

CATEGORY III – COMMUNICATION, TREATMENT & PREVENTION INTERVENTIONS – TOBACCO

1.0 Introduction

Smoking tobacco remains one of the single major causes of avoidable diseases and premature deaths worldwide, killing over 7 million people a year (WHO, 2018). Countries that have introduced comprehensive tobacco control measures have seen a reduction in the numbers of people who smoke. The global percentage of smokers has dropped from 22% to 15.3% in the past 15 years. However, there is concern that tobacco related deaths will remain a global health threat unless a renewed and sustained focus is initiated on world tobacco control policies. It remains the case that efforts need to be intensified to maintain the reduction in smoking prevalence rates and prevent the uptake of smoking by young adults (Reitsma, et al. 2017).

Tobacco use places a high financial burden on society and public health care systems, as this goes well beyond the impact on mental and physical health. It is often argued that revenue through tobacco tax provides a healthy income for the Government. However, the costs associated with tobacco related deaths, illness and accidents in the UK are estimated to be twice that of the costs accrued through duty on tobacco products.

Global poverty and health inequalities are magnified by tobacco use. Tobacco use is likely to be more prevalent in low income households so the poor are more likely than the rich to suffer tobacco-related illness and premature death. This places a greater economic burden on families if expenditure on tobacco cuts spending on basic necessities such as food and shelter, education and health care. and the country.

A country's business and productivity are affected by tobacco related illness and smoking breaks during working hours. In England, it is estimated that early deaths due to smoking result in 116,494 years of lost productivity, costing the economy £3.1bn. Smoking related sick days in England cost 16,717,470 days of productivity each year. (ASH, 2018)

The annual cost of smoking to the NHS across England is £2.6bn, which includes £1.1bn estimated to primary care through increased GP visits, practice visits and prescriptions (PHE, 2017). Passive smoking, coming from a lit cigarette and the smoke breathed out by a smoker, increases the passive smoker's risk to the same health conditions as the smoker. Babies and children are particularly vulnerable to secondhand smoke which increases risk to chest infections, meningitis, persistent cough and otitis media with effusion.

LEARNING OUTCOMES

Medical students will gain an understanding of:

1. The major harms of tobacco use
2. Common myths concerning tobacco smoking and suggested responses
3. Assessment of tobacco dependence
4. Tobacco dependence and withdrawal
5. Treatment options and motivational tools
6. Tobacco use prevention and control measures

2.0 Prevalence

In the UK, around 7.4 million of the population aged 18 years and above smoked cigarettes, (ONS, 2018), a promising reduction from previous years, but these smokers are placing themselves and others at risk of tobacco-related diseases. The Department of Health and Social Care (England) 'Towards a smoke free generation tobacco control plan for England 2017' has placed emphasis on reducing the smoking prevalence by 2022. The aim is to reduce smoking prevalence in youth, from 8% to 3% or less; in adults, to 12% or less; in pregnancy, from 10.5% to 6% or less; and, to reduce the inequality gap between those in manual and routine occupations and the

Case Study: Developing core skills at the undergraduate level

Developing core skills in the treatment of addictions, particularly in the areas of smoking and alcohol abuse is an important for all health professionals. Core competencies can be developed early in the undergraduate curriculum of medical schools and allied health professionals with immediate benefit to patients.

Medical Student intervention promote effective nicotine dependence and tobacco healthcare (MIND-THE-GAP) (Kumar A, 2017).

An Irish study group identified that medical students were a potential untapped resource for delivering the smoking cessation education and counselling to inpatient wards.

In a small, randomised trial, students who had received standardised cessation training had better outcomes working with patients thanb standard hospital interventions. There was positive feedback from both patients and students and the method is being further investigated.

Undergraduates can develop the necessary skills quickly and incorporate them into patient care at an early stage. Although medical students are used in this example it represents an ideal opportunity to share experience with other healthcare professionals training in nursing and allied health professions.

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general population. It is estimated that around 95,800 people in the UK die annually from smoking (ONS, 2018).

3.0 The hazards of tobacco use

The use of tobacco is associated with significant morbidity at an individual and societal level (Buczowski et al, 2014). Apart from premature mortality many others live with debilitating smoking related illness. The life expectancy of a smoker is at least 10 years shorter than that of non-smokers.

3.1 Physical morbidity

Tobacco affects most organs of the body. Illnesses are various and include addiction, cancers, respiratory disorders, heart diseases, infertility and sexual dysfunction, and cataracts. Smoking contributes to 85% of all lung cancers (NHS, 2015) and contributes to cancers in the mouth, lips, throat, larynx, oesophagus, bladder, kidney, liver, stomach and pancreas.

Public Health England estimate that around 25,000 deaths each year in England are attributable to chronic obstructive pulmonary disease; 86% of these deaths are caused by smoking. (PHE, 2015).

Smoking damages heart and blood circulation, increasing risk of coronary heart disease, heart attack, stroke, peripheral vascular disease and cerebrovascular disease. Smoking is responsible for one in eight cardiovascular disease deaths in the UK. A cigarette smoker is twice as likely to have a heart attack than a non-smoker.

Smoking can cause impotence, and worsen fertility in both sexes. In males smoking damages the blood vessels supplying blood to the penis and damages sperm. Smoking whilst pregnant can lead to miscarriage, premature births, stillborn infants, low birthweight babies and increases difficulties in labour and the risk of Sudden Unexplained Death in infancy. At birth, babies of smokers will experience nicotine withdrawal causing stress and irritability (ASH, 2016).

The less developed lungs and immune systems of children make them particularly vulnerable to second-hand smoke. Second-hand smoke has been linked to around 165,000 new cases of disease among children in the UK each year (Cancer Research UK, 2016). Exposure to second-hand smoke places children at risk of ear infections, bronchitis, pneumonia, asthma and meningitis. Children with parents whom smoke are three times more likely to smoke.

3.2 Psychiatric morbidity

The association between mental illness and smoking is well documented. It is estimated that of the 10 million smokers in the UK more than 3 million will have a mental disorder (ASH, 2016)

The life expectancy in those diagnosed with depression and anxiety is believed to be ten years less than the general population and is largely attributed to smoking (Royal College of Physicians and Royal College of Psychiatrists, 2013). The prevalence of smoking amongst those with a mental disorder has not fallen in line with the general population.

Smokers with mental health disorders tend to be heavier and more dependent smokers. Reasons for the link between smoking and mental health has suggested that smokers think smoking provides psychological benefits (Parrot, 2003). The

effects of nicotine withdrawal heighten irritability, anxiety and depression which is easily relieved by the intake of nicotine through tobacco smoking. Smokers mistakenly interpret the short-lived release of dopamine by nicotine and feelings of ease as a solution to improving mental health, however the short-term fix does not address the underlying causes and symptoms of the longer-term health problem.

Stopping smoking does not lead to worsening of mental health and studies have shown that stopping smoking has been associated with improvements in mental health. When comparing those continuing to smoke with those who have stopped, improvements in positive mood and the quality of life has been demonstrated. Stopping smoking has been linked to reduced depression, anxiety and stress, and lower rates of re-hospitalization and suicide for those with mental disorders. Smoking interferes with the metabolism of psychiatric medication, particularly clozapine and olanzapine, meaning higher doses are required to produce the desired effect. Nicotine replacement therapy will not interfere with medication levels as the interaction between the medication and tobacco smoke is the cause for the lowered therapeutic effect of medications.

The report of Action on Smoking and Health (ASH, 2016), 'The Stolen Years', suggests more bespoke stop smoking interventions which include pharmacological treatment and behavioural support, have a greater impact on those with a mental disorder. ASH recommends that stop smoking medications varenicline and bupropion, which have been proved to be effective and acceptable for those with severe mental illness, should be made more widely available. Primary care is pivotal to providing stop smoking support to people experiencing mental illness as many may have little or no current contact with mental health services.

Given the range of medical conditions outlined above, it is imperative that medical practitioners have a key role in helping to reduce smoking prevalence and discourage uptake of smoking by younger generations. It is important that support to quit tobacco smoking and to remain smoke free remains an everyday issue by providing treatment and prevention so as to build a tobacco free generation. However, the British Lung Foundation report 'Less help to quit; What's happening to stop smoking prescriptions across Britain' identifies a huge decline in prescriptions for stop smoking aids, stating "This is a deeply concerning trend because the most effective treatment for tobacco dependency - medication alongside behavioural support - is now increasingly hard for smokers to access." (BLF, 2018)

4.0 Assessment and brief intervention of tobacco dependence

The early identification and assessment of tobacco use enables early initiation of treatment and increased health benefits. Brief interventions are opportunistic interventions especially designed to be provided within busy healthcare settings National Institute for Health Care and Excellence, (2018).

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A stepped guide to providing brief interventions is outlined in **Box 1:**

HAVING THE SMOKE FREE CONVERSATION

Ask about the person's smoking behaviour including administration of the Fagerstrom Test for Nicotine Dependence.

Assess motivation to quit smoking.

Support the person to shift from a state of ambivalence to considering a smoke-free lifestyle.

Briefly explain the implications and impact the smoking has on the person's condition.

Dispel the myths the person has concerning smoking.

Consider together methods to assist smoking cessation:

Assist with dealing with the physical craving of nicotine withdrawal. If appropriate, offer Nicotine Replacement Therapy (NRT), varenicline, bupropion or nortriptyline.

Assist with dealing with the psychological craving. If appropriate go through craving and how to prepare for these. (See table).

Document and re-examine progress at each appointment.

Encourage the patient to seek further support from NHS Stop Smoking Services or consider quitting in the near future.

4.1 Motivation

Assessing an individual's motivation to act on their tobacco use is important in determining the direction of treatment and management. Motivation to quit smoking and coping with relapse have been noted as the two main factors in successful cessation. Health concerns have been documented as an important motivator towards a patient acting on their tobacco addiction. Conversations with patients can include the effects of smoking on one's own health and that of others, particularly those who are pregnant or breast feeding. It is important to attempt to engage individuals assessed as having low levels of motivation to act on their tobacco dependence. The initial treatment goal would be to maintain or increase motivation levels towards a desirability for treatment. Research shows that the right moment to quit is not clear and the triggers that motivate a smoker to act differ (Buczowski, et al. 2014; West R, et; al 2001). It is likely that the combination of health concerns, health promotion and tobacco control policies restricting smoking and increasing pricing, all play a part in motivating people to stop smoking.

5.0 Treatment and Management

Tobacco is highly addictive and remains one of the most widely abused substances in the world. The most common use is by smoking tobacco, usually through manufactured cigarettes or cigars, though tobacco may also be consumed in other ways. (See Box 2)

Box 2:

TYPES OF TOBACCO USE

Smoked Tobacco

There are a number of methods that tobacco can be smoked, these include cigarettes, cigar, kretels, pipes, sticks and bidis. The most common tobacco consumption is through manufactured cigarettes. Tobacco companies have progressively engineered cigarettes to increase efficiency in delivery of nicotine. A cigarette consists of reconstituted tobacco processed with hundreds of chemicals.

Water pipe smoking

Water pipe smoking has many terms which include hookah, shisha, hubble-bubble and goza. Hookah smoke contains as many toxins as cigarette smoke.

Smokeless tobacco: Chewing tobacco and Moist/Dry Snuff

Chewing tobacco has three forms: loose, leaf, plug and twist. A portion of tobacco is placed between the cheek and gum or upper lip and crushed with teeth to release flavour and to suck on the tobacco to absorb the nicotine.

5.1 Dependence

Nicotine, the main addictive chemical inhaled in cigarette smoke enters the body on tar droplets which is then absorbed through the mucosal lining of the nose and mouth and enters the bloodstream reaching the brain. Nicotine stimulates adrenal glands to produce more adrenalin causing an adrenalin rush. A number of neurotransmitters in the body are stimulated including:

Dopamine: producing feelings of pleasure and reward.

Serotonin: aids increased alertness and appetite suppression.

Acetylcholine: improves cognition and arousal.

Vasopressin: enhances memory improvement.

Beta – endorphin: reduces anxiety

The depletion of nicotine in the blood stream occurs within 30-60 minutes and is quickly relieved by further inhalation of tobacco smoke which is delivered to the brain within 7-10 seconds.

Typical nicotine addiction is demonstrated by:

Nicotine tolerance and increasing doses to obtain desired effect.

Nicotine withdrawal symptoms.

Continuation of smoking despite health concerns.

Suspending work duties and social activity to smoke.

Failure to stop despite the desire to reduce/quit

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5.2 Withdrawal:

Symptoms of nicotine withdrawal are temporary and peak at around 48 hours and 72 hours after tobacco has been absorbed. Symptoms begin to subside over 3 to 4 weeks. The urge to

smoke or use tobacco takes longer to subside, though the worst is generally over by 12 weeks.

WITHDRAWAL SYMPTOMS	SUGGESTED RESPONSES	TRIGGERS	SUGGESTED RESPONSES
Nicotine craving	Nicotine Replacement Therapy (NRT) is readily available. Ensure correct use of product. Ensure dose is sufficient. Higher dosing of NRT is becoming more common.	Daily routine actions eg talking on the phone, watching TV, driving.	Encourage planning ahead and changing the normal routine. Encourage a smoke free environment. Encourage beginning the day with activity.
Sleep disturbance	Avoid excessive intake of caffeine and alcohol. Smokers have a higher tolerance to caffeine and brief abstinence.	Consumption of drinks associated with smoking, tea, coffee and alcohol.	Encourage switching to decaffeinated tea and coffee. Encourage avoiding alcohol in early weeks of quitting.
Anger and irritability	Identify what makes feelings of craving appear. Plan ahead to avoid these situations. If it happens, consider the anger as a temporary situation which is strongest in the initial two weeks of cessation.	Boredom	Encourage activity away from places associated with smoking. Encourage pre- planning activity for periods of free time. Encourage activity that occupies the hands.
Depressed mood	Identify feelings at point of depression (tired, lonely, bored, hungry) and address need. Symptoms persisting more than a month need further investigation.	Stressful events	Encourage visualization of stress events and an alternative stress relief. Encourage relaxation techniques.
Increased appetite and weight gain	Health benefits of quitting outweigh minor weight gain. Encourage use of NRT particularly lozenges and gum. Encourage regular exercise and healthy food choice.		Remove all smoking paraphernalia from the home. Make the home a smoke free environment. Ask friends/relations to assist in quitting.
Difficulty concentrating	Encourage planning tasks and prioritizing actions. Encourage frequent short breaks and brief exercise.		
Constipation	Ensure adequate intake of fluids. Consider changes in diet. Prescribe a laxative.		
Restlessness	Check NRT use and dose is sufficient. Encourage regular breaks and changes in routine.		
Cold symptoms and mouth ulcers	Encourage heightened awareness to personal hygiene. Consider supplements of zinc, copper, magnesium and vitamin C.		

6.0 Treatment interventions

6.1 Pharmacological interventions

Pharmacotherapy for the treatment and management of tobacco dependence is recommended for all individuals willing to engage in treatment, unless medically contraindicated or if the effectiveness is unclear. Pharmacological treatment combined with behavioural counselling have been found to increase the success of stopping smoking.

Nicotine replacement Therapy (NRT)

NRT is recommended as a first line medication for treating tobacco dependence. It exerts its effect by delivering nicotine, replacing the nicotine absorbed from tobacco, alleviating nicotine withdrawal symptoms and reducing the need for further tobacco use.

NRT is available in chewing gum, nasal spray, mouth spray, skin patches, lozenges or inhalator. All have comparable efficacy.

NRT can be prescribed and is easily bought from pharmacies and some shops. An adequate dose of nicotine must be prescribed to reduce withdrawal symptoms and prevent relapse. A heavy smoker will require higher doses of NRT, which may include 2 or more patches and the use of lozenges/gum. The recommended use of NRT is for 8-12 weeks and then gradual reduction if there have been no craving or nicotine withdrawal symptoms in the previous two weeks. Whilst little research exists on NRT use beyond 12 weeks, the recommendation is to use it as a preventative measure to returning to cigarettes for as long as necessary. This may be months or years.

Varenicline

Varenicline is a selective nicotine receptor partial agonist recommended as the first-line treatment for nicotine dependence. It blocks the effects of nicotine by selectively activating the $\alpha 4\beta 2$ nicotine acetylcholine receptor, resulting in moderate but sustained dopamine release, which is believed to be the main mechanism counteracting nicotine withdrawal symptoms.

Concerns about the neuropsychiatric safety of varenicline were diminished in a landmark study (Athenelli et al, 2016). The double blind, triple dummy, placebo-controlled and active controlled trial of varenicline study involved a large cohort of both psychiatric and non-psychiatric patients. The findings showed no difference in treatment by cohort and showed no neuropsychiatric adverse events attributable to varenicline. The findings showed that varenicline was more effective than placebo, nicotine patch and bupropion in achieving abstinence.

Bupropion

Bupropion is an anti-depressant with adrenergic and dopaminergic actions, working by inhibiting the reuptake of dopamine, serotonin and norepinephrine and thereby reducing the need for cigarettes. A number of clinical trials have proven the efficacy and safety of bupropion as a smoking cessation medication. Bupropion is a potent enzyme inhibitor and consideration should be given co-prescribing with medications such as anti-depressants, antiarrhythmics and anti-psychotics. A recent trial examined the effectiveness combining bupropion

slow release (SR) and varenicline, showing greater efficacy than varenicline alone, though suggests further trials to rule out addictive psychiatric adverse effects (Vogeler, et al 2016).

6.2 Psychological interventions

Behavioural interventions are particularly effective alongside pharmacological interventions. Stop smoking clinics and public health settings originally provided formal behavioural approaches to smoking cessation. These techniques have been developed and adapted to become more acceptable and accessible in everyday smoking cessation support such as through quitlines and internet formats. Behavioural interventions such as cognitive behavioural therapy and motivational interviewing teach smokers trying to quit to recognize high risk situations of possible relapse and develop alternative coping strategies, manage stress and improve problem-solving skills.

Motivational interviewing

Originally developed as a treatment for alcohol misuse, motivational interviewing techniques have an increased popularity in the treatment of smoking cessation. A behavioural change is encouraged by helping patients to explore and find solutions in keeping with their goals. The use of motivational interviewing by General Practitioners has been found to help more with smoking cessation than providing brief advice (Lindson-Hawley et al (2015).

Behaviour Therapy

Individual and group counselling are effective in increasing success of smoking abstinence. Developing personal strategies to use delay, avoidance and substitution to cope with cravings and high risk situations form the basis of most counselling support for smoking cessation. The development of social networks through group based treatment has proven effect.

Hypnotherapy and Acupuncture

Hypnotherapy and acupuncture are popular interventions despite their questionable efficacy. In hypnotherapy the desire to use tobacco is weakened through modification of the individual's perception of tobacco use. It is suggested that acupuncture reduces the symptoms of nicotine withdrawal.

Combinations of different medications, and combination of psychological and pharmacological treatments increases beneficial effects of each alone.

7.0 Frequent statements about tobacco use

Consider some of these statements and how you might respond:

I've been smoking so long it's not worth giving up:

The body repairs itself almost immediately smoking is stopped and risks to heart and lung diseases are reduced.

I'll put on weight if I quit smoking:

On average smokers gain 5 to 10 pounds (2.25 - 4.5 kg) after they quit smoking. Nicotine in cigarettes speeds up the metabolism and thus food is burned more slowly without cigarette use. Smoking is a habit and maybe replaced by repeated snacking often of high calorie foods. Encourage physical exercise and healthy eating.

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I like smoking, but I'm not addicted:

The Royal College of Physicians reported (2015) that nicotine is as addictive as heroin or cocaine. Repeated use of nicotine from cigarettes fools the brain into thinking that the regular release of dopamine causing a natural high is a normal state. When nicotine blood levels drop the brain craves cigarettes to reach the perceived normal state.

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9.0 Websites and useful resources

BMJ Blog Tobacco Control <https://blogs.bmj.com/tc/>

Medications interactions with Smoking and smoking cessation NSW Government, www.health.nsw.gov.au/tobacco/Publications/tool-14-medication-intera.pdf

Stop Smoking treatments www.nhs.uk

Types of Tobacco Use www.who.int/tobacco/en/atas4.pdf, Flowchart for NRT and combination NRT www.health.nsw.gov.au/tobacco/Publications/tool-06-flowchart-for-nrt.pdf

National Centre for Smoking Cessation and Training (NCSCT) - supports the delivery of effective evidence-based tobacco control programmes and smoking cessation interventions provided by local stop smoking services. <http://www.ncsct.co.uk/>

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