Essentials of Smoking Cessation (2018)

Dr Alex Bobak

Smoking – the size of the problem:

- Biggest preventable cause of death and disease bar none
- >50% of long term smokers die prematurely from smoking related diseases.
- They die 10-15 years short of average life expectancy with years of morbidity.
- Smokers with mental health problems die 20-25 years short.
- Current UK prevalence 17% with strong demographic variation
- Most smokers start as children, before they are legally allowed to buy cigarettes at 18.

Cigarette smoke:

- 4000+ chemicals in each puff
- 250+ are toxic
- 60+ are carcinogenic
- Nicotine itself is a relatively safe substance on a par with caffeine
- "It's the nicotine which makes you smoke, it's the smoke which kills you".
- Smoking is like an arterial hit. Nicotine gets to brain in 7-10 seconds so is more addictive.
- Venous drugs take 30-40 seconds to get to the brain. Dilution and first-pass mechanism through liver make them less addictive.

Why smoke?

- Boredom
- Social
- Stress
- Habit
- Weight control
- Taste
- BUT ABOVE ALL NICOTINE ADDICTION

Addiction Criteria:

- Cravings – intense desire
- Withdrawal – physical or psychological symptoms
- Reinforcement – ease of getting used to it
- Tolerance – higher dose needed for the same effect. Also tolerance of initially unpleasant effects
- Denial – taking against reason or in face of harm
- Dependence – difficulty to quit, ease of relapse

Addiction levels of all those who drink alcohol – 10-15%
Addiction levels for those who smoke – 95% - so in consultations assume all smokers are addicted.

Assessing addiction:

"How soon after waking do you smoke your first cigarette?

- About 70% are within 60 minutes.
- About 35% within 30 minutes (heavily addicted)
- About 10% wake during the night to smoke.

The power of tobacco addiction:

- As or more powerful than heroin and cocaine addiction
- 60% smoke post myocardial infarction
- 50% smoke after laryngectomy
- 50% smoke after pneumonectomy
- 80% don't stop during pregnancy (although 80% say they do –in denial)

The neurophysiology:

- α4-β2 nicotine receptors are stimulated by nicotine from tobacco smoke causing rapid dopamine release – feel good chemical
- The dopamine is rapidly reabsorbed causing low mood and craving for the next puff
- Persistent smoking increases the α4-β2 receptors in the brain by 300%+
- Once created they stay there so smokers become "hard wired" to need tobacco smoke
- If you stop smoking the nicotine receptors do down-regulate
- However even long term any smoking up-regulates the receptors so there is a high relapse rate
- On stopping smoking the nicotine is gone in 24-48 hours
- However it is 8-12 weeks before the nicotine receptors down regulate (hence most smoking cessation treatments and support last 8-12 weeks).
- For most smokers, smoking can be seen as a chronic relapsing organic brain disease, not a lifestyle choice

Withdrawal Symptoms:

Physical:	**Mental:**
Gastrointestinal – nausea, constipation etc	Irritability
Headache	Fatigue, drowsiness, insomnia
Cough, nasal drip	Dizziness
Mouth ulcers	Poor concentration
Chest discomfort	Anxiety
Hunger / weight gain	Depression
	Suicidal thoughts

Quit attempts each year. Of all smokers:

- 70% want to stop
- 30%+ try to stop
- 3-5% stop long term (because most use willpower alone which is usually not enough)

Benefits of stopping smoking:

- Risk of all harmful effects reduce after stopping
    - MI risk falls 50% in one year
    - Overall risk may never go to baseline or at best takes 15 years.

Tests for smoking status:

Breath CO – elevated immediately after smoking but lasts only for hours – used to motivate and monitor quit attempts

Cotinine - a metabolite of nicotine and present in saliva and urine for up to 1 month after stopping - used for research and insurance medicals.

3 keys to quitting:

- **Motivation** – essential but seldom enough – only 3-5% success with willpower alone
- **Good quality support**
- **Choice of all available treatments**

Long term cessation rates with and without Support and Medication:

	No Medication	Medication
Willpower alone	3-5%	4-6%
Support -trained advisor	10-15%	20-30%

- So behavioural support can increase quit rates up to five times from willpower alone and adding medications roughly doubles the chance of success.
- So support and medications can be ten times more successful than willpower alone.

Keys to good quality support in General Practice:

- The advisor
- The consultations

A good advisor is:

- A skilled listener and communicator
- Available and flexible (enables access when motivation is high)
- Empathetic
- Positive
- Realistic
- Motivational
- Knowledgeable about smoking cessation
- Willing

So advisors should be carefully selected, not just delegated

Principles for advisors' consultations:

- Smoker owns the attempt
- Choice of support and all treatment options
- Systems to make treatments easy to obtain
- Same advisor throughout
- Not telling smoker to stop but how to stop
- Routine use of CO monitoring
- Expect and normalise failure
- Enough time

Cutting down is not normally to be recommended as:

- Number of cigarettes smoked is not a reliable measure of smoke intake
- Smokers can inhale several times the amount of smoke from any cigarette depending on how they smoke it. This is called compensatory smoking.
- Any smoking is significantly harmful- the risk is not linear with number of cigarettes smoked
- Any smoking maintains the up-regulation of the nicotine receptors and only complete abstinence allows gradual down-regulation (nicotine from NRT allows down-regulation)

Opportunistic GP advice to smokers:

This is brief advice about smoking given to a smoker by a GP during or at the end of a consultation about another problem which may or may not be smoking related. It is NOT a smoking cessation consultation which is a dedicated appointment about stopping smoking ideally with a smoking cessation advisor. It is important that brief advice does not become a cessation consultation unless you have extra time as it takes too long to do it properly. If done properly brief advice from a GP can be one of the most important triggers for a quit attempt.

Most common GP brief advice to smokers is to stop, but the problems are that it is:

- Negative
- Nagging
- Nothing new – heard it all before.
- Encourages conflict and denial.
- Frustrating for doctor and patient
- Consultation takes longer
- Puts you off giving advice at all.

Remembering you are almost certainly dealing with an addict you have to appeal to the smoker's rational side of the brain and avoid challenging the addictive side.
So it is much better and quicker to give very simple advice on HOW to stop smoking and to miss out the negative aspects.

VBA (Very Brief Advice) for smokers was specially designed for GPs by GPs:

1. Establish and record smoking status **(**satisfies QOF):

   "Do you smoke/ Are you still smoking?"

2. Advise how to stop:

   "The best way to stop smoking is with support and medication (which make it many times more likely you'll stop than just using willpower)."

3. Offer support and treatment (satisfies QOF):

   "When you're ready, all you need to do is book an appointment with…..(who is great!)"

NB: VBA deliberately does not:

- Advise smokers to stop
- Ask how much or what they smoke
- Even ask if they want to stop

Benefits of VBA:

- Brief! (<30 seconds or it won't be used)
- Records smoking status (to trigger future VBA as 70%+ relapse rate)
- Opportunistic (suitable for almost any consultation)
- Positive (or you put them off trying)
- Not confrontational or nagging (not telling them to stop)
- Informative (saying how to stop)
- Engaging (new information)
- Evidence-based
- Satisfies QOF
- NOT a smoking cessation consult (that's for next time)
- Very simple: MINIMUM EFFORT, MAXIMUM REWARD

A free video training module on VBA is recommended and can be found either at:

http://www.ncsct.co.uk/publication_very-brief-advice.php

or through BMJ Learning, either search VBA or go to:

http://learning.bmj.com/learning/module-intro/very-brief-advice-on-smoking---in-association-with-the-national-centre-for-smoking-cessation-and-training-.html?moduleId=10032720

There is also a training module on VBA for smoking, alcohol and weight called "Behaviour change in cancer prevention":

http://www.elearning.rcgp.org.uk

Licensed Smoking Cessation medications:

Nicotine Replacement Therapy (NRT)
Bupropion (Zyban)
Varenicline (Champix)

NRT:

- Nine different forms:
  - Slow acting - patch
  - Medium acting - gum, inhalator, lozenge, mini lozenge, microtabs, oral strips
  - Fast acting - oral spray, nasal spray
- Based on nicotine weaning
- Combination use of two or more types is now routine eg patch + a medium/fast product
- Standard regime is to start taking on the quit date
- Nicotine delivery much slower than cigarettes
- Low level of addiction
- Significantly reduces withdrawal symptoms and cravings
- Significantly increases smoking cessation rate vs placebo
- Treatment lasts 8–12 weeks with gradual withdrawal
- Packaging can be difficult to open as they are licensed medications

Types of NRT:

Patches:

- Various types, all of three strengths
- The most discrete type of NRT, very slow delivery
- The most common type of NRT used in combination with faster acting types
- Apply to clean, dry, hairless skin and change site daily
- Usually OK to stick with highest dose throughout and stop without weaning to the medium and low dose patches
- 16-24 hour types available as some get insomnia if used overnight (fine to use the 24 hour ones – just take off at night is get insomnia)

Gum:

- 2mg, 4mg and 6mg
- "Freshmint" or "Freshfruit" are best re taste. Need to specify "Freshmint" or "Freshfruit" if prescribing generic "nicotine gum"
- Generic ones taste less good
- Chew (till soft) – park (for a few mins until the taste fades) in buccal sulcus and then chew and park again. 20-30 mins per piece of gum.
- Only chewing leads to swallowing nicotine which is then not absorbed and can cause hiccups

Lozenges:

- 2mg and 4mg
- Taste variable
- Place in buccal sulcus until completely dissolved which takes 20-30 mins with occasional sucking

- Don't chew or swallow

Mini-lozenges:
- 1.5mg, 2mg and 4mg
- Taste OK
- Alternate between sides of mouth
- Handy container
- Small and discrete

Inhalator:
- 10mg disposable cartridges in plastic dispensers a bit like a cigarette
- Each cartridge allows about 20 mins use up to 400 "puffs"
- May work quicker than gum and lozenges
- Good for smoking hand to mouth action and displacement activity
- Most nicotine is deposited on the oropharynx and is not actually inhaled
- Can cause "scratch" sensation at back of throat which some (but not all) smokers think is pleasant

Oral Spray:
- 1mg per spray
- Single spray into mouth avoiding lips and don't inhale
- Rapid effect (few minutes)
- Up to 64 sprays per day
- Tastes like strong mint

Nasal Spray:
- 1mg per spray
- Single spray up nostril, don't inhale
- Fastest delivery of NRT with effect in a couple of minutes
- Causes painful burning sensation in sinuses and sore eye for a few minutes when first taken-tolerance develops after a few times
- Up to 64 sprays per day

Oral strips:
- 2.5mg
- Newest product
- Small rectangular film which sticks to palate until dissolved
- Pleasant strong mint taste

Microtabs:
- Not currently available

Considerations for patients using NRT:

- USE ENOUGH - avoid under-dosing and irregular use
- LONG ENOUGH - don't stop early, continue for 8-12 weeks
- NOT A PUFF - NRT delivers nicotine less effectively than cigarettes and cannot compete

For more practical advice on the use of NRT go to:

https://www.nhs.uk/smokefree/help-and-advice/prescription-medicines

Zyban (bupropion SR)

- Oral tablet 150mg od for 6 days followed by 150mg bd for the rest of the 8-12 week course
- Stop smoking on a target quit date in the second week of taking the tablets
- Dopamine/Noradrenalin reuptake inhibitor
- Was developed as an antidepressant at a dose of 450mg per day and it was observed that smokers stopped spontaneously in depression on this medication.
- 150mg bd for 3 months for smoking cessation
- As or more effective as combination NRT, less effective than Champix (varenicline)
- Not commonly used due to (mainly unfounded) safety concerns
- Common side effects insomnia, headache, dry mouth, nausea
- Similar safety profile to selective serotonin reuptake inhibitors (SSRIs)
- There is a 1 in 1000 risk of seizure (just as any SSRI)
- So would not give on top of an SSRI as risk of seizure then 2 in 1000 or lower.
- Other drug interactions and cautions (see BNF)

Champix (varenicline):

- Oral tablet 0.5mg od for 3 days followed by 0.5mg bd for 4 days followed by 1mg bd for the rest of the 12-24 week course
- Stop smoking on a target quit date in the second week of taking the tablets
- Similar action to cytisine, another nicotine agonist, which is from the laburnum tree and available in Eastern Europe for smoking cessation as the drug Tabex
- Varenicline is specially designed to target the α4-β2 nicotinic acetylcholine receptor
- Partial stimulant and partial blocker of the receptor
- Stimulant effect relieves craving and withdrawal by low delivery of dopamine
- Blockade reduces dopamine reward/pleasure of smoking and reduces risk of relapse ie the receptors are protected
- Usual length of treatment is 3 months. However licensed for 6 months use.
- It is significantly more effective than both combination NRT and bupropion.
- There are no clinically meaningful drug interactions so can use in medical and psychiatric patients on polypharmacy
- Common side effects nausea (about 30%), headache, insomnia and abnormal dreams
- Management of nausea on varenicline:
    - Warn before prescribing that it may, but more likely will not (70%), happen
    - Advise that it is usually self limiting
    - Recommend taking tablets with food or water
    - Use an antiemetic if necessary
    - Adjust or reduce dose
- Cautions with varenicline:
    - End stage renal failure (renal excretion)
    - Pregnancy – contraindicated as no studies
    - Under 18s – contraindicated as no studies
    - Known allergy – rare

Mental illness and smoking cessation medications:
There has been confusion and misplaced concern particularly around the use of varenicline in patients with mental health problems.
Two major studies have addressed this issue:

1. Smoking cessation treatment and the risk of depression, suicide and self harm in the Clinical Practice Research Datalink: prospective cohort study. Thomas et al BMJ Oct 2013

- 349 English General Practices, Sept 2006- Oct 2011
- 119,546 adult smokers
    - 81,545 NRT
    - 6,741 bupropion
    - 31,260 varenicline
- 45.7% had used antidepressants
- Results: No evidence that patients prescribed varenicline or bupropion had higher rates of fatal or non-fatal self harm or treated depression compared with those on prescribed nicotine replacement therapy
- Conclusion: "These findings should be reassuring for users and prescribers of smoking cessation medicines"

2. Neuropsychiatric safety and efficacy of varenicline, bupropion and nicotine patch in smokers with and without psychiatric disorders: a double-blind randomised placebo controlled clinical trial. http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)30272-0/abstract
Largest ever treatment study in smoking cessation

- 8144 smokers; 4028 no psychiatric diagnosis, 4116 with psychiatric diagnosis
- 16 countries, 6 continents, Nov 2011- Jan 2015
- 2037 varenicline, 2034 bupropion, 2038 NRT, 2035 placebo
- Psychiatric cohort:
    - 70% mood disorders, mainly depression
    - 49% on psychotropic medication
    - 34% lifetime suicidal ideation
    - 12-13% lifetime suicidal behaviour
- Results:
    - No significant increase in neuropsychiatric adverse events in varenicline or bupropion compared with NRT patch or placebo in smokers with or without psychiatric illness.
    - Varenicline more effective than NRT patch and bupropion which were more effective than placebo

Unlicensed Smoking Cessation medications:

E-cigarettes:

- Main constituents: nicotine, glycerol, propylene glycol.
- Also colouring and flavouring – there have been reactions to these.
- There is no burning, so no harmful products of combustion
- About 3 million users in the UK (2017)
- 20–30 times safer than smoking in short term
- High false perception of harm
- At least as effective as NRT for smoking cessation
- Unregulated so significant constituent and batch variability.
- Unlikely to cause risk from passive vaping
- May be addictive
- Long term effects not known
- No reliable evidence for individual brands so none can be recommended
- Not licensed as medicines. Come under consumer law and so less regulated. One product (e-Voke from British American Tobacco) is licensed for smoking cessation but not on the market.

E-Cigarette current recommendations:

- First recommend varenicline (Champix), bupropion (Zyban) and NRT with support for cessation – and if smokers won't use these, only then sanction e-cigarettes with support.

- Advise complete cessation of smoking with e-cigarettes, not smoking reduction (45% e-cig users continue smoking cigarettes).
- Always recommend support. NHS stop smoking advisors are paid the same to support quit attempts with e-cigs as with licensed medications.

NHS Guidance:

"Since all motivated quitters should be given the optimum chance of success in any given quit attempt, nicotine replacement therapy (NRT), Champix (varenicline) and Zyban (bupropion) should all be made widely available in combination with intensive behavioural support as first-line treatments (where clinically appropriate)"

- Remember choice of all treatments is essential so that:
    - 1. The patient is able to make an informed decision on the treatment they will use so their motivation to use it will increase
    - 2. If they go back to smoking (realistically >70% chance of this with each attempt) they will be aware that there are lots of alternatives and they will be more likely to engage in a supported quit again.

- Always remember to ensure support from a trained adviser (or yourself) whenever you prescribe a smoking cessation medication. The support may be more important than the medication and will certainly make it more effective.

Cost and clinical effectiveness of licensed smoking cessation medications:

- According to NICE (2002) stop smoking medications "are considered to be among the most cost effective **of all** healthcare interventions"
- Estimates of cost-effectiveness for NRT and bupropion are below £2000 per life year gained and for varenicline it is around £1000.
- The NICE benchmark for a cost-effective treatment is around £30,000 per life year gained

Numbers Needed to Treat (NNT):

Compared with most other NNTs in primary care those related to smoking cessation are very low. For example:

NNT of smears to prevent one case of cervical carcinoma over ten years is 1140
NNT of prescriptions for antibiotics for sore throat to prevent one case of quinsy is >4000

	NNT to quit	NNT to prevent a premature death
Brief advice	51	102
NRT + support	23	46
Bupropion + support	22	44
Varenicline + support	11	22

Useful resources:
http://www.ncsct.co.uk
https://www.nhs.uk/smokefree
Fast Facts: Smoking Cessation 3rd Edition. Robert West and Saul Shiffman. Health Press - 2016
The SmokeFree Formula. A revolutionary way to stop smoking. Robert West. Orion – 2013
Manual of Smoking Cessation: A guide for counsellors and practitioners. McEwen et al – 2006