

What is the impact of extending treatment on cessation?

There is some suggestion that more intensive programmes result in higher quit rates than briefer treatments. Consequently, guidelines generally recommend longer treatments over shorter treatments to increase the likelihood of cessation.¹ However, this may not apply to all types of smoking cessation interventions as incremental increases in effectiveness may either be very small or not always be in proportion to the accompanying increase in effort to deliver a given intervention, resulting in reduced cost-effectiveness.^{2;3} In addition, increasing length of treatment may also reduce reach and entice fewer smokers to participate, depending on the treatment modality.⁴ The following provides an overview of the impact of treatment length on effectiveness in different interventions.

1) Behavioural interventions

1.1) Face-to face support

- Current guidelines suggest that there is a strong dose-response relationship between session length and number of sessions (at least four sessions of more than 10 minutes each).⁴ However, despite some evidence of a dose-response relationship meta-analyses suggest that increasing length of face-to-face counselling beyond 90 minutes or above eight sessions does not substantially improve long-term outcomes (see Figure 1A and B).

Figure 1A: Abstinence as a function of contact time

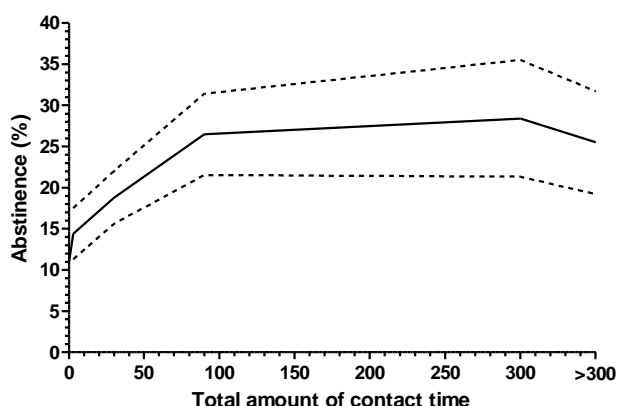
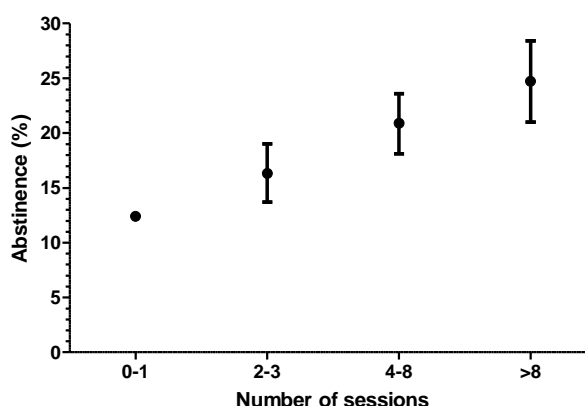


Figure 1B: Abstinence as a function of number of sessions



Data come from USDHSS (2000)⁵; Error bars and lines indicate 95% confidence intervals (CI)

- Further evidence comes from studies on relapse prevention in which participants, who have successfully stopped smoking, are provided with additional support. Results indicate that while there is an impact on short-term follow-up more than doubling abstinence (Odds ratio 2.55, 95%CI 1.58-4.11), this impact is lost at longer follow-ups.⁶ This lack of long-term benefit applies to those who are or are not assisted quitters and studies which tested extended face-to-face contact did not improve relapse rates (Risk Ratio 1.01, 95%CI 0.80-1.27).⁷

1.2) Telephone counselling

- The findings relating to telephone counselling are similar to face-to-face counselling insofar as there is also evidence of a weak dose-response relationship. This increase in effectiveness as function of the number of calls made tends to apply both to proactive counselling when a counsellor initiates the phone call⁸ and less so to reactive telephone counselling when smokers initially call up a quitlines.⁹ Figure 2 provides the associated risk ratios of interventions with different number of sessions based on proactive telephone counselling and suggests that at least three sessions are required to be effective.

Figure 2: Effect of number of proactive counselling calls on smoking cessation^a

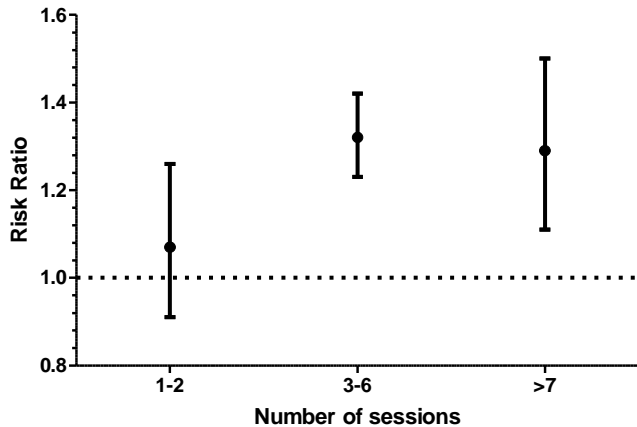
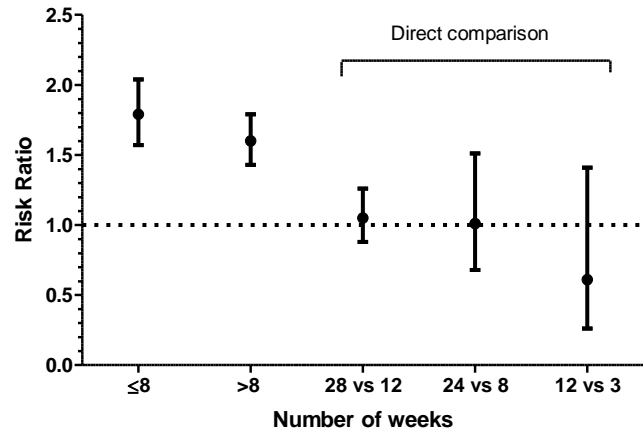


Figure 3: Association of length of nicotine patch provision with abstinence^b



^aData come from Stead et al (2013)⁸; ^bData come from Stead et al (2012)¹⁰, the CEASE trial¹¹, Schnoll et al (2010)¹² and Bolin et al (1999)¹³

- Evidence from studies on relapse prevention suggests that telephone counselling added onto the end of other treatments does not increase medium or long-term follow-up cessation rates.^{6;7}

1.3) Online/electronic support

- The length of treatment support provided in online interventions for smoking cessation does not appear to be related to their effectiveness^{14;15} and extending support does not improve relapse rates.¹⁶ This lack of any effect may be due to high attrition rates observed in electronic interventions.¹⁷
- Given the novelty of other (mainly mobile-based) electronic interventions, there is little information on the effect of treatment intensity.¹⁸

2) Pharmacological interventions

2.1) Nicotine replacement therapy

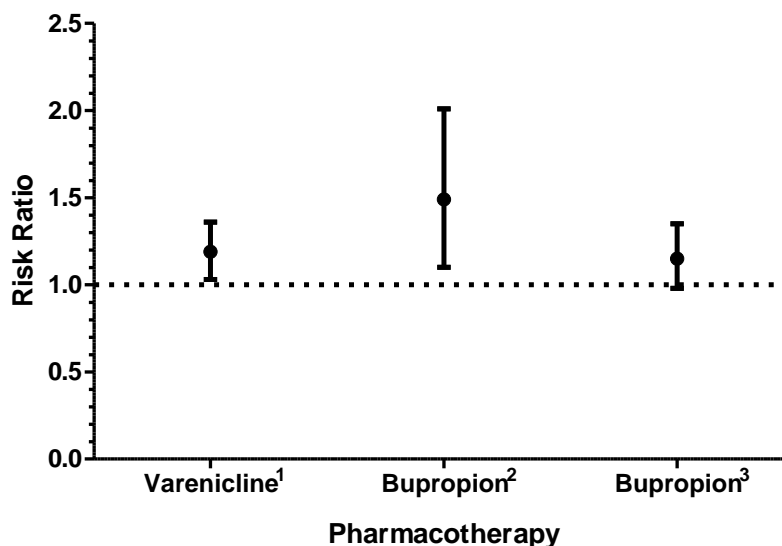
- There is generally relatively little evidence to suggest that longer provision of NRT improves abstinence rates based on indirect comparison of treatment effects between studies of less than or more than eight week duration (see Figure 3).¹⁰ Studies which have directly compared the influence of length of treatment on outcome confirm this finding,¹¹ and those that detect an initial effect suggest that it dissipates at longer follow-ups.¹²
- However, it should be noted that most of these studies used only one form of NRT (nicotine patch) and that there is some evidence that NRT may reduce the risk of relapse, especially if it is provided after unassisted quit attempts.^{6;7}

2.2) Varenicline

- Varenicline has been provided beyond standard treatment length of 12 weeks for up to a year in one trial to assess safety, showing no increase in risk.¹⁹ Notably, abstinence rates were continuously higher in the treatment than control group and the effect size difference at last follow-up was greater compared with pooled effects of other varenicline trials, suggestive of improved effectiveness.²⁰

- Consistent with this observation, the only study to-date which provided varenicline as part of maintenance for an additional 12 weeks following standard length treatment reported a significant effect on long-term abstinence rates compared with a control group receiving a placebo following active treatment (see Figure 4).²¹

Figure 4: Effect of maintenance therapy on smoking cessation^a



Data come from Tonsted et al (2006)²¹, Hajek et al (2013)⁷ and Agboola et al (2010)⁶; ¹Based on a single trial; ²Compared with placebo; ³Compared as part of combination therapy

2.3) Bupropion

- Evidence suggests that extended bupropion therapy (an additional 16-45 weeks) may be beneficial when provided after initial treatment with NRT or bupropion compared with placebo treatment at longer follow-ups (see Figure 4)⁶. However, this effect is somewhat reduced when bupropion is provided as part of combination therapy with NRT and compared against placebo and NRT, becoming non-significant in overall comparison.⁷

Overall, current evidence is relatively weak and does not wholly favour the notion that longer treatments are necessarily more effective. With the exception of maintenance treatment with varenicline and bupropion, there is generally either a lack of evidence or evidence of lack of data to support longer treatment to reduce relapse and increase long-term quit rates (see Table 1 for an overview).

Table 1: Overview of extending treatment length beyond current standard on smoking cessation

Intervention	Impact	Issues
Face-to-face support	+ / ?	Effects only short-term; some evidence of dose-response
Telephone support	+ / ?	Some evidence of dose-response but only at lower intensity level
Online/electronic support	- / ?	Few available studies
NRT	- / ?	Length of treatment general not associated with improvement but may be effective in relapse prevention
Varenicline	+	Only assessed in one study
Bupropion	+	Small but significant effect compared with placebo

++Good evidence for clinically significant effect; +Evidence suggestive of clinically significant effect; ?Insufficient evidence to draw general conclusions; -Evidence suggestive of no clinically significant effect

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