

# Smoking Cessation Research Review™

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Issue 5 – 2012

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## Welcome to the fifth edition of Smoking Cessation Research Review.

Important benefits are associated with smoke-free homes, according to research presented in this edition of Smoking Cessation Research Review. For instance, a US-based study suggests that the increasing prevalence of smoke-free homes is associated with the decreasing number of infant deaths attributable to secondhand smoke. Another nationwide study from the US shows that children who live in households where they are exposed to tobacco miss more days of school than do children living in smoke-free homes. Furthermore, research from the University of Michigan, USA, reports an increased risk of early pregnancy loss and also failed *in vitro* fertilisation among women exposed to secondhand tobacco smoke compared to nonexposed controls.

We hope you find this edition stimulating reading, and we welcome any comments or feedback.

Kind regards,

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## Nicotine therapy sampling to induce quit attempts among smokers unmotivated to quit: a randomized clinical trial

**Authors:** Carpenter MJ et al

**Summary:** These researchers compared the effects of a practice quit attempt (PQA) intervention for smoking cessation with or without nicotine replacement therapy (NRT) sampling, in a sample of 849 smokers currently unmotivated to quit.

**Comment:** I remember conducting a study a few years ago that involved smokers having to abstain for 24 hours to test the withdrawal relief potential of some new NRT products. After the study had finished we provided help for those participants who wanted to quit. Some of them commented that participating in the study was really useful in preparing for quitting. Given that the study did not involve helping people to stop smoking I was somewhat confused and sought clarification. These participants were seeing the 24-hour periods of abstinence as PQAs, where there was no pressure to abstain for any longer than a day. Many had not managed to quit for even this long in the past and felt more confident in quitting for longer periods.

This study looked at the outcomes of PQAs alone or made with NRT. Those who used NRT were more likely to make a PQA and were more likely to achieve a short period of abstinence. Although there was no difference in 6-month quit rates this may be a good approach for people who do not want to quit smoking. Getting them to have a PQA may actually get them to give quitting a go and may increase their self-efficacy in the future. Of course, those who do want to quit smoking should be supported in doing this as soon as possible.

**Reference:** *Arch Intern Med.* 2011;171(21):1901-7.

<http://archinte.ama-assn.org/cgi/content/abstract/171/21/1901>



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## Chronic disease management for tobacco dependence: a randomized, controlled trial

**Authors:** Joseph AM et al

**Summary:** Telephone-based chronic disease management (1 year; longitudinal care [LC]) was compared with evidence-based treatment (8 weeks; usual care [UC]) for tobacco dependence in 443 current smokers who each received 5 telephone counselling calls and nicotine replacement therapy (NRT) by mail for 4 weeks. They were then randomised to UC (2 additional telephone calls) or LC (continued counselling and NRT for a further 48 weeks). At 18 months, 30.2% of the LC group and 23.5% of the UC group reported 6 months of abstinence from smoking (unadjusted,  $p=0.13$ ). In multivariate analysis, the LC treatment arm, quit attempts in the previous year, cigarettes per day at baseline and cigarettes smoked in the past week (as reported at day 21) were significantly associated with prolonged abstinence at 18 months. Among subjects who did not quit smoking, there was more smoking reduction in the LC group compared with the UC group (significant only at 12 months). Compared with UC, LC was associated with more counselling calls (mean, 16.5 vs 5.8 calls;  $p<0.001$ ), longer total duration of counselling (283 vs 117 minutes;  $p<0.001$ ), and more NRT (4.7 vs 2.4 boxes of patches;  $p<0.001$ ).

**Comment:** Tobacco dependence is often referred to as a chronic relapsing disease. Most smokers have tried to quit, yet few, especially the more dependent smokers, are successful the first time around.

This study used a relatively simple smoking cessation approach consisting of telephone-based support and NRT that was delivered via mail. However, the intervention arm adopted a 'chronic' or 'long-term' care approach that we'd more commonly associate with the management of diabetes, hypertension or COPD, for example. Those smokers in the chronic care arm who relapsed were encouraged to make repeated quit attempts and received more counselling than those smokers in the usual care arm.

The authors show that receiving the 'chronic care' type treatment was a predictor of being abstinent for at least 6 months at 18 months' follow-up. This type of approach may be particularly beneficial for those highly dependent smokers who have tried and failed numerous times in the past.

**Reference:** *Arch Intern Med.* 2011;171(21):1894-1900.

<http://archinte.ama-assn.org/cgi/content/abstract/171/21/1894>

## Incremental efficacy of adding bupropion to the nicotine patch for smoking cessation in smokers with a recent history of alcohol dependence: results from a randomized, double-blind, placebo-controlled study

**Authors:** Kalman D et al

**Summary:** 148 smokers with between 2 and 12 months of alcohol abstinence received either nicotine patch + bupropion or nicotine patch + placebo bupropion. Between-group differences were not significant for 7-day point prevalence quit rates in the patch + bupropion versus patch + placebo conditions at week 24 (6% and 11%, respectively), nor for prolonged abstinence and time to first smoking lapse. However, those in the bupropion group who accurately "guessed" that they were receiving bupropion were more likely to remain abstinent than those who incorrectly believed they were receiving placebo.

**Comment:** There is good rationale for combining nicotine replacement therapy (NRT) and bupropion. NRT is a full agonist of nicotinic acetylcholine receptors. Binding to these receptors on dopaminergic neurons in the ventral tegmental area of the midbrain results in dopamine release in the nucleus accumbens, thereby ameliorating symptoms of tobacco withdrawal. Bupropion (Zyban) is an atypical antidepressant whose mechanism of action is not completely understood. However, it is known to reduce the severity of tobacco withdrawal symptoms, making quitting easier. Given their different modes of action it would make sense to combine these products. There are no safety concerns regarding this combination, however, there are no data showing that this approach increases quit rates. The results of this study add data to support this. Despite this evidence I sometimes hear that 'chewing a piece of nicotine gum really helps to deal with breakthrough craving'. Smokers can be reassured that bupropion is effective on its own and that they should not need to combine bupropion and NRT. However, if people report that they are getting benefit from using short-acting NRT to control urges to smoke there is no harm in this approach.

**Reference:** *Drug Alcohol Depend.* 2011;118(2-3):111-8.

<http://www.sciencedirect.com/science/article/pii/S0376871611001311>

## Effect of an electronic nicotine delivery device (e-Cigarette) on smoking reduction and cessation: a prospective 6-month pilot study

**Authors:** Polosa R et al

**Summary:** Forty regular smokers with no interest in quitting were provided with electronic cigarettes (e-Cigarettes) and followed-up at weeks 4, 8, 12 and 24. Thirteen participants (32.5%) sustained 50% reduction in the number of cigs/day, from a median of 25 at baseline to 6 at week 24 ( $p<0.001$ ). Five participants (12.5%) sustained 80% reduction, from a median of 30 cigs/day to 3 cigs/day ( $p=0.043$ ). Of 9 participants (22.5%) who were abstinent at week 24, 6 were still using the e-Cigarette by the end of the study. Combined sustained 50% reduction and smoking abstinence was reported in 22 participants (55%), with an overall 88% fall in cigs/day. Mouth (20.6%) and throat (32.4%) irritation, and dry cough (32.4%) were common, but diminished substantially by week 24.

**Comment:** There is growing interest in electronic cigarettes. This, like many of the other published studies, is primarily looking at proof-of-concept to see if there may be a benefit of undertaking larger clinical trials. The results of this study, like most of the others, suggest that these devices are worth investigating further.

This study recruited people who were unwilling to quit smoking. Almost a quarter of them (9 out of 40) were no longer smoking regular tobacco at 6 months' follow-up. Three had quit smoking tobacco and e-cigarettes, while the other 6 were still using the e-cigarettes. Current opinion is that these e-cigarettes are safer than smoked tobacco. However, we do not yet know the long-term safety of e-cigarette use, or indeed if they will help people quit regular tobacco use.

**Reference:** *BMC Public Health.* 2011;11:786.

<http://www.biomedcentral.com/1471-2458/11/786/abstract>

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## Paying women to quit smoking during pregnancy? Acceptability among pregnant women

**Authors:** Lynagh M et al

**Summary:** These researchers explored the acceptability of incentives for reducing smoking in pregnant women and the perceived size of incentive that would encourage smoking cessation during pregnancy. In the study cohort of 213 pregnant women, the majority (60%) did not agree that paying pregnant smokers to quit is a good idea; 62% were not willing to pay smokers any amount to quit. Smokers were significantly more likely to have more favourable views about incentives than nonsmokers and considered payments of between \$100 and >\$1,000 acceptable as reward for quitting smoking.

**Comment:** The Cochrane Review on interventions for smoking cessation in pregnancy suggests that financial incentives may be a useful tool to assist women who smoke to quit during pregnancy.

The authors of this study surveyed a sample of 213 pregnant women attending an antenatal unit. This sample consisted of nonsmokers (n=183) and smokers (n=30). Overall, there was low support for such an approach. However, as one might expect, there was a difference between smokers and nonsmokers. For example, 52% of smokers compared to 29% of nonsmokers agreed that paying pregnant women to quit smoking would be an effective way to reduce the rates of smoking in pregnancy (adjusted odds ratio = 3.47; 95% CI: 1.68–7.28). Given that it is the current smokers that are the target audience, aren't their views the most important?

More generally the data regarding incentives to quit smoking is mixed and does not appear to increase long-term quitting in a general population of smokers. Essentially, incentives work for as long as they are provided. It appears that when the incentive stops people relapse. However, incentives that encourage attendance at cessation programmes and those incentive schemes that are more complex (e.g. ones where the reward increases the longer you go without a single puff) show some promise and need exploring further. Smoking in pregnancy, especially among Māori women and women from lower socioeconomic groups, is a priority.

**Reference: Nicotine Tob Res. 2011;13(11):1029-36.**

<http://ntr.oxfordjournals.org/content/13/11/1029.abstract>

## Monoamine oxidase inhibitory activity in tobacco smoke varies with tobacco type

**Authors:** Lewis AJ et al

**Summary:** Monoamine oxidase (MAO) inhibitory activity was measured in tobacco extracts from different brands of cigarette and loose-leaf tobacco commonly available in New Zealand. At a physiologically relevant nicotine concentration of 0.2 µM, all extracts inhibited MAO-A and MAO-B by between 4% and 12% in a standard assay. Significantly more MAO activity per mg of nicotine was found in the samples from loose-leaf tobacco than samples from factory-made cigarettes. When inhibitory activity was calculated on a per mg of tar basis, there was no significant difference between loose-leaf tobaccos and factory-made cigarettes.

**Comment:** The primary dependence-producing property of nicotine is via its action of dopaminergic neurons in the midbrain, giving rise to dopamine release in the nucleus accumbens. It is the pairing of this dopamine release and subsequent biological reward with the behaviour of smoking that contributes to the difficulty in stopping smoking.

Although nicotine is the primary cause of tobacco dependence there are other substances in tobacco smoke that are likely to contribute; MAO inhibitors are a good example. Dopamine is broken down by MAO. Substances that inhibit this enzyme give rise to 'increased levels' of dopamine. Therefore, the MAO inhibitors in tobacco smoke might potentiate the addictive effects of nicotine.

The authors of this New Zealand study not only show that substances in tobacco smoke inhibit the MAO enzymes by up to 12%, but that roll-your-own tobacco appears to have greater MAO-inhibiting activity than tobacco in factory-made cigarettes. These findings suggest that those who smoke RYO tobacco (who are more likely to be those from lower socioeconomic groups) may find it more difficult to quit.

**Reference: Tob Control. 2012;21(1):39-43.**

<http://tobaccocontrol.bmj.com/content/21/1/39.abstract>

## Increasing prevalence of smoke-free homes and decreasing rates of sudden infant death syndrome in the United States: an ecological association study

**Authors:** Behm I et al

**Summary:** These researchers examined the relation between concurrent temporal trends in sudden infant death syndrome (SIDS) rates and prevalence of smoke-free households with infants in the USA, controlling for an important risk factor, infant supine sleep position. Annual state-specific SIDS cases were computed using period linked birth/infant death files; the prevalence of 100% smoke-free homes with infants using Tobacco Use Supplement to the Current Population Survey data, and percentage of infants in supine sleep position from National Infant Sleep Position data, for years 1995–2006. For every 1% absolute increase in the prevalence of homes that were smoke-free with infants, SIDS rates decreased 0.4% between 1995 and 2006, while controlling for supine sleep position. The study authors conjecture that 4,402 to 6,406 combined excess SIDS cases may have been caused by residential secondhand smoke exposure.

**Comment:** New Zealand has made good progress in achieving smoke-free homes. Exposure to secondhand smoke is associated with many risks to health, especially among infants and children.

These data suggest that smoke-free homes are associated with a decreased number of infant deaths attributable to secondhand smoke.

Having a smoke-free home remains an important public health message. Of course, having smoke-free people living in these homes is even better.

**Reference: Tob Control. 2012;21(1):6-11.**

<http://tobaccocontrol.bmj.com/content/21/1/6.abstract>

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## School absenteeism among children living with smokers

**Authors:** Levy DE et al

**Summary:** Data from schoolchildren aged 6–11 years identified in the 2005 US National Health Interview Survey (NHIS) were subjected to multivariate analyses to assess the relationships between adult-reported household smoking and child health and school absenteeism. Children living with 1 or  $\geq 2$  adults who smoked in the home had 1.06 and 1.54 more days absent from school per year, respectively, than children living with 0 smokers in the home. Living with  $\geq 2$  adults who smoked in the home was associated with increased reports of having  $\geq 3$  ear infections in the previous 12 months (adjusted odds ratio [aOR] 2.65) and having a chest cold in the 2 weeks before interview (aOR 1.77) but not with having vomiting/diarrhoea in the previous 2 weeks (aOR 0.93). Caregivers' time tending children absent from school due to smoke exposure-related illness was calculated to cost \$227 million per year.

**Comment:** The authors present some interesting data regarding secondhand smoke (SHS) exposure in the home and children being absent from school. SHS exposure in children is associated with an increased risk of respiratory illness and middle ear infections. Results from this research show that having 2 or more adults who smoke at home roughly doubles the odds of recurrent ear infections and chest colds. Sick children, of course, need caring for and this has significant financial burden on the family.

**Reference:** *Pediatrics*. 2011;128(4):650-6.

<http://pediatrics.aappublications.org/content/128/4/650.abstract>

## Secondhand tobacco smoke exposure is associated with increased risk of failed implantation and reduced IVF success

**Authors:** Benedict MD et al

**Summary:** Researchers from the University of Michigan investigated the relationship between secondhand smoke exposure and implantation failure in 1,909 nonsmoking women who underwent 3,270 *in vitro* fertilisation treatment cycles between 1994 and 2003. The analysis revealed a significant increase in failed implantations in women exposed to secondhand smoke compared to nonexposed controls (odds ratio [OR] 1.52; risk ratio [RR] 1.17) and a significant decrease in live births among the exposed women (OR 0.75; RR 0.81).

**Comment:** Staying on the topic of secondhand smoke (SHS) exposure, this study adds to the literature on the associated health risks of SHS. Women who smoke are strongly advised to quit prior to receiving IVF. Partners who smoke are also encouraged to do the same. These new data suggest that we should be extending our advice to others who smoke around women undergoing IVF treatment. Another good reason for smoke-free homes.

**Reference:** *Hum Reprod*. 2011;26(9):2525-31.

<http://humrep.oxfordjournals.org/content/26/9/2525.abstract>

## Effects of physical activity on teen smoking cessation

**Authors:** Horn K et al

**Summary:** Adding physical activity to teen smoking-cessation programmes may enhance cessation success, particularly among boys, according to this research involving 233 West Virginia high school students (aged 14–19 years).

**Comment:** It is known that exercise can assist adults to stop smoking, at least in the short-term. This study investigated the effect of an exercise programme provided in addition to a smoking cessation programme for teenagers. The teens in the exercise programme received a challenge log, which listed physical tasks and activities they had to complete each week. They were also provided with pedometers and asked to record the number of steps each day.

The results are encouraging, especially for boys. Exercise plus smoking cessation support was associated with greater 7-day point prevalence abstinence rates at 6 months compared to smoking cessation support alone.

**Reference:** *Pediatrics*. 2011;128(4):e801-11.

<http://pediatrics.aappublications.org/content/128/4/e801.abstract>

*Independent commentary by Dr Hayden McRobbie, Senior Lecturer in the School of Public Health and Psychosocial Studies, Auckland University of Technology and Honorary Senior Lecturer in the School of Population Health at the University of Auckland. He is also a Reader in Public Health Interventions at Queen Mary University of London.*

For full bio [CLICK HERE](#).

**Conflict of interest statement:** Dr McRobbie has received research funding from, and provided consultancy to, manufacturers of smoking cessation medications.

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