Smoking Cessation

There are about 10 million smokers in the UK. It is the biggest cause of premature death and preventable disease in the UK - more than the next six causes put together. It kills 100,000 people in the UK a year; about half of all smokers will eventually die of a smoking-related illness. [1]

Smoking cessation interventions are a cost-effective way of reducing ill health.

Quitting at any age provides both immediate and long-term health benefits. A recent study found that smokers who quit before the age of 50 may be able to reverse the risks to the level which non-smokers enjoy. Even those who quit after the age of 60 reduce the risk of dying by 39%. [2]

Smokers should be advised to stop and be offered help and follow-up, with access to a smoking cessation clinic for behavioural support. The National Institute for Health and Care Excellence (NICE) recommends focusing particularly on reducing the prevalence of smoking among people in manual groups, ethnic groups and disadvantaged communities. A reminder about the health benefits of smoking cessation and brief advice should be given at every opportunity in primary and secondary care. If appropriate, a referral should be made to the local NHS Stop Smoking Service.

Opportunities identified by NICE include patients referred for elective surgery and those recently discharged from hospital.

NICE recommendations (February 2008) are as follows: [3]

- Offer nicotine replacement therapy (NRT), varenicline or bupropion, as appropriate, to people who are planning to stop smoking.
- Pharmacological therapy should normally be prescribed as part of an abstinent-contingent treatment, in which the smoker makes a commitment to stop smoking on or before a particular date (target stop date).
- The prescription of NRT, varenicline or bupropion should be sufficient to last only until two weeks after the target stop date. Normally, this will be after two weeks of NRT therapy and 3-4 weeks for varenicline and bupropion, to allow for the different methods of administration and mode of action.
- Subsequent prescriptions should be given only to people who have demonstrated, on re-assessment, that their quit attempt is continuing.
- If a smoker's attempt to quit is unsuccessful using NRT, varenicline or bupropion, do not offer a repeat prescription within six months unless special circumstances have hampered the person's initial attempt.
- Varenicline or bupropion may be offered to people with unstable cardiovascular disorders, subject to clinical judgement.
- Consider offering a combination of nicotine patches and another form of NRT (such as gum, inhalator, lozenge or nasal spray) to people who show a high level of dependence on nicotine or who have found single forms of NRT inadequate in the past.
- Do not offer NRT, bupropion or varenicline in any combination.
- Do not favour one medication over another. The clinician and patient should choose the one that seems most likely to succeed.
- When deciding which therapies to use and in which order, discuss the options with the patient and take the following into account:
    - Whether a first offer of referral to the NHS Stop Smoking Service has been made.
    - Contra-indications and the potential for adverse effects.
    - The patient's personal preferences.
    - The availability of appropriate counselling or support.
    - The likelihood that the patient will follow the course of treatment.
    - Their previous experience of smoking cessation aids.

NICE has also issued guidance on smoking cessation activities in schools. [4]

Nicotine replacement therapy

Seven NRT formulations are available on prescription and most can also be bought over the counter (OTC) at pharmacies and supermarkets. None of these formulations is more effective than any other. Higher-dose gum and patches are more effective in those smoking more than 10 cigarettes a day. There has been some recent criticism of the effectiveness of the OTC strategy and more research is required.[5]

Combining products (eg patch and nasal spray or inhalator) is more effective than single agents:

- Patches 5, 10, 15 mg/16-hour (Nicorette®); 7, 14, 21 mg/24-hour (NiQuitin®).
    - **NB**: the Nicorette® range is being replaced by a new formulation of 10 mg, 15 mg and 25 mg Nicorette® Invisipatches. The old range is being phased out in early 2012.
- Gum (2 mg, 4 mg).
- Nasal spray (0.5 mg per puff).
- Mouth spray (1 mg per metered dose).
- Inhalation cartridge (10 mg cartridge plus mouthpiece):
    - **NB**: the formulation of Nicorette® inhalator - the only available inhalation cartridge - is changing to a 15 mg cartridge; the 10 mg cartridge will be available until June 2012.
- Lozenges (1 mg, 1.5 mg, 2 mg, 4 mg).
- Sublingual tablets (2 mg).

NRT is most effective with behavioural interventions. NRT reduces but does not completely eliminate the symptoms of withdrawal because it takes a few seconds for nicotine from a cigarette to reach the brain, one minute for the mouth spray, several minutes for the nasal spray, gum, inhalator, sublingual tablet and lozenge and hours for transdermal patches.[6]

NRT can control the weight gain commonly experienced after cessation. NRT should be continued for eight weeks and can then be stopped immediately.

The risk of dependence on NRT is small. About 5% who quit continue to use nicotine regularly. Nicotine from NRT is considerably safer than cigarettes, as the patient is not exposed to tar, carbon monoxide and other harmful products. However, the safety of the long-term use of NRT is currently being investigated.[7]

NICE advises explaining the risks and benefits of using NRT to young people aged from 12 to 17, pregnant or breast-feeding women and people who have unstable cardiovascular disorders.[3] [8] These groups should also be strongly encouraged to use behavioural support in their quit attempt. NRT is licensed for use in children from the age of 12. Nicotinell® lozenges have the added rider that they should only be prescribed for children under the age of 18 on the recommendations of a doctor.[9]

Smokers should be advised not to smoke while using NRT products, although some gums are licensed for smoking *reduction* (see 'Chewing gum', below).

Contra-indications[9]

Severe cardiovascular disease (severe arrhythmias, post-infarction period); recent cerebrovascular accident (including transient ischaemic attacks).

Cautions[9]

Cardiovascular disease; peripheral vascular disease; hyperthyroidism, diabetes mellitus, phaeochromocytoma, renal impairment, hepatic impairment, gastritis and peptic ulcers.

Side-effects[9]

- Nausea
- Dizziness
- Flu-like symptoms
- Palpitations
- Dyspepsia

- Hiccups
- Insomnia
- Vivid dreams
- Myalgia

Patches - these are applied on waking, to dry, non-hairy skin and removed, usually when retiring to bed; the next patch should be sited on a different area. Nicorette® is a 16-hour patch, whereas Nicotinell® and NiQuitin® are 24-hour patches. As a general guide, people who smoke more than 10 cigarettes a day should apply a high-strength patch daily for 6-8 weeks, the medium-strength patch for two weeks and then the low-strength patch for the final two weeks. Lower-dose regimes are more appropriate for those who smoke 10 a day or fewer. Each brand has its own regime so the manufacturer's instructions should be followed in individual cases. The most common side-effect is skin irritation. Minor sleep disturbances can occur, in which case 16-hour patches are best.

Chewing gum (can be used when trying to reduce the number of cigarettes) - sugar-free, nicotine 2 mg and 4 mg. Available in fruit, liquorice and mint flavours (Nicotinell®). Chew slowly for 30 minutes, when the urge to smoke occurs. Maximum 60 mg daily. Withdraw gradually after three months. Individuals smoking more than 20 cigarettes daily may need the 4 mg strength.

Nasal spray - nicotine 500 micrograms/spray. One spray into each nostril to maximum twice an hour for 16 hours daily (maximum 64 sprays daily) for eight weeks; then reduce gradually over the next four weeks (reduce by half at the end of the first two weeks; stop altogether at the end of the next two weeks). Maximum treatment three months.

Oral spray - this is an oral alternative which can be used whenever the urge to smoke appears. The maximum is two sprays per episode (up to four sprays every hour), 64 sprays daily.

Nicorette® inhalator - this is now available as a 15 mg cartridge. It should be inhaled when the urge to smoke occurs. Up to 12 cartridges can be used daily for eight weeks; then they should be reduced by half over the next two weeks and then tailed off over two weeks. The 15 mg cartridge is replacing the 10 mg cartridge and lasts twice as long (40 minutes).

Electronic cigarettes - or e-cigarettes, are designed to look and feel like normal cigarettes. They have a heating element inside that vapourises a solution that may contain nicotine - this looks like smoke. They are substituted for normal cigarettes or cigars. There is some uncertainty whether this is better (or safer) than the other ways of stopping smoking. A recent research paper from The Lancet showed that the e-cigarettes were as effective as nicotine patches.[10]

Lozenges - one lozenge every 1-2 hours, when the urge to smoke occurs. Maximum 30 mg daily. Withdraw gradually after three months. The period of treatment should not usually exceed six months (eg four hours for three weeks, then every eight hours for three weeks).

Sublingual tablets (2 mg) - one each hour (two may be needed for those on more than 20 cigarettes daily). Maximum 80 mg daily. Continue for three months, then gradually reduce. Treatment should not exceed six months.

See the British National Formulary (BNF) for full prescribing details.

Bupropion[9] [11]

Zyban® (bupropion) is only available on prescription. Bupropion was developed as an antidepressant but subsequently shown in trials to be effective in smoking cessation. Bupropion is an atypical antidepressant similar to diethylpropion, an appetite suppressant; it inhibits reuptake of dopamine, noradrenaline and serotonin in the CNS and is a non-competitive nicotine receptor antagonist.

Contra-indications

The Medicines and Healthcare products Regulatory Agency (MHRA)/Committee on Safety of Medicines (CSM) issued a warning that bupropion should not be prescribed to patients with seizures or eating disorders, a CNS tumour, or who are experiencing acute symptoms of alcohol or benzodiazepine withdrawal. Bupropion should not

be prescribed to patients with other risk factors for seizures unless the potential benefit of smoking cessation clearly outweighs the risk. The risk of seizures is increased by antidepressants, mefloquine, chloroquine, antipsychotics, quinolones, sedating antihistamines, corticosteroids, theophylline and tramadol, alcohol abuse, history of head trauma, diabetes and use of stimulants and anorectics.
Bupropion is contra-indicated in pregnancy or whilst breast-feeding. It is also contra-indicated in patients with a history of bipolar illness. It should not be given to patients under the age of 18. **NB**: allow 14 days after stopping a monoamine-oxidase inhibitor (MAOI).

Cautions

Hepatic cirrhosis, renal impairment; predisposition to seizures; raised blood pressure (monitor weekly if used with nicotine products). It may impair performance of skilled tasks (eg driving).

Side-effects

The most important side-effects are seizures (fits), which occur in about 1 in 1,000 patients. Insomnia and dry mouth commonly occur. About 0.1% of smokers suffer severe hypersensitivity reactions (eg angio-oedema, bronchospasm and anaphylactic shock) and 3% suffer milder reactions, such as rash, urticaria or pruritus.

Rare side-effects include: gastrointestinal disturbances, tremor, anorexia, headache, dizziness, visual disturbance, anxiety, flushing, hallucinations, depersonalisation, seizures, paraesthesia, Stevens-Johnson syndrome, hepatitis, exacerbation of psoriasis.

See the BNF for full prescribing details.

Varenicline[9] [12]

Varenicline is only available on prescription. It is an alpha-4 beta-2 (α4β2) nicotinic acetylcholine receptor partial agonist. This means that it both blocks and stimulates the receptor it is attracted to. The α4β2 receptor is located in the nucleus accumbens area of the brain (the 'pleasure centre'). The stimulatory effect produces a weak nicotine-like effect which reduces the craving for nicotine itself, whilst the blocking effect inhibits the pleasurable effect derived from smoking.

Varenicline should be started 1-2 weeks before the target stop date. NICE recommends that it should normally only be prescribed as part of a programme of behavioural support.[13] The drug should be initiated at 500 micrograms (one tablet) daily for three days, 500 micrograms twice-daily for four days, then 1 mg twice-daily for 11 weeks. If the patient cannot tolerate the higher dose, it can be reduced to 500 micrograms twice-daily. A further 12-weeks course of 1 mg twice-daily can be considered for patients who have stopped smoking but feel they still need further pharmacological support.

Contra-indications

- Pregnancy
- Age under 18

Cautions

History of psychiatric illness - there is an MHRA/CSM warning advising that suicidal thoughts and behaviour have been observed. Patients should be advised to cease therapy or seek medical advice if they develop depression or suicidal thoughts. Patients with a history of psychiatric illness should be closely monitored.

- Severe renal impairment.
- Breast-feeding.
- Up to 3% of individuals in the trials complained of irritability, an urge to smoke, depression and/or insomnia on stopping the drug. Patients should be advised of this and a gradual reduction in dosage towards the end of the course may need to be considered.

Side-effects

The most common side-effect noted in trials was nausea, which occurred in 30% of patients. This usually resolved spontaneously in a few days in patients who continued the drug. It is also helped by taking the tablet with water but a reduction in dosage to 500 micrograms twice-daily was sometimes required. A wide range of other adverse effects was reported, of which the most common were insomnia, abnormal dreams, headaches and flatulence. Both nausea and abnormal dreams can be reduced by taking the second pill at dinner time or supper time rather than at bedtime.

See the BNF for full prescribing details.

Other treatments for smoking cessation

The following treatments have some effect on smoking cessation but are neither licensed in the UK for this indication, nor recommended by NICE:

Nortriptyline, a tricyclic with noradrenergic properties and dopaminergic activity - is effective in cessation therapy, independent of the presence of depressive symptoms. [14]

Clonidine, an alpha-agonist that suppresses sympathetic activity and has increased smoking cessation in eight out of nine trials - however, it has serious side-effects, including sedation and postural hypotension. [15]

Acupuncture, acupressure, laser therapy, hypnotherapy and electrostimulation - these have not been shown to be effective in clinical trials, although further research is needed. [16] [17]

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