

Evidence-based smoking cessation and the family doctor

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ABSTRACT

Background

In Malta smoking is widespread and associated with significant morbidity and mortality. Family doctors are well-placed to provide smoking cessation advice to their patients.

Objective

The aim of this review is to assist family doctors in helping their patients quit smoking by informing them of evidence-based therapies.

Method

The online Cochrane Database of Systematic Reviews within the Cochrane Library was searched for meta-analyses and systematic reviews related to various smoking cessation interventions.

Results

Effective non-pharmacological interventions include individual counselling (face to face and over the telephone), text-messaging and group therapy. Smoking cessation medications that are successful and licensed comprise nicotine replacement therapy, bupropion and varenicline. Combining behavioural support and pharmacotherapy increases smoking cessation success.

Conclusion

By following the 5As technique for smoking cessation based on evidence-based interventions, family doctors can have a considerable influence on the health of smokers by helping them to quit.

Key words

Evidence-based medicine; smoking cessation; family practice.

INTRODUCTION

To ensure that clinical practice today provides effective health care, it should be based on evidence, with the latter being attained from scientific knowledge, research / audit findings and verified experiences (Kernohan, 2006). In 1996, Sackett and colleagues defined evidence-based medicine (EBM) as the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. They went on to specify that successful EBM must comprise the best available external clinical evidence, clinical expertise and the involvement of patient choice, with best evidence provided by research that is clinically relevant and carried out using sound methodology (Sackett et al., 1996).

The practice of EBM thus involves a process of methodically locating, appraising, and making use of recent research findings in order to inform the taking of clinical decisions (Rosenberg and Donald, 1995). As the above may prove to be a laborious process for busy clinicians, the latter initially may refer to clinical guidelines drawn up by reputable organisations. If a guideline relevant to a certain clinical topic is not found, one may then search in online databases for systematic reviews (of quality studies with sound methodology) and/or meta-analyses (systematic reviews where data from quality studies are pooled and re-analysed as if one large study). (Sandholzer, 2004; Duke University, 2013)

BACKGROUND

In 2008, the European Health Interview Survey revealed that one third of the Maltese population had smoked daily or almost daily for at least one year. Males were approximately two times more likely than females to smoke daily, with occasional smokers being slightly more likely to be female than male. Passive smoking was a problem, with about a quarter of the respondents claiming to be somewhat exposed at home or in public. (Department of Health Information and Research, 2008)

The average annual smoking-attributable mortality in Malta during 1999-2013 was estimated to be 396 deaths in males (42% from cancer, 40% due to cardiovascular disease and 18% from respiratory diseases) and 111 deaths in females (37% due to cancer, 47% from cardiovascular disease and 16% due to respiratory diseases). (Department of Health Information and Research, 2014)

Therefore smoking is a widespread problem in Malta associated with significant morbidity and mortality. As patients see their family doctor four times a year on average, the latter has ample opportunities to practice preventive medicine in daily practice (McWhinney, 1997). The promotion of health and well-being by applying the appropriate strategies in fact is one of the core competences of the family doctor (WONCA Europe, 2005). The aim of this review thus is to assist family doctors in providing smoking cessation advice consisting of interventions that have been proved to work.

METHOD

As meta-analyses and systematic reviews are considered to be at the top of the hierarchy of study designs (Duke University, 2013), the online Cochrane Database of Systematic Reviews (CDSR) within the Cochrane Library (<http://www.cochranelibrary.com>) was searched for such designs related to various smoking cessation interventions. The Cochrane Library is maintained by a global independent network of researchers, professionals, patients, carers, and people interested in health, that gathers and summarises the best evidence from research to help make informed choices about treatment (Cochrane Library, 2016).

The CDSR systematic reviews are of randomised controlled trials (RCTs) or quasi-RCTs that test the efficacy of a drug or service where subjects are randomly allocated to receive one or other of alternative interventions. These reviews provide the risk ratio (RR), which gives the risk of a certain event happening in one group compared to the risk of the same event happening in another group, and the confidence interval (CI) within which results of a trial fall given a set probability (usually taken as 95%).

RESULTS

Eighty-two reviews related to 'tobacco' were found in the CDSR. Limiting this scrutiny to reviews of treatment modalities that can be used by family doctors to help otherwise-healthy adults in the community quit smoking, 29 different interventions were identified and classified

as follows for ease of reference: what doesn't work, what makes no difference, what's still uncertain, and what works.

1. WHAT DOESN'T WORK

(a) Non-pharmacological

As anxiolytics may assist anxiety associated with smoking, Hughes, Stead and Lancaster (2000) identified and reviewed 6 trials of the effect of anxiolytic drugs on smoking cessation for at least six months, but concluded that none showed strong evidence that they were effective.

Aversion therapy (such as rapid smoking) was reviewed by Hajek and Stead (2001), who, after identifying 25 relevant RCTs, concluded that there is insufficient evidence regarding its efficacy.

Hypnotherapy is supposed to help cessation by abating the craving to smoke or strengthening the determination to quit. However there is not enough evidence from 11 RCTs that hypnotherapy could be as effective as counselling in this regard (Barnes et al., 2010).

Although internet-based interventions are popular in this information technology age, when compared with self-help or usual care such interventions did not show consistent effects from 28 quasi/RCTs which were found to be at risk of bias (Civljak et al., 2013).

Acupuncture, acupressure, laser therapy and electrical stimulation have not been found to result in smoking cessation in the long term (for at least six months) from 38 identified RCTs that only provided inconsistent and biased evidence (White et al., 2014).

Exercise programmes were not found to aid smoking cessation in the long term in an analysis of 20 trials by Ussher, Taylor and Faulkner (2014) who identified problems with study design, bias risks and study differences.

(b) Pharmacological

Nicobrevin, a product containing quinine, menthyl valerate, camphor and eucalyptus oil, had been promoted in the past as a smoking cessation aid. However, as no RCTs with long term follow-up were found, there is no evidence that it works (Stead and Lancaster, 2006).

Cannabinoid type 1 receptor antagonists (rimonabant and taranabant) restore the balance of the endocannabinoid system and were developed for the treatment of weight gain. Their mode of action was thought to perhaps be of help with smoking cessation, but a review of 3 RCTs concluded that, while rimonabant may increase the quit-rate by 50%, the evidence for

maintaining abstinence was uncertain. Both rimonabant and taranabant were withdrawn in 2008 due to their side-effects. (Cahill and Ussher, 2011)

Lobeline, an alkaloid produced from Indian tobacco leaves, was not found to help people stop smoking in a review by Stead and Hughes (2012), who could identify no adequate long-term trials.

Silver acetate, in the form of lozenges, gum and spray, produces an unpleasant metallic taste with smoking and thus was intended to help smokers to quit. However there is little evidence from 2 RCTs that it does result in cessation of smoking (Lancaster and Stead, 2012).

Nicotine vaccines have been designed to reduce effects of nicotine on the brain, with less reward from smoking. Four RCTs comparing nicotine vaccines to placebo showed that the former did not result in long-term quitting (Hartmann-Boyce et al., 2012), with the authors of the analysis recommending that further trials of such vaccines are needed.

The long-acting opioid antagonist, naltrexone, was not found to assist smoking cessation in the long term from 8 trials with over 1200 participants (David et al., 2013).

2. WHAT MAKES NO DIFFERENCE

Studies comparing cutting down the number of cigarettes before quitting to the traditional abrupt quitting 'cold turkey' gave similar cessation rates (10 RCTs; number of participants [N] = 3760; RR= 0.94; 95% CI 0.79 to 1.13), with the authors of the analysis (Lindson-Hawley, Aveyard and Hughes, 2012) advising that further studies needed to be carried out regarding the most effective method of cutting down before quitting.

3. WHAT'S STILL UNCERTAIN

(a) Non-pharmacological

Stage-based interventions for smoking cessation are based on the transtheoretical model of behaviour change that suggests that advice to smokers should be tailored to their stage of readiness to quit (precontemplation, contemplation, preparation, action and maintenance). From a review of the evidence from 41 stage-based trials of over 33,000 smokers measuring long-term quit rates, Cahill, Lancaster and Green (2010) found that "providing self-help or counselling support to smokers trying to quit is more effective than 'usual care' or simple observation. However, the extra value of fitting that support to the smoker's stage of change is currently unclear".

(b) Pharmacological

Mecamylamine (developed as an antihypertensive) is a nicotine antagonist and a review was carried out to see if it was of use as an aid to long-term smoking cessation. As only 2 small trials (N=128) were identified that suggested that mecamylamine in combination with nicotine may be superior to nicotine alone in helping smokers quit, the authors of the review recommended that larger studies are required (Lancaster and Stead, 1998).

Cytisine is a natural nicotine receptor partial agonist extracted from seeds of the Golden Rain acacia that aims to reduce withdrawal symptoms and smoking satisfaction. Two RCTs (N=937) found that it increases the chances of quitting, although absolute quit rates were modest at around 9% (Cahill et al., 2016).

Electronic cigarettes (ECs) are electronic devices that produce an inhalable aerosol through heating a liquid usually composed of propylene glycol and glycerol, with or without nicotine. Two RCTs (N=662) have found that ECs delivering nicotine help smokers to quit long-term compared with placebo ECs. However, confidence in the result is rated 'low' by standards developed by the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) Working Group due to the small number of trials, low event rates and wide confidence intervals (Hartmann-Boyce et al., 2016).

4. WHAT WORKS

(a) Non-pharmacological interventions

The provision of printed self-help materials without any other contact was found by Hartmann-Boyce, Lancaster and Stead (2014) to increase quit rates compared to no intervention by about 20% from 11 RCTs with 13,241 participants (RR 1.19; 95% CI 1.04 to 1.37).

Motivational interviewing (MI) is a style of counselling that is directive and patient-centred and aims to explore and overcome ambivalence about change in behaviour. A meta-analysis of 28 RCTs (N=16,803) of MI compared to usual care or brief advice showed an increase of about 25% in quitting (RR 1.26; 95% CI 1.16 to 1.36). The authors (Lindson-Hawley, Thompson and Begh, 2015) however advised caution in interpreting these results because of differences between studies regarding their features and treatment delivery.

Individual counselling compared to minimal behavioural intervention in 22 quasi/RCTs (RR 1.39; 95% CI 1.24 to 1.57) was found to increase the rate of quitting by 40% (Lancaster and Stead, 2005). Telephone counselling through calls to a helpline was also found

to increase the quit rate by 40% in a review of 9 quasi/RCTs (N>24,000; RR 1.37; 95% CI 1.26 to 1.50) by Stead, Hartmann-Boyce et al. (2013). Mobile phone text-messaging in high-income countries increases long term quit rates by nearly 70% compared with control programmes according to 12 quasi/RCTs (N= 11,885; RR 1.67; 95% CI 1.46 to 1.90) reviewed by Whittaker et al. in 2016.

While brief advice intervention from a medical practitioner versus usual care or no advice increases the rate of quitting long term by nearly 70% (17 RCTs; RR 1.66; 95% CI 1.42 to 1.94) (Stead, Buitrago et al., 2013), group therapy compared to self-help was found to double the chances of quitting from 13 RCTs (N=4375, RR 1.98; 95% CI 1.60 to 2.46) analysed by Stead and Lancaster (2005).

(b) Pharmacological interventions

Clonidine is a centrally-acting antihypertensive that was found to increase the rate of quitting by 60% from 6 RCTs (RR 1.63; 95% CI 1.22 to 2.18). However, due to the limited number of studies with potential biases, and the drug's important side-effects, its use for smoking cessation is limited (Gourlay, Stead and Benowitz, 2004).

Nicotine replacement therapy (NRT) aims to help the shift from smoking to quitting by replacing nicotine from cigarettes and thus decrease both the stimulus to smoke and the symptoms resulting from nicotine withdrawal. Such therapy is available in different forms (patch, gum, spray, inhaler and lozenges/tablets). Stead et al. (2012) established that NRT increase quit rates by 50-70% from 117 RCTs with over 50,000 total participants (RR 1.60; 95% CI 1.53 to 1.68).

The tricyclic antidepressant nortriptyline was found to double the chances of long term cessation, but from only 6 RCTs with a total of 975 participants (RR 2.03; 95% CI 1.48 to 2.78). Due to adverse effects, nortriptyline is not licensed as a smoking cessation medication. There is more evidence available regarding bupropion, another antidepressant which inhibits norepinephrine-dopamine reuptake and is licensed also to treat smoking cessation. Forty-four RCTs (N=13,728; RR 1.62; 95% CI 1.49 to 1.76) showed that it increases the rate of long term cessation by 60% (Hughes et al., 2014).

Varenicline, a synthetic nicotine receptor partial agonist, was specifically developed and approved as a smoking-cessation therapy in 2006. It has been ascertained from 27 RCTs (N=12,625) that varenicline increases the chances of successfully quitting long-term

by two to three-fold compared with placebo (RR 2.24; 95% CI 2.06 to 2.43) (Cahill et al., 2016).

(c) Pharmacological and behavioural interventions together

Adding behavioural support (face to face or by telephone) to pharmacotherapy may increase the chance of successful quitting by 10 - 25% as a result of pooling of results by Stead, Koilpillai and Lancaster (2015) from 47 quasi/RCTs (N>18,000; RR 1.17; 95% CI 1.11 to 1.24).

Combined behavioural support (such as brief advice and counselling) and pharmacotherapy (e.g. NRT, varenicline and bupropion) increases smoking cessation success by over 80% compared to minimal interventions or usual care. This conclusion is based on high quality evidence from 52 quasi/RCTs (N=19,488) with a RR of 1.83 and a 95% CI of 1.68 to 1.98 (Stead et al., 2016).

CONCLUSION

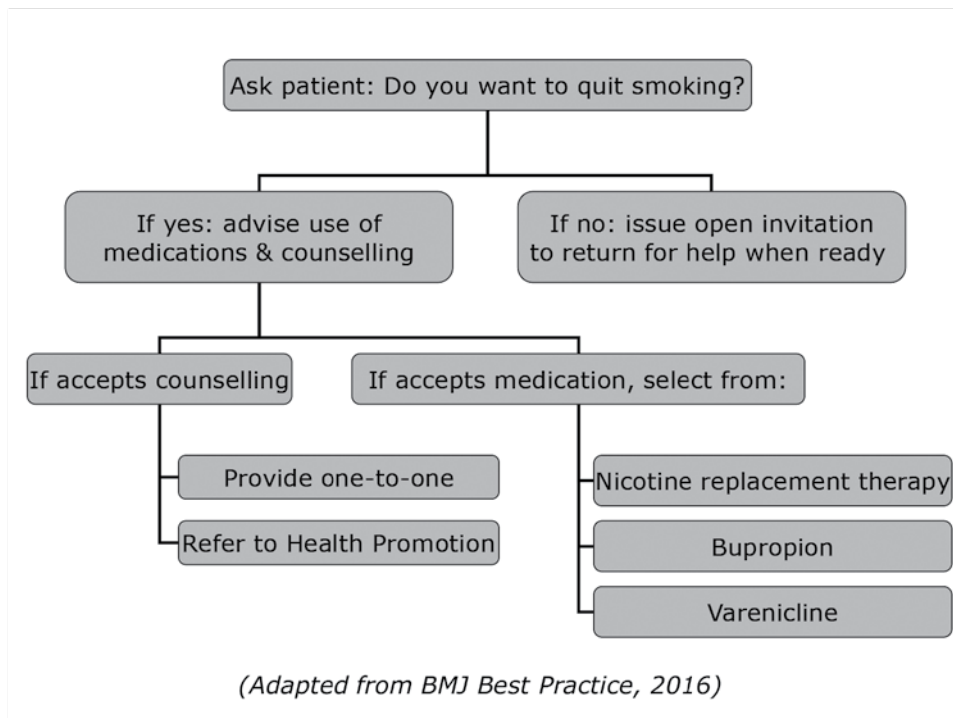
The website BMJ Best Practice (<http://bestpractice.bmj.com>) provides access to the latest research evidence, guidelines and expert opinion to aid diagnosis and treatment decisions. Regarding smoking cessation, it recommends the following 5-step technique for clinicians to follow (Best Practice, 2016):

- **Ask:** patients if they smoke;
- **Advise:** smokers on how quitting can help them achieve their goals;
- **Assess:** whether the patient is ready to attempt to stop and, if ready, how confident he/she is about success;
- **Assist:** if not ready to quit, inform the smoker that help is always available when he/she is ready; if willing to stop, provide a menu of pharmacotherapy / counselling;
- **Arrange** follow-up through a telephone counselling line, group or individual counselling, return visits and telephone calls.

Individual counselling and group therapy clinics are available in Malta from the Health Promotion Unit within Malta's Ministry for Health that may be contacted as follows:

- website: <https://health.gov.mt/en/health-promotion/Pages/home.aspx>;
- email: health.pro@gov.mt;
- telephones: 23266000 (main), 23266116 (tobacco support officer), 80073333 (quitline).

Figure 1: Smoking cessation flowchart for the clinician



Preventive measures in tobacco control involves knowing which diseases are related to smoking, informing patients on the dangers of smoking and the benefits of quitting, and advising all patients who smoke to quit and how (Sammut, 2006). Giving up smoking is probably the biggest single thing smokers can do in their life to improve their health, and the intervention of family doctors in this respect (see Figure 1) will probably be the most important single influence they can have on the health of patients who smoke (Raw, 1988).

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