but more effective than using a single NRT agent.

The most common side-effect reported from the use of varenicline is nausea (28 per cent). In the majority of cases nausea is mild to moderate in severity and subsides over time.

There have been media reports to suggest that varenicline can increase the risk of cardiovascular events and of suicide and is, therefore, unsafe to be used in people with mental health problems. These reports have, however, been refuted in a recent meta-analysis that demonstrates that there is no evidence of an increased risk of suicidal behaviour in patients prescribed varenicline compared to those prescribed NRT.

**Bupropion**
Bupropion has antidepressant properties and is indicated as a stop smoking medication in combination with behavioural support. The OR of bupropion achieving long-term abstinence compared to a placebo is 1.82. It is comparable with using single NRT but has been shown to be less effective when compared to using varenicline.

Bupropion is contraindicated in people with seizure disorder, CNS tumour, under 18 years old, pregnant or breastfeeding, previous diagnosis of bulimia or anorexia nervosa, severe hepatic cirrhosis, bipolar disorder and for people using MAOIs.

Side-effects of bupropion can include a rash, seizures (0.1 per cent) and increased anxiety and depression. It also has a number of drug interactions and interactions with clinical conditions and therefore caution should be taken before recommending to a smoker.

**E-cigarettes**
The e-cigarette is a battery-powered electronic nicotine delivery device designed for the purpose of providing inhaled doses of nicotine by way of a vapourised solution to the respiratory system.

They provide a flavour and physical sensation similar to that of inhaled tobacco smoke, with no smoke or combustion actually involved, although some vapour is released into the air when the smoker exhales. Propylene glycol is typically used to produce the nicotine-carrying vapour.

E-cigarettes may be used:

- to help quit smoking or avoid relapsing
- to reduce cigarette consumption
- to relieve tobacco withdrawal symptoms in places where there are smoking restrictions
- in order not to disturb other people with smoke
- to continue having a ‘smoking’ experience with reduced health risks
- because it is cheaper than smoking.

Benefits include the positive effects of abstinence from smoking (less coughing, improved breathing, better physical fitness), enjoyment of the flavour and the sensation of inhalation. Side-effects include dryness of the mouth and throat.

Evidence on the safety of e-cigarettes is limited, and there is no evidence regarding the health effects of long-term use. While it is unlikely that long-term use of e-cigarettes is as harmful as smoking, inconsistencies in product contents and labelling are of concern, and thus, at this stage, e-cigarettes are not licensed as a quit treatment.

The WHO reported that there is concern that nicotine delivery to the lung might result in stronger toxicological, physiological and addictive effects, and more evidence is needed about the safety of long-term use and about their effectiveness as cessation devices.

Thus, while e-cigarettes are potentially a powerful force for public health, they need to be better regulated if they are to deliver. In June 2013 the Medicines and Healthcare products Regulatory Agency announced its intention to regulate e-cigarettes as medicines. The revised Directive is expected to be adopted in 2014 and to come into effect in 2016.

Until that time, NHS stop smoking advisers have been advised not to recommend that smokers wishing to quit should use e-cigarettes in favour of NHS-approved smoking cessation treatments to have the best chances to quit successfully.

For those smokers who have successfully switched to e-cigarettes, however, the priority should be staying off conventional cigarettes, rather than quitting e-cigarettes.

**Conclusion**
Smoking cessation is the most cost-effective intervention for the prevention of smoking-related disease and treatment for smokers who have smoking-related disease(s). A range of evidence-based treatments exist to support smokers facing the difficulty of behaviour change and breaking nicotine addiction. Supporting smokers to quit, knowing and using these interventions, is every clinician’s business.

**References**
• NHS Smokefree is a free resource for advice to help people stop smoking. You can call and talk to a stop smoking adviser over the phone or chat to an adviser online. They also have useful tools you can access from their website such as widgets, stop smoking mobile app and a cost calculator. www.smokefree.nhs.uk or 0800 0224332

• QUIT is a charity that provides practical help, advice and support by trained counsellors to all smokers who want to stop. You can speak to a trained counsellor on 0800 002200 or visit their website www.quit.org.uk

• Shared Decision Making. A patient decision aid to help patients make an informed choice about the best route to stop smoking for them. http://sdm.rightcare.nhs.uk/pda/smoking-cessation

• Action on Smoking and Health (ASH) is a campaigning public health charity that works to eliminate the harm caused by tobacco. They have useful resources for both patients who want to stop smoking or health professionals wanting to help people stop smoking. www.ash.org.uk

• The National Centre for Smoking Cessation and Training (NCSCT) has useful resources for healthcare professionals wanting to help people stop smoking. The NCSCT has developed a range of training, assessment and certification programmes to enable people to become more skilled stop smoking practitioners. www.ncsct.co.uk

• NICE has produced a Quality Standard (QS43) on Smoking cessation: supporting people to stop smoking. http://publications.nice.org.uk/smoking-cessation-supporting-people-to-stop-smoking-q543

Table 3. Available support and resources for clinicians and smokers


Declaration of interests

None to declare.

Elizabeth Pang is stop smoking specialist and Myra Stern is an integrated consultant respiratory physician, Whittington Health, London