Telephone counselling for smoking cessation (Review)

Stead LF, Lancaster T, Perera R

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in The Cochrane Library 2006, Issue 2

http://www.thecochranelibrary.com
# Table of Contents

- **Abstract** .................................................. 1
- **Plain Language Summary** .................................. 2
- **Background** .................................................. 2
- **Objectives** ................................................... 2
- **Criteria for Considering Studies for this Review** ........ 3
- **Search Methods for Identification of Studies** .......... 3
- **Methods of the Review** ....................................... 3
- **Description of Studies** ..................................... 4
- **Methodological Quality** ..................................... 5
- **Results** ....................................................... 5
- **Discussion** .................................................... 6
- **Authors' Conclusions** ....................................... 8
- **Potential Conflict of Interest** .............................. 9
- **Acknowledgements** ........................................... 9
- **Sources of Support** .......................................... 9
- **References** ................................................... 9

## Tables
- Characteristics of included studies .................................. 13
- Characteristics of excluded studies .................................. 23

## Analyses
- Comparison 01. Proactive counselling ................................. 25
- Comparison 02. Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms ................................................................. 25
- Comparison 03. Proactive counselling - Multiple versus single session ................................................................. 25
- Comparison 04. Reactive counselling - Helplines/hotlines ........ 25

## Index Terms .................................................. 26

## Cover Sheet .................................................. 27

## Graphs and Other Tables ..................................... 27
- Analysis 01.01. Comparison 01 Proactive counselling, Outcome 01 Long term cessation - Telephone counselling compared to minimal intervention only .................................................. 27
- Analysis 01.02. Comparison 01 Proactive counselling, Outcome 02 Long term cessation - Telephone counselling as adjunct to face to face intervention without pharmacotherapy .................................................. 28
- Analysis 01.03. Comparison 01 Proactive counselling, Outcome 03 Long term cessation - Telephone counselling as adjunct to pharmacotherapy .................................................. 29
- Analysis 02.01. Comparison 02 Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms, Outcome 01 Long term cessation - Telephone counselling v all less intensive controls .................................................. 30
- Analysis 02.02. Comparison 02 Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms, Outcome 02 Long term cessation - Telephone counselling v all less intensive controls (Zhu 2002 subgroup B only) .................................................. 31
- Analysis 03.01. Comparison 03 Proactive counselling - Multiple versus single session, Outcome 01 Long term cessation - Up to 6 calls compared to single call and self help materials .................................................. 32
- Analysis 03.02. Comparison 03 Proactive counselling - Multiple versus single session, Outcome 02 Long term cessation - Four calls compared to single call and in hospital intervention .................................................. 32
- Analysis 04.01. Comparison 04 Reactive counselling - Helplines/hotlines, Outcome 01 Long term cessation - Effect of availability of a hotline .................................................. 33
- Analysis 04.02. Comparison 04 Reactive counselling - Helplines/hotlines, Outcome 02 Long term cessation - Effect of offering different services for helpline callers .................................................. 33
ABSTRACT

Background
Telephone services can provide information and support for smokers. Counselling may be provided proactively or offered reactively to callers to smoking cessation helplines.

Objectives
To evaluate the effect of proactive and reactive telephone support to help smokers quit.

Search strategy
We searched the Cochrane Tobacco Addiction Group trials register for studies using free text term 'telephone*' or the keywords 'telephone counselling' or 'Hotlines' or 'Telephone'. Date of the most recent search: September 2002.

Selection criteria
Randomised or quasi-randomised controlled trials in which proactive or reactive telephone counselling to assist smoking cessation was offered to smokers or recent quitters.

Data collection and analysis
Trials were identified and data extracted by one person and checked by a second. The main outcome measure was abstinence from smoking after at least six months follow-up. We used the most rigorous definition of abstinence in each trial, and biochemically validated rates where available. Participants lost to follow-up were considered to be continuing smokers. Where trials had more than one arm with a less intensive intervention we used only the most similar intervention as the control group in the primary analysis. Where interventions were similar, we performed meta-analysis using a fixed effects model (Peto method) to give an odds ratio.

Main results
Twenty seven trials met inclusion criteria. Thirteen trials compared proactive counselling to a minimal intervention control. There was statistical heterogeneity, with five trials showing a significant benefit, and eight showing non significant differences. The heterogeneity was associated with trials that provided tailored self-help materials to the control group. Meta-analysis using all less intensive intervention arms as the control removed the heterogeneity and suggests that telephone counselling compared to less intensive intervention increases quit rates (OR 1.56, 1.38 - 1.77).

Four trials adding telephone support to a face to face intervention control failed to detect a significant effect on long term quit rates. Four trials failed to detect an additional effect of telephone support in users of nicotine replacement therapy. Providing access to a hotline showed a significant benefit in one trial and no significant difference in two. No differences in outcome were detected in trials that compared different types of telephone counselling.

Authors' conclusions
Proactive telephone counselling can be effective compared to an intervention without personal contact. Successful interventions generally involve multiple contacts timed around a quit attempt. The available evidence neither confirms nor rules out a benefit of telephone counselling as an adjunct to face to face counselling or pharmacotherapy. Further trials randomising access to helplines are unlikely to be done but indirect evidence suggests they can be a useful part of a smoking cessation service.
Plain Language Summary

Telephone counselling can help as part of a program to help people stop smoking.

Smoking contributes to many health problems including cancers and lung diseases. People trying to quit smoking can be helped with medication or through behavioural support such as specialist counselling and group therapy. Support, information and counselling are offered either face to face or by telephone. Counselling via telephone hotlines can be provided as part of a program or separately and gives access to more people than face to face. The review of trials found telephone counselling is effective compared to a program with no personal contact.

Background

People who smoke can be helped to quit using behavioural and pharmacological support. Behavioural approaches range from brief advice from a physician to intensive specialist counselling (Lancaster 2005a; Silagy 2004, Stead 2005). Support can be given in individual counselling sessions or in group therapy where clients can share problems and derive support from one another. There is less evidence that standard self-help materials alone are effective. At best they have a small effect helping quitting (Fiore 2000; Lancaster 2005b). Materials which are tailored to the characteristics of individual smokers are more likely to be effective (Lancaster 2005b). Telephone counselling may have the potential to supplement face to face support, or to substitute for face to face contact as an adjunct to self-help interventions. Counselling may be helpful in planning for a quit attempt, and helping prevent relapse during the initial period of abstinence (Brandon 2000). Although intensive face-to-face intervention helps smokers successfully quit there are difficulties in delivering it to large numbers. Many people who smoke do not wish to attend group programmes, and the timing of group programmes can also be inflexible. Individual counselling is more flexible but more expensive. Telephone counselling may be a way of providing individual counselling more cheaply. Telephone contact can be timed to maximise the level of support around a planned quit date, and can be scheduled in response to the needs of the recipient.

Telephone counselling can be proactive or reactive (Lichtenstein 1996). In a proactive approach the counsellor initiates one or more calls to provide support in making a quit attempt or avoiding relapse. This can be offered as part of an intervention which has included face to face counselling, or provided as an adjunct to a mailed self-help programme, or to pharmacotherapy. Smokers may get access to this form of support by calling helplines.

Reactive counselling is provided via helplines or hotlines which take calls from smokers or their friends and family. These telephone helplines/hotlines may offer information, recorded messages, personal counselling or a mixture of components. They may provide a regional or national service. They are often advertised in conjunction with No-Smoking Day or other population wide campaigns. Helplines may also be provided on a smaller scale for a specific project or population. Although in general reactive helplines respond only to client initiated calls, in some models smokers may request counselling calls which are made from the call centre (Zhu 1996; Zhu 2000), and there is then some overlap with the proactive approach. Hotlines have the potential to provide access to information for large numbers of people. Some services have reported reaching substantial proportions of the target population (Ossip-Klein 1991; Platt 1997). They may have the potential to reach underserved populations such as ethnic minorities (Zhu 2000). A further development of hotlines uses computers and expert systems to provide a menu of automated responses (Burke 1993; Schneider 1995; Ramelson 1999).

Helpline services may be specific to smoking, as for example the California Smokers’ Helpline, Quitline in Australia, or Quit in the UK, or they may be embedded in broader health information services such as the Cancer Information Service in the USA. They may also be provided as part of an integrated smoking cessation support service (e.g. Glasgow 1991). Access to hotlines or the opportunity to register to receive calls from a counsellor may also be offered as a part of a cessation programme including pharmacotherapy.

Although reactive helplines have been widely implemented, controlled evaluation has been limited by a reluctance to refuse support to those requesting help. Evaluations involving these services have been more likely to compare variants in service than to use a no intervention control (e.g. Davis 1992; Balanda 1999). Proactive services have been more widely evaluated because they can more easily be compared with a minimal intervention. A recent evaluation (Zhu 2002) used an innovative approach for evaluating the benefit of the counselling component for callers to a quitline. Because the number of requests for counselling sometimes exceeded the quitline’s capacity, all callers at these times were sent a self-help pack and invited to call back. Counselling capacity could be then be equitably allocated by randomising some callers to a group who were called back, whilst the control group were counselled only if and when they called back.

Objectives

The review evaluates the effect of telephone support to help smok-
ers quit. Telephone support includes proactive or reactive counselling or the provision of other information to smokers calling a helpline.

We addressed the following questions:

Do telephone calls from a counsellor increase quit rates compared to other minimal interventions (for example, self-help materials alone)?
Do follow-up calls from a counsellor increase quit rates compared to face to face intervention without telephone follow-up?
Do telephone calls from a counsellor increase quit rates compared to pharmacotherapy alone?
Does an increase in the number of telephone contacts increase quit rates?
Do differences in counselling protocol related to the type of support lead to differences in quit rates?
Do differences in counselling protocol related to the timing of support (eg scheduled around a quit day) lead to differences in quit rates?
Does the availability of a reactive helpline increase quit rates?

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies
Randomised or quasi-randomised controlled trials, with unit of allocation individual participants, group, intervention site or geographical area.

Types of participants
Smokers or recent quitters. The definition of recent quitters was that used by the trial recruitment protocols, or by the participants themselves.

Types of intervention
Provision of proactive or reactive telephone counselling to assist smoking cessation, to any population. Studies were excluded if the contribution of the telephone component could not be evaluated independently of face to face counselling. Studies which combined telephone counselling with self-help materials were included since the effect of self-help materials alone is limited.

Types of outcome measures
Smoking cessation at least 6 months after the start of intervention.

SEARCH METHODS FOR IDENTIFICATION OF STUDIES

See: methods used in reviews.

Studies were identified from the Tobacco Addiction Group specialised register using the free text terms 'telephone*', 'quitline*' or 'helpline*' or the keywords 'telephone counselling' or 'Hotlines' or 'Telephone' to identify relevant studies. This register incorporates the results of systematic searches for trials on tobacco addiction in MEDLINE, PsycINFO and Science Citation Index electronic databases. Databases were searched in September 2002. Studies cited in existing reviews (Lichtenstein 1996; McBride 1999b) were also checked for relevance.

METHODS OF THE REVIEW

Potentially relevant studies with a control group, and an intervention arm which included telephone contact were identified by one author and checked for inclusion or exclusion by a second person. Data from included studies were extracted by one author and checked by a second. The following information was recorded in the table of included studies:
The country and setting of the trial
The method of recruitment to the study
The method of randomisation
Details of participants, including whether they were selected according to motivation to quit, and their age, sex and average baseline cigarette consumption
Description of intervention and control, including the number, timing and duration of telephone contacts.
Definition of smoking abstinence at longest follow-up
Use of biochemical validation or confirmation by a surrogate.

Studies which did not meet the inclusion criteria because of short follow-up or use of an intervention which combined telephone and face to face counselling are listed and briefly described in the table of excluded studies. Some uncontrolled evaluations of helplines are also described in this table.

The strictest measure of abstinence at the longest follow-up was used as the primary outcome. If a less strict definition of quitting was more appropriate for showing an effect of telephone counselling on renewed quit attempts we planned a sensitivity analysis. The denominator was the number randomised, with losses to follow-up assumed to be continuing smokers. Any exceptions to this were noted in the study details.

Study results were summarised as an odds ratio for the likelihood of quitting at the longest follow-up. Where trials had more than one arm with a less intensive intervention we used only the most similar intervention as the control group in the primary analysis. Proactive and reactive counselling were addressed separately. Statistical pooling of study results was considered if both the intervention and control arms were sufficiently similar - that is, if the components common to both intervention and control were alike. Therefore a priori we did not pool studies in which telephone counselling was the most intensive component of a minimal contact intervention together with studies in which telephone counselling was assessed as an adjunct to face to face counselling. A Mantel-Haenszel chi-
square statistic was used for assessing between study heterogeneity and the Peto method (Yusuf 1985) used for pooling study results if no significant heterogeneity was detected.

Where results of studies differed we considered the following possible explanations; the duration, timing and intensity of the counselling, the counselling strategy used, and the characteristics of the participants, in particular their motivation to quit or stage of change at baseline.

**Description of Studies**

Twenty seven controlled studies met the criteria for inclusion in the review. Twenty three of these were trials of proactive counselling calls, including four which compared different types of telephone support for smokers who had called a hotline (Thompson 1993; Orleans 1998; Zhu 1996; Borland 2001). Three assessed the impact of offering reactive counselling by providing access to a hotline (Ossip-Klein 1991; McFall 1993; Brandon 2000). One trial compared two variants of telephone support as part of an intervention for hospital inpatients; a minimal intervention provided a single post discharge call and an intensive intervention used up to four calls (Miller 1997).

In fifteen studies proactive telephone calls from a counsellor were the only form of personal contact. In five of the trials smokers were recruited from advertisements, three for smokers planning to quit (Orleans 1991; Ossip-Klein 1997; Miguez 2002) and two for any smoker irrespective of current interest in quitting (Prochaska 1993, and Rimer 1994 which recruited smokers aged over 50). A further four were conducted amongst people who had identified themselves as smokers in surveys, quit-smoking or health screening programmes but had not volunteered for a trial of smoking cessation intervention (Landor 1992; Curry 1995; McBride 1999; Prochaska 2001). One study recruited smokers in households which had low levels of radon present (Lichtenstein 2000). Of the five which recruited smokers who called a hotline, one compared provision of self-help materials alone to one or six outreach calls (Zhu 1996), one compared brief counselling and self-help materials to multiple outreach calls (Borland 2001), one compared up to seven proactive calls with a control group in which smokers were only given counselling if they called back to request it (Zhu 2002) and two compared different counselling approaches provided during the initial call (Thompson 1993; Orleans 1998). Two of the studies of proactive counselling also provided both intervention and control groups with details of a hotline to contact for support (Prochaska 1993; Ossip-Klein 1997).

One study in workplaces compared the provision of telephone counselling, a group format programme, or a choice of formats (Henrikus 2002).

In seven studies proactive telephone counselling formed part of a more intensive intervention. The control group intervention ranged from a single information session and the provision of a self-help manual (Brown 1992); a chart reminder to the physician to provide advice (Lipkus 1999); a single session, the provision of nicotine gum and access to a helpline (Lando 1997); an advice, counselling or nicotine gum intervention from a physician (Ockene 1991); physician advice and nicotine patch (Reid 1999); an intensive cessation clinic (Lando 1996), or provision of free nicotine patch but no face to face contact (Solomon 2000). We considered those studies in which telephone counselling was an adjunct to pharmacotherapy (Landor 1997, Reid 1999, Solomon 2000 and two arms of Ockene 1991) as a separate group. One study assessed the effect of increasing the amount of telephone follow-up (Miller 1997).

Of the three studies that directly evaluated a hotline, one randomised counties to hotline access or not and followed up smokers who were planning to stop and had registered for a smokers' self-help project (Ossip-Klein 1991). One combined newsletter mailings and hotline access compared to no follow-up support for smokers who had registered for a self-help televised cessation programme (McFall 1993). The third provided access to a hotline in a factorial design with mailings of Stay Quit booklets as an intervention for relapse prevention (Brandon 2000).

Content and format of proactive counselling calls

The minimum intervention tested was a single call offering stage based counselling lasting about 6 minutes; women in this trial could receive two calls (Lipkus 1999). The most common intervention was for three calls, generally spread over three months, with at least one call within the first month (Ockene 1991; Curry 1995; McBride 1999; Prochaska 2001). Their first study provided an additional call at 1 month (Prochaska 1993). One study of relapse prevention called at 3, 9 and 21 months, with the opportunity to receive up to three calls at each point (Lando 1996). The highest intensity of counselling was 6 contacts over 10 weeks (Brown 1992). One study compared a single outreach session lasting about 50 minutes before a quit attempt, or a possible five further 20 minute sessions, timed for 1, 3, 7, 14 and 30 days after the quit attempt (Zhu 1996). Zhu 2002 used a similar intensive protocol offering up to 6 post quit contacts within a three month period. A similarly timed schedule of early calls, but with the final timing and number of calls agreed with the patient was used in two other studies (Solomon 2000; Borland 2001).

The support was usually derived from a prepared script and was based on stage based or motivational counselling approaches. Those providing the support ranged from professionally qualified counsellors with experience in smoking cessation to ex smokers who had received seven hours of training.
METHODOLOGICAL QUALITY

None of the trials described the method of randomisation in sufficient detail to exclude the possibility of allocation bias. Allocation was based on the digits of a phone number in one case (Zhu 1996). Three trials used cluster randomisation. In one, participants were given access to a hotline according to county of residence so that the availability of a hotline could be advertised in the intervention counties (Ossip-Klein 1991). In the second, households were the unit of randomisation, and about 54% of households contained more than one smoker (Lichtenstein 2000). In this study the intraclass correlation was calculated and was small enough to be ignored. The third randomised 4 workplaces to each of six conditions, and is not included in a meta-analysis, but outcomes are summarised in the results section (Hennrikus 2002).

In eleven trials no biochemical validation was attempted. In two of these confirmation of self-reported cessation was sought from 'significant others'. Of those trials which used biochemical testing for some or all reported quitters, not all clearly reported validated quit rates, but none reported significantly different misreport or refusal rates between intervention and control conditions.

Many trials reported both short term point prevalence (7 day or 24 hour) abstinence and sustained abstinence, at one or more follow-ups. Long term sustained abstinence, or abstinence at one or more previous follow-ups is used as the outcome for all trials except Brandon 2000; Brown 1992; Lando 1996; McFall 1993; Ockene 1991; Orleans 1998; Ossip-Klein 1997; Reid 1999 and Rimer 1994. Length of longest follow-up ranged from 6 months (Ockene 1991; Orleans 1998 (12 month follow-up not reported for entire sample); Ossip-Klein 1997; Solomon 2000), to 34 months (which was 12 months after end of the intervention, Lando 1996).

One trial is included on the basis of preliminary 12 month data for 75% of the original cohort (Rimer 1994).

RESULTS

PROACTIVE TELEPHONE COUNSELLING PLUS MINIMAL INTERVENTION VERSUS MINIMAL INTERVENTION ALONE (Comparison 1.1)

There were thirteen trials in this category, including three which provided call back counselling for smokers calling a helpline (Borland 2001; Zhu 1996; Zhu 2002). There was significant heterogeneity (Chi-square 22.74, p=0.03), so we did not calculate a pooled effect size. Grouping the trials according to whether or not self-help materials were used in both intervention and control groups did not account for the heterogeneity. In ten of the trials both groups received self-help materials. However four of the studies (Rimer 1994; Curry 1995; Prochaska 1993; Prochaska 2001) had more than one control or intervention group receiving a less intensive intervention, and we used the most intensive of these as the most conservative choice of control for the primary analysis. In two of these trials the quit rate was non-significantly lower in the intervention group than in the control group used in the meta-analysis. In the first (Prochaska 1993), adding telephone counselling did not increase quit rates over stage based self-help materials and individually tailored written feedback, but it did lead to higher quit rates than standard self-help materials. In the second (Rimer 1994), the addition of two counselling calls to tailored self-help materials did not increase 12 month quit rates, but it did lead to higher rates than a control group receiving only standard self-help materials, and there was a significant effect at three months. A third trial had almost identical quit rates between tailored self-help alone or with telephone counselling, but again there would have been a significant benefit had the comparison been with standard self-help materials (Prochaska 2001). Because it seemed likely that the heterogeneity in the primary meta-analysis could have been due to the diversity of the controls we did a second analysis (Comparison 2.1). This uses all the arms without telephone counselling or more intensive intervention as the control for each study. In this analysis there was no significant heterogeneity, and there was evidence of a significant benefit from the addition of the telephone counselling component (OR 1.56, 95% CI 1.38 - 1.77). Excluding the tailored self-help arms from the control did not substantially change this result.

The result of this meta-analysis is supported by the results of individual studies. Five of the other trials had significantly higher quit rates in the group receiving telephone counselling compared to standard self-help materials alone. All participants in these trials were volunteers who were motivated to make a quit attempt. In the first (Orleans 1991) the rate increased from 10% in the self-help control to 18% with four calls spread over a year. In the second (Zhu 1996) callback counselling increased sustained quit rates from 5.5% to 7.5% with a single outreach call and to 9.9% with up to 6 calls. The six call condition also significantly increased rates over the single call condition (See Comparison 3.1). In the third, callback counselling increased sustained rates from 3.9% to 7.0% amongst callers to a quitline (Borland 2001). In the fourth (Miguez 2002) six weekly calls increased sustained quit rates to 27% compared to 14% using the same number of self-help mailings. In the fifth (Zhu 2002) callback counselling increased rates from 6.9% to 9.1%, and this increase was achieved even with 32% of the control group also given counselling when they sought it. Zhu and colleagues conducted an additional analysis in which they assumed that the proportion of people in the intervention group who would have phoned back in any case, and their success rates, would have been the same as the sub group of the control group who called for counselling. They therefore infer the outcome for those in the intervention group who would not have called again, and compare this with the subgroup of the controls who only received the mailing and did not make further contact. They estimated that the provision of proactive support to people who would not have sought it out increased...
quit rates from 4.1% to 7.5%. This effect is larger and more significant than the result using all trial participants, although using these subgroups in the meta-analysis does not have a large impact on the results.

**PROACTIVE COUNSELLING PLUS A FACE TO FACE INTERVENTION VERSUS FACE TO FACE INTERVENTION ALONE (COMPARISON 1.2)**

There were four studies in this category. None showed a significant increase in quitting from the addition of telephone follow-up. The pooled estimate also failed to show a statistically significant increase in the odds ratio (OR 1.08, 95% CI 0.87 - 1.33).

One trial compared a hospital based intervention followed by a single call with an intensive intervention in which patients could receive up to four calls after discharge from hospital (Miller 1997) (Comparison 3.2). The more intensive intervention increased the continuous one year quit rate from 14% to 19%, a difference which just reached statistical significance.

**PROACTIVE COUNSELLING PLUS NICOTINE REPLACEMENT THERAPY VERSUS NICOTINE REPLACEMENT ALONE (COMPARISON 1.3)**

In none of four studies was there a statistically significant effect of adding telephone support. The confidence intervals around the pooled estimate (OR 1.08, 95% CI 0.82 - 1.43) do not exclude the possibility of a small benefit.

**PROACTIVE COUNSELLING COMPARED TO A GROUP PROGRAMME**

One study compared offering telephone counselling or group programmes or a choice in a workplace setting (Hennrikus 2002). Programmes were offered 3 times, and the primary evaluation was based on all smokers irrespective of participation. No difference in 6-month sustained quit rates were detected at 24 month follow-up, although point prevalence quit rates favoured the telephone condition. Quit rates for programme participants were also similar. Incentives increased participation but did not appear to increase cessation rates. (Data not displayed in graphs)

**REACTIVE COUNSELLING: PROVISION OF HELPLINES PLUS SELF-HELP MATERIALS VERSUS SELF-HELP MATERIALS ALONE (COMPARISON 4.1)**

In one trial, provision of a hotline was associated with an increase in quit rates from 4.0% amongst smokers sent self-help materials only, to 6.6% amongst smokers in areas where in addition to materials an advertised hotline was provided (Ossip-Klein 1991). This difference was statistically significant using the unit of allocation, the county, as the unit of analysis. In a second trial, smokers who had enrolled for materials for a self-help programme with a televised component were randomised to receive follow-up newsletters and access to a helpline for 6 months. Although the intervention combined a helpline and written materials, quit rates were lower at 24 months than in the control condition (McFall 1993). One study failed to show an effect of providing access to a helpline as a relapse prevention component (Brandon 2000). The ex-smokers who volunteered for the trial had generally been abstinent for an extended period and relapse rates were low. Whilst written materials reduced relapse there was no effect of the hotline.

**DISCUSSION**

This review considers telephone services as a method for delivering behavioural counselling and support both proactively and reactively. The intensity of the interventions ranged from brief contact which might only motivate a quit attempt to more intensive support for smokers already intending to quit.

The findings provide support for proactive telephone counselling as the main intervention (Comparisons 1.1 and 2.2). This conclusion must be cautious because of the heterogeneity in the results. However our primary analysis is conservative. The use of all less intensive arms in trials with multiple comparisons removes the heterogeneity and suggests that telephone counselling as the sole intervention, or added to self-help materials alone, increases the odds of quitting (OR 1.56, 1.38 to 1.77).

The effects of telephone calls providing follow-up after a face to face intervention are less clear or consistent (Comparison 1.2). The updated US smoking cessation practice guidelines (Fiore 2000) recommend proactive telephone counselling as one of the formats for delivering behavioural counselling. The evidence supporting this derives from a meta-analysis comparing different formats for intervention. That analysis includes trials that used any proactive telephone support, even if combined with other components in an intervention. In the analysis, using a regression approach, proactive telephone counselling as a format for intervention was associated with an estimated odds ratio for quitting of 1.2 (95% CI 1.1-1.6). This was a similar size of effect to a self-help format, but had narrower confidence intervals. For comparison the estimated effect for group counselling format was 1.3 (95% CI 1.1 - 1.6) and for individual counselling 1.7 (95% CI 1.4 - 2.0).

Our analysis, based only on those studies making direct assessments of the effect of telephone support, leads to more cautious
conclusions although it does not exclude a similar size of effect. The US guidelines also recommend the use of multiple formats, for example by providing initial face-to-face counselling then telephone follow-up. In this review the evidence for a benefit from counselling was stronger when it was the main intervention rather than when it was used to support face to face intervention. The reason for the relative lack of evidence for telephone counselling in this context may be due to two related features: the maximum size of effect which could be expected, and the power of the existing studies to detect such an effect. In trials which compare telephone counselling to self-help materials alone, the impact of the additional component can be relatively large, increasing quit rates by 50%. However since the quit rate in the control group is only 5-8%, the absolute increase in quit rates is in the order of 2-4%. This increase has been detected because the number of trials and participants is large. Over 16,000 people contribute to this meta-analysis, and the trials that have detected a significant effect generally have over 1,000 participants. When telephone counselling is used as an adjunct to a more intensive control intervention we find that the control group quit rates are higher, with marked heterogeneity but averaging 21% with face to face counselling and 17% with pharmacotherapy. It seems unlikely that the addition of telephone counselling could achieve a relative increase of 50% over this baseline, especially if we consider that the main benefit is likely to be on reducing relapse. Although only one of the trials in this category explicitly used telephone counselling for relapse prevention, the effect of telephone follow-up after a face to face intervention is probably to reduce the likelihood of relapse, rather than to promote a quit attempt in people who have not been successful in quitting during the initial phase of intervention. Even if such a large relative effect is unrealistic, we might still expect some benefit, perhaps the same absolute increase as in the trials of telephone counselling within a minimal intervention. An increase of three percentage points is well within the confidence intervals around the trial results in Comparisons 1.2 and 1.3, expressing the pooled effect as a risk difference instead of an odds ratio. But there have not been enough large trials to detect or exclude this with certainty. So far the review includes only 2,000 people in comparisons with face to face counselling and 1,400 in comparisons with pharmacotherapy.

If telephone follow-up can help people who relapse to make another quit attempt, or persuade initial non quitters to persevere, then telephone support may be of benefit. In a subgroup analysis Lando and colleagues (Lando 1996) showed that although there was not a significant overall benefit of telephone counselling, amongst people who relapsed in the first 6 months after the clinic (64% of the total), there were significantly more quitters in the telephone group at two subsequent follow-up points. In this trial the major purpose of the telephone support was recycling of relapers, and the calls did not start until almost two months after the end of the intensive clinic sessions. The authors suggest that earlier calls might have been more effective for preventing relapse and recycling earlier relapers.

The better results achieved by dedicated telephone support services could reflect a difference in provider skills, with lower levels of training and experience in counsellors offering an adjunctive intervention. A further possibility is that the telephone contact could encourage use of self-help materials, so that there is a synergistic effect of the two formats combined. Timing may also affect the impact of telephone support. Some interventions have used 3 or more calls spread over months. This may not be appropriate if the risk of relapse is highest in the first weeks of a quit attempt. In one of the studies in which telephone support did not improve the outcome of a quit attempt using the nicotine patch, 35% of participants had relapsed by two weeks after the quit date, so that later calls were likely to be a limited use (Lando 1997).

Evidence of a benefit from telephone support as a follow-up to a face to face intervention is strengthened if we consider a small number of trials which compared intervention combining face to face support plus telephone follow-up with usual care. Studies by researchers at Stanford showed that nurse mediated counselling for hospitalised smokers with post discharge telephone follow-up was more successful than usual care DeBusk 1994; Miller 1997; Stevens 1993; Taylor 1990). In one study (Miller 1997), a single phone call after in hospital counselling was not significantly better than usual care, but multiple calls led to significantly better cessation rates. Some of these studies were included in an earlier meta-analysis (Lichtenstein 1996) which concluded that proactive counselling was of benefit both as the sole intervention and when combined with a hospital initiated programme. Another review suggested through indirect comparisons that in-hospital interventions plus telephone follow-up were more effective than in-hospital interventions alone. (Rigotti 2003).

Telephone support services as part of multicomponent interventions for tobacco use cessation have also been recently recommended as part of the strategy for community preventive services in the US (MMWR 2000). Both proactive and reactive services were strongly recommended.

Rigorous evaluation of reactive services (hotlines and helplines) has been difficult because of a reluctance to undertake randomised trials that would require callers who sought help to be refused support. This review has restricted formal inclusion to randomised trials, whilst recognising that this limits the scope of the evidence. A single large trial provides the main evidence that hotlines are beneficial (Ossip-Klein 1991). In this study use of the hotline was relatively high: 36% of the intervention participants called the hotline for recorded messages of support, and 8.7% spoke to counsellors. The hotline appeared most effective for those people who enrolled face to face, despite the fact that telephone enrollees made more use of the service. In two other trials the results were less supportive of reactive counselling (McFall 1993; Brandon 2000). A recent study was able to evaluate the benefit of the proactive
counselling element of a helpline by capitalizing on the constraints on capacity at certain times (Zhu 2002)

Moving beyond the evidence from randomised trials, there are some published evaluations that have followed up callers to hotlines. In Scotland a follow-up of a random sample of callers to the Smokeline service in 1992/93 estimated a quit rate of 23.6% one year later, with 8.2% (SD 2.2%) having been non smokers for at least 80% of the intervening period (Platt 1997). They also estimated that almost 6% of the smokers in the country had called during the year. A follow-up of 378 callers to the Quit Information Line in Victoria, Australia in 1987 found a quit rate of 17% three to four months after the call (Borland 1989). Also in Australia, an evaluation of a campaign including a helpline (providing self help materials, and access to counselling) estimated the point prevalence abstinence rate as 29% at one year amongst callers, with 11% quit for at least 80% of the year (Wakefield 1999). It was estimated that about 3.6% of the adult smokers called the quitline during the year. In England in 1994 a one year follow-up of Quitline callers who spoke to a counsellor estimated their quit rate to be 15.6% (95% CI 12.7% - 18.9%) (Owen 2000). This Quitline receives approximately half a million calls a year, or around 4% of the adult smoking population. About 54% of callers speak to a counsellor. The evaluation followed a mass media campaign which included components aimed at 16-24 year old smokers. The California Smokers Helpline also reported encouraging long term quit rates and usage levels (Zhu 2000), in addition to the randomised evaluations included here (Zhu 1996; Zhu 2002) Although estimates of reaching 4-6% of the smoking population over a year are encouraging, they are likely to be at the upper end of what can be expected, even with the help of mass media campaigns. Levels of use of one to two percent may be more realistic.

Helplines may exert an impact beyond that which can be measured in terms of quit rates amongst callers. They have an important symbolic role, telling smokers that smoking cessation is important (Wakefield 2000). To attract callers they need to be promoted as part of mass media antismoking campaigns. One suggested benefit of helplines/hotlines is that they can attract calls from specific minority or underserved groups by using targeted advertising (Cummins 1989; Cummins 1993; Owen 2000; Pierce 1992; Zhu 2000), but higher educated white women are over-represented as users of telephone services for health care in general (McBride 1999). Callers to helplines do not necessarily ask for, or want counselling, and helplines can increase population quitting just by mailing self-help materials, even though the effect of this minimal intervention may not be large (Lancaster 2005b).

One use of telephone based services is to provide support for users of medications such as nicotine patch or gum, or bupropion. None of the studies in this review evaluated the services provided by pharmaceutical companies. One short term randomised trial (Shiffman 2000) failed to detect an effect of a single telephone call after the target quit date compared to mailed, tailored self-help materials alone for purchasers of nicotine gum. We are not aware of any published evaluations of the use and impact of this type of service. In their trial of proactive calls as an adjunct to patch Lando and colleagues noted that less than 1% of participants called the company helpline. This was true even in the intervention group who were not receiving outreach calls and were specifically encouraged to use the service (Lando 1997). One study awaiting publication has compared compared proactive counselling with tailored self-help materials as adjuncts to bupropion (Swan 2001)

A study of callers to the California Smokers’ Helpline provides useful information about the acceptability of a telephone referral service (Zhu 2000a). Participants in this follow-up study all planned to use NRT and had a pre-quit counselling session. Those who chose to receive further counselling were more likely to attempt to quit, and to remain non smokers for up to a year. 79% of participants continued with counselling, and 26% of these stayed quit for a year. Of the 21% who had only a single session of counselling, 16% quit. More than half the smokers had called the helpline as a requirement for obtaining free NRT, and the high take up of further behavioural support suggests that it was popular as an adjunct to pharmacotherapy.

A U T H O R S ’ C O N C L U S I O N S

Implications for practice

As the main component of an intervention, proactive telephone counselling helps smokers to quit. A call from a counsellor is likely to increase the chances of quitting relatively by around 50 percent, or absolutely by two to four percentage points compared to a minimal intervention such as providing standard self-help materials. Reactive counselling for callers to telephone helplines has not been evaluated in the same way but indirect evidence suggests that callers receiving counselling via a quitline also have an increased chance of successfully quitting. Telephone quitlines provide an important route of access to support for smokers, and call back counselling enhances their usefulness. Telephone counselling as follow-up to a face to face intervention may lead to a small increase in success rates compared to face to face intervention alone, but the evidence for this effect is weaker.

Implications for research

Further research on ways to combine face to face counselling with telephone follow-up to support quit attempts and reduce relapse rates may be useful. Research on reactive helpline services which compares different counselling protocols and different schedules of call back sessions may also lead to improved outcomes.
POTENTIAL CONFLICT OF INTEREST

None known.

ACKNOWLEDGEMENTS

Elaine Harkness assisted with data extraction. We would like to acknowledge the helpful suggestions of Ed Lichtenstein and Corinne Husten.

SOURCES OF SUPPORT

External sources of support

- No sources of support supplied

Internal sources of support

- NHS Research & Development Programme UK

REFERENCES

References to studies included in this review

Borland 2001 (published data only)

Brandon 2000 (published data only)

Brown 1992 (published data only)

Curry 1995 (published data only)


Hennrikus 2002 (published data only)

Lando 1992 (published data only)

Lando 1996 (published data only)

Lando 1997 (published data only)


Lichtenstein 2000 (published data only)


Lipkus 1999 (published data only)
*Lipkus IM, Lyra PR, Rimer BK. Using tailored interventions to enhance smoking cessation among African-Americans at a community

McBride 1999 {published data only} 

McFall 1993 {published data only} 

Miguez 2002 {published data only} 

Miller 1997 {published data only} 

Ockene 1991 {published data only} 


Orleans 1993 {published data only} 

Orleans 1998 {published data only} 

Ossip-Klein 1991 {published data only} 

Ossip-Klein 1997 {published data only} 

Prochaska 1993 {published and unpublished data} 

Prochaska 2001 {published data only} 

Reid 1999 {published data only} 

Rimer 1994 {published data only} 

Solomon 2000 {published data only} 

Thompson 1993 {published data only} 


Zhu 1996 {published data only} 

Zhu 2002 {published data only} 

References to studies excluded from this review

Ahijevych 1995 

Amos 1995 

Balanda 1999 
Best 1977

Borland 1989

Cummings 1988


Cummings 1989

Davis 1992

DeBusk 1994

Decker 1989

Dubren 1977

Johnson 1999

Koffman 1998

Koffman 1999

Ockene 1992

Owen 2000

Platt 1997

Prue 1983

Reid 1999b

Schneider 1995

Shiffman 2000

Simon 1997

Stevens 1993

Taylor 1990

Wadland 1999

Wadland 2001
Westman 1993

Zhu 2000a


References to studies awaiting assessment

Smith 2000

Swan 2001

Additional references

Burke 1993
Burke A. Examining the use of a fully-automated interactive voice response tobacco cessation support line. American Journal of Health Promotion 1993;8:93–94+100.

Cummings 1993

Fiore 2000

Glasgow 1991

Lancaster 2005a
Lancaster T, Stead LF. Individual behavioural counselling for smoking cessation. In: The Cochrane Database of Systematic Reviews, 2, 2005.10.1002/14651858.CD001292.pub2

Lancaster 2005b

Lichtenstein 1996

McBride 1999b

MMWR 2000

Pierce 1992

Ramelson 1999

Rigotti 2003
Rigotti NA, Munafò MR, Murphy MF, Stead LF. Interventions for smoking cessation in hospitalised patients. In: The Cochrane Database of Systematic Reviews, 1, 2003.10.1002/14651858.CD001837

Silagy 2004

Stead 2005

Wakefield 1999

Wakefield 2000

Yusuf 1985
Zhu 2000


References to other published versions of this review

Stead 2001


*Indicates the major publication for the study

## TABLES

### Characteristics of included studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Borland 2001</th>
</tr>
</thead>
</table>
| **Methods** | Setting: Community, Australia  
Recruitment: Smokers calling an advertised Quitline  
Randomisation: method not stated |
| **Participants** | 998 smokers interested in quitting,  
52% F, 37% aged 15-29, 26% aged 30-39, av. cigs/day 23 |
| **Interventions** | Proactive following initial call to hotline.  
Callback condition: Multiple calls, first pre quit, quit, then according to need. Up to 6m. Average number of calls 2.8, 67% received one or more. Mailed materials  
Control: Mailed materials  
Both groups also received the standard motivational counselling in response to their first call. |
| **Outcomes** | Abstinence at 12 months (abstinent for 9 months)  
Validation: none |
| **Notes** | 20% refused call back or wanted to initiate the calls, further 7% did not receive any.  
Denominators based on Ns randomised |
| **Allocation concealment** | B |

<table>
<thead>
<tr>
<th>Study</th>
<th>Brandon 2000</th>
</tr>
</thead>
</table>
| **Methods** | Setting: Community, USA  
Recruitment: advertisements for ex-smokers wanting to avoid relapse  
Randomisation: method not stated |
| **Participants** | 446 ex-smokers (abstinent >7 days at baseline),  
Av. age 49, median months of abstinence 6.55, mean 16 |
| **Interventions** | Reactive/proactive for relapse prevention  
2x2 factorial design  
Mailings condition: 8 Stay Quit booklets mailed at 1,2,3,5,7,9,12 months  
Hotline Condition: Information about Stay Quit hotline. Asked to call to register. Participants were called if they did not register within 2 weeks and at 3 months if they had not called.  
Minimal contact condition received first stay quit booklet. |
| **Outcomes** | Abstinence at 12 months (no smoking in past 7 days) |
Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Brown 1992</th>
</tr>
</thead>
</table>
| Methods | Setting: Community health centre, Australia  
Recruitment: advertising for smokers interested in cessation  
Randomisation: method not stated |
| Participants | 45 smokers attending an information evening on smoking cessation  
62% F, av. age 40, av. cigs/day 23 |
| Interventions | 1. Self-help manual  
2. Self-help manual and 6 counselling calls at 1,2,4,6,8,10 weeks which asked about use of manual, and gave additional information about any techniques or skills proving difficult |
| Outcomes | Abstinence at 12 months (7 day PP)  
Validation: Saliva samples collected but not apparently tested - 1 participant refusing to provide a sample was classified as smoking. |
| Notes | 2 vs 1, effect of TC compared to S-H and single information session alone |
| Allocation concealment | B |

<table>
<thead>
<tr>
<th>Study</th>
<th>Curry 1995</th>
</tr>
</thead>
</table>
| Methods | Setting: Health Maintenance organization, USA  
Recruitment: Smokers identified via a telephone survey of health behaviour in a random sample of HMO members  
Randomisation: method not stated |
| Participants | 1137 smokers, not selected by motivation to quit  
52% F, av. age 41, av. cigs/day 17 |
| Interventions | 1. Control - no materials or counselling  
2. Self-help booklet (Breaking Away)  
3. As 2 plus feedback based on computer analysis of initial survey.  
4. As 3 plus telephone counselling; up to 3 calls at 2, 6, 10 weeks |
| Outcomes | Abstinence at 12 months, from 3-12m  
Validation: saliva cotinine requested but not obtained for all self reported quitters. Disconfirmation rates (cut off >20ng/ml) not significantly different between groups. |
| Notes | 4 vs 3, effect of TC compared to S-H and feedback alone |
| Allocation concealment | B |

<table>
<thead>
<tr>
<th>Study</th>
<th>Hennekens 2002</th>
</tr>
</thead>
</table>
| Methods | Setting: 24 worksites, USA  
Recruitment: Baseline survey used to identify smokers.  
Randomisation: cluster randomised by company, 4/condition. method not stated |
| Participants | 2402 smokers at baseline survey. 38-48% in precontemplation.  
50-64% F, av age 36-40 (large between company variations in prevalence and smoker characteristics. |
| Interventions | Factorial design, 6 conditions: Incentives for participation and cessation/no incentive crossed with telephone, group or choice of programme format.  
Telephone counselling: 3-6 sessions + mailed ALA S-H materials. |
### Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Method</th>
<th>Participants</th>
<th>Interventions</th>
<th>Outcomes</th>
<th>Notes</th>
<th>Allocation concealment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lando 1992</td>
<td>Setting: Community, USA</td>
<td>1827 smokers, not selected by motivation to quit 50% F, av. age 47, av. cigs/day 22</td>
<td>1. Telephone counselling, 2 calls over 3 weeks. Offered self- help materials 2. No intervention, contacted at follow-up only</td>
<td>Abstinence at 18 months (no puff, &gt; 3 months and validated abstinent at 6m) Validation: Saliva cotinine &lt;10ng/ml at 6m</td>
<td>1 vs 2, effect of TC vs no intervention  High level of cotinine disconfirmation</td>
<td>B</td>
</tr>
<tr>
<td>Lando 1996</td>
<td>Setting: Community, USA</td>
<td>1083 smokers who attended a smoking cessation clinic 60% F, av. age 45, av. cigs/day 27</td>
<td>Proactive 1. 8 week 15 session group smoking cessation clinic 2. Clinic and TC at 3, 9, 21m. At each point up to 3 calls could be made if requested</td>
<td>Abstinence at 34 months (7 day point prevalence). Also assessed at 6, 12 &amp; 24m Validation: random half quitters validated by saliva cotinine &lt;20ng/mL at 12m. 91% confirmed</td>
<td>2 vs 1, effect of adjunct TC compared to clinic alone</td>
<td>B</td>
</tr>
<tr>
<td>Lando 1997</td>
<td>Setting: Health Maintenance Organisation, USA</td>
<td>509 smokers of &gt;20/day, motivated to quit 56% F, av. age 42, av. cigs/day 28</td>
<td>Participants received prescriptions for free nicotine patch (Prostep), 22mg for a maximum of 6w plus 2ws 11mg. Proactive vs Reactive</td>
<td></td>
<td></td>
<td>B</td>
</tr>
</tbody>
</table>

**Outcomes Abstinence at 24m, sustained for 6m & 7 day PP**

**Validation:** saliva cotinine from a sample. no correction for misreporting

**Notes** New for 2003/1 update. Cluster randomised, and no other trial compared TC to group so not used in meta-analysis, reported narratively
Characteristics of included studies (Continued)

Attended 90 minute group orientation session describing study, use of patch, behavioural information, set quit date. Standard written materials with patch included description of a toll-free telephone help line.
1. No further support
2. Orientation session included encouragement to call toll-free number and a registration card
3. Additional telephone counselling, 4 calls (approx 1, 4, 7-9, 12 weeks from quit date). Reinforced success or negotiated a new quit date

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Abstinence at 12 months (from quit date) Validation: CO at 6 months. 96% of quitters were confirmed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes</td>
<td>3 vs 1+2, effect of proactive TC compared to contact &amp; quitline alone. (1&amp; 2 combined since fewer than 1% called hotline and no difference between quit rates) Participants who did not return questionnaires at 2, 5, 8, 12 weeks were called by telephone.</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>B</td>
</tr>
</tbody>
</table>

Study | Lichtenstein 2000
---|---
Methods | Setting: Community, USA
Recruitment: via electric utility mailing to identify households with smokers and low radon concentrations
Randomisation: by household, method not stated.

Participants | 1006 smokers in 714 households
Av. cigs/day 20

Interventions | Proactive
1. Standard Environmental Protection Agency leaflet on risks of radon
2. Pamphlet highlighting risk of smoking in low concentrations of radon, with tips for quitting, or not smoking indoors
3. Pamphlet as 2. and up to 2 brief proactive telephone calls

Outcomes | Abstinence at 12 months (sustained at 3, 12m) Validation: none

Notes | 3 vs 2, effect of TC versus S-H alone
Cluster randomisation, 54% of smokers lived with another smoker. Intraclass correlation for sustained abstinence was .010. Analyses did not correct for this.

Allocation concealment | B

Study | Lipkus 1999
---|---
Methods | Setting: Health centre, USA
Recruitment: from telephone survey of patients
Randomisation: method not stated

Participants | 266 randomised, 160 followed up
Low income African-American smokers, unselected by motivation
52% F, 49% aged over 50

Interventions | 1. Physician prompts attached to chart (included other screening tests). Providers trained to use 4As (Ask/Advise/Assist/Arrange f-up) model
2. As 1, and one mailing of tailored print communication around birthday
3. As 2, and telephone counselling: 1 or 2 (for women also due other screening), stage based, barriers and reasons for quitting, approx 6 min.

Outcomes | Abstinence 16m after last intervention, 30 day quit Validation: none

Notes | 3 vs 2, effect of TC as adjunct to physician advice and mailing.
Reported rates based on numbers followed up, not randomised.
Provider compliance reported to be 48%
### Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>McBride 1999</th>
</tr>
</thead>
</table>
| **Methods** | Setting: Health Maintenance Organisation, USA  
Recruitment: health survey of women following a cervical smear (pap) test  
Randomisation: method not stated, stratified on pap test result |
| **Participants** | 580 female current smokers, not selected for motivation for quit  
Av. age 36, av. cigs/day 13 |
| **Interventions** | 1. Usual care - no smoking cessation intervention  
2. Mailed cessation kit, letter personalised to stage of change and quit motivation, 3 counselling calls 2 weeks after mailing then monthly. Motivational & stage based. |
| **Outcomes** | Abstinence at 15m (7 day at 6 & 15m)  
telephone interview  
Validation: saliva cotinine <20ng/ml, quit rates not corrected, low level of misreport |
| **Notes** | Effect of TC and S-H materials compared to no intervention  
Counsellor discussed smoking and cervical cancer but not individual's pap results |

<table>
<thead>
<tr>
<th>Study</th>
<th>McFall 1993</th>
</tr>
</thead>
</table>
| **Methods** | Setting: Community, USA  
Recruitment: Registrants for a S-H TV programme who received manual or watched at least one programme  
Randomisation: method not stated |
| **Participants** | 1745 smokers  
70% female, 23% age 18-30, 40% age 31-45, 30% 45-64 |
| **Interventions** | Reactive  
1. TV programme and S-H manual (ALA Freedom From Smoking in 20 Days)  
2. As 1. plus 10 newsletters over 6 months following programme with details of hotline with taped messages and counsellors |
| **Outcomes** | Abstinence at 24m (7 day)  
Validation: none |
| **Notes** | Effect of access to hotline combined with self-help materials for maintenance of cessation.  
Use of the hotline was low - only 7% called and spoke to a counsellor |

<table>
<thead>
<tr>
<th>Study</th>
<th>Miguez 2002</th>
</tr>
</thead>
</table>
| **Methods** | Setting: Spain  
Recruitment: Community volunteers  
Randomisation: method not stated |
| **Participants** | 200 smokers interested in quitting  
38% F av. age 35, av cigs/day 28 |
| **Interventions** | Proactive  
1. S-H + 6x weekly 10m calls. 4 on motivation & cessation, 2 on maintenance  
2. S-H only. Personalised intro letter, manual & 6 similar mailing with self-monitoring and self-eval forms |
| **Outcomes** | Abstinence at 12m (not even a puff since quitting)  
Validation: CO at 12m |
| **Notes** | New trial 2003/1 update  
Effect of TC as adjunct to S-H |
### Characteristics of included studies (Continued)

#### Study: Miller 1997

**Methods**
- Setting: Hospitals, USA
- Recruitment: Inpatient smokers (excl those with no intention of quitting, or wishing to quit unaided)
- Randomisation: sealed envelopes. Study undertaken in 2 phases with minimal intervention introduced in phase 2

**Participants**
- 1942 smokers (excludes deaths)
- 49% F, av. age 51, av cigs/day 20

**Interventions**
- Proactive. All groups received standardized physician advice
  1. Intensive intervention: 30min nurse counselling, 4 phone calls at 48 hours post discharge, 7, 21, 90 days, optional session for relapers
  2. Minimal: 30min counselling + 1 phone call at 48 hours
  3. Usual Care

**Outcomes**
- Abstinence at 12 months (sustained at 3, 6 12m)
- (Paper also reports 12m point prevalence confirmed and self reported cessation rates)
- Validation: saliva cotinine <15ng/ml, or family member verification

**Notes**
- 1 vs 2, effect of additional telephone follow-up. Usual care group not used in meta-analysis. Intensive intervention was significantly better than usual care for confirmed point prevalence 12 m abstinence, other differences not significant

#### Study: Ockene 1991

**Methods**
- Setting: Primary care clinics, USA
- Recruitment: clinic attenders
- Randomisation: method not stated, allocated prior to physician encounter

**Participants**
- 1223 smokers (excludes deaths and 237 who did not receive intervention) not selected for interest in quitting
- 57% F, av. age 35, av. cigs/day 23

**Interventions**
- Proactive. 2x3 factorial design, physician intervention +/- follow-up
  - AO. Physician advice only
  - CI. Physician provided patient centered counselling, written agreement and schedule follow-up, letter. CI plus NCG. In addition informed of availability of free nicotine gum.
  1. Follow-up counselling by psychologist or health educator, 3 calls (1, 2, 3m) approx 10 mins, behavioural recommendations. Letters
  2. No follow-up

**Outcomes**
- Abstinence at 6m (7 day)
- (3m sustained abstinence rates not given by condition)
- Validation: none

**Notes**
- 1 vs 2, AO and CI effect of TC in addition to physician intervention. NCG arm in pharmacotherapy adjunct, 12m abstinence rates reported in Ockene 1994 but not given by follow-up condition

#### Study: Orleans 1991

**Methods**
- Setting: Health Maintenance Organisation, USA
- Recruitment: Largely through publicity in HMO magazine
- Randomisation: method not stated, stratified by living alone/not, advice to quit in last 12m/not and nicotine content of cig,brand

**Participants**
- 2021 smokers of 3 or more cigs/day, wanting to quit.
### Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Methods</th>
<th>Participants</th>
<th>Interventions</th>
<th>Outcomes</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Setting: Community, USA</td>
<td>1422 African American smokers</td>
<td>Reactive</td>
<td>Abstinence at 6 months, 7-day point prevalence. Telephone questionnaire</td>
<td>Comparison of 2 types of counselling. Also included in Cochrane self-help review since effects of counselling and self-help materials cannot be separated. 63% followed up. No differential drop out, results based on all randomised.</td>
</tr>
<tr>
<td>Orleans 1998</td>
<td>Recruitment: African American smokers calling the National Cancer Information Service telephone counselling line in response to targeted campaign</td>
<td>64% F, av. age not stated, 62% in 20-39 age group, median cigs/day 20</td>
<td>1. Tailored telephone counselling and tailored 36 page 'Pathways to Freedom' guide. Guide used African American models and addressed specific obstacles. Personalised quitting plan. 2. Standard CIS telephone counselling and standard guide 'Clearing the Air'</td>
<td>2. Standard CIS telephone counselling and standard guide 'Clearing the Air'</td>
<td>3 vs 1+2, effect of telephone counselling compared to self-help materials alone. (No significant difference between 1 and 2)</td>
</tr>
<tr>
<td>Ossip-Klein 1991</td>
<td>Randomisation: by last digit of caller's contact phone number</td>
<td>1813 smokers planning to quit within 3 months</td>
<td>Reactive</td>
<td>Abstinence at 16 months for over 6 months, by blinded telephone interview. Validation: Saliva cotinine &lt;10ng/ml, or thiocyanate &lt;2,400 umol/l for gum users. Self-report rates reported in analyses</td>
<td>No allocation concealment, no significant difference in 16-month abstinence rates</td>
</tr>
<tr>
<td></td>
<td>Setting: 10 counties, USA</td>
<td>1813 smokers planning to quit within 3 months</td>
<td>Reactive</td>
<td>Abstinence at 18 months, sustained from 3m. Validation: by significant other for 90% of claims, saliva cotinine for 52% of claims. Cotinine validated rates used.</td>
<td></td>
</tr>
</tbody>
</table>

**Interventions**

- Proactive
  1. Self-help manual, Quit Kit and ALA 'Lifetime of Freedom from Smoking'
  2. Same materials as 1. plus 2 copies of a social support guide.
  3. Same as 2. plus 4 scheduled calls (6, 18, 34, 60 weeks) from a counsellor and invitation to call a quit line
  4. Control - Referral guide

**Outcomes**

- Abstinence at 6 months, by blinded telephone interview.
- Validation: Saliva cotinine <10ng/ml, or thiocyanate <2,400 umol/l for gum users.
- Self-report rates reported in analyses

**Notes**

- 3 vs 1+2, effect of telephone counselling compared to self-help materials alone. (No significant difference between 1 and 2)
- No allocation concealment, no significant difference in 16-month abstinence rates
Characteristics of included studies (Continued)

Notes
The authors report a range of analyses based on alternative measures of smoking status and using logistic regression to allow for cluster randomisation. The higher quit rate in the hotline counties was consistent in all analyses.

Allocation concealment  B

Study | Ossip-Klein 1997
--- | ---
Methods | Setting: Community, USA  
Recruitment: Advertising for self-help cessation for over 60 year olds  
Randomisation: method not stated

Participants | 177 smokers aged >=60, planning to quit in next 3 months  
61% F, av. cigs/day 25

Interventions | Proactive  
1. Self-help manual (Clear Horizons), access to 24h hotline, 2 letters of support and hotline reminders  
2. As 1. and telephone counselling, 2 calls at 4 and 8 weeks Counsellors followed structured format to provide strategies based on stages of change.

Outcomes | Abstinence at 6 months (7 day point prevalence)  
Validation: no biochemical. Significant others only. Refusals and nonconfirmations classified as smokers.

Notes | Effect of telephone counselling compared to self-help materials alone  
42% had called hotline and 17.5% spoken to counsellor by 6 months.

Allocation concealment  B

Study | Prochaska 1993
--- | ---
Methods | Setting: Community, USA  
Recruitment: Advertisements for volunteers to test self-help materials  
Randomisation: method not stated, stratified by stage

Participants | 756 smokers (12% precontemplation, 58% contemplation, 30% preparation)  
62% F, av. age 43, av. cigs/day 27

Interventions | Proactive  
1. ALA S-H manuals  
2. Tailored manuals - 5 covering precontemplation, contemplation, action, maintenance, relapse. Participants sent manual for their stage of change and subsequent ones.  
3. Interactive - in addition to tailored manuals, sent personalised reports in response to questionnaires  
4. Telephone counselling - short calls at 0,1,3,6m. Materials as in 3.

Outcomes | Sustained abstinence at 18 months (12 & 18m)  
Validation: none. Participants asked for names of significant others but these not contacted

Notes | 4 vs 3, effect of TC compared to S-H alone. Numbers randomised to groups and quit rates as shown in graphs obtained from authors.

Allocation concealment  B

Study | Prochaska 2001
--- | ---
Methods | Setting: Managed care organisation, USA  
Recruitment: Smokers identified by survey of members. 85% recruited to a study  
Randomisation: method not stated

Participants | 1447 smokers unselected for motivation to quit (723 in comparisons used). 38% were precontemplators.  
56% F, av. age 38, av. cigs/day 20

Interventions | Proactive  
1. Assessment only (completed questionnaires on 4 occasions)
### Characteristics of included studies (Continued)

2. Expert System S-H. Tailored 2-3p report at 0,3,6m and SoC matched manual
3. As 2+ TC, short calls at 0, 3, 6m. Similar to Prochaska 1993 protocol but more emphasis on alternative targets for those unwilling to set quit date.
4. As 3 + computer scheduled cig reduction.

**Outcomes**
- Abstinence at 18 months, sustained for 6 months
- Validation: None
- (Other measures of abstinence also reported)

**Notes**
- New 2003/1 update
- 3 vs 2, TC vs S-H alone. Other arms compared in Self-help review
- Denominators here include losses to follow-up and refusals. Author analysis suggests ITT analysis is biased.

**Allocation concealment**  B

### Study  Reid 1999

**Methods**
- Setting: Community, Canada
- Recruitment: community volunteers
- Randomisation: table of random numbers, stratified by sex and nicotine dependence. Physician blind to allocation

**Participants**
- 396 smokers interested in quitting within 30 days, smoking >=15 cigs/day
- 48% F, av. age 38, av. cigs/day 23-24

**Interventions**
- Proactive
- 1. Nicotine patch (15mg x8w, 10mg x2w, 5mg x2w) free, physician advice (x3 15min, 2w before, 4, 12w after quit date)
- 2. As 1 plus telephone counselling, nurse counsellors, stage based, 3 sessions at 2, 6, 13 weeks

**Outcomes**
- Abstinence at 12 months (point prevalence)
- Validation: CO, but self reported rates reported. Only one disconfirmation

**Notes**
- Effect of adjunct TC compared to NRT and counselling alone
- Similar counselling scripts to Orleans 1991

**Allocation concealment**  B

### Study  Rimer 1994

**Methods**
- Setting: Community. USA
- Recruitment: volunteers from American Association for Retired Persons
- Randomisation: method not specified

**Participants**
- 1867 smokers aged 50-75 (12 month data based on 1391) interested in finding out about quitting.
- 63% F, Av age 61, av cigs/day 27

**Interventions**
- Proactive
- 1. Standard S-H manual (not included in meta-analysis)
- 2. S-H manual tailored for older smokers (Clear Horizons)
- 3. Tailored manual and 2 10-15min counsellor calls at 4-8 weeks and 16-20 weeks. Also access to a quitline

**Outcomes**
- Abstinence at 12 months
- Validation: none

**Notes**
- 3 vs 2, effect of TC compared to S-H
- Preliminary 12m results used. Further data requested from author.

**Allocation concealment**  B

### Study  Solomon 2000

**Methods**
- Setting: Community, USA


Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Recruitment: volunteers for free nicotine patch trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomisation: method not specified</td>
</tr>
</tbody>
</table>

Participants | 214 female smokers, >4/day, intending to quit in next 2 weeks  
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Av. age 33, av cigs/day 24</td>
</tr>
</tbody>
</table>

Interventions | Proactive  
|---------------------------------------------------------|
| 1. Free nicotine patch (dose based on smoking level) for up to 10w.  
| 2. Free patch plus TC from female ex smoker, 7hrs training. Calls for up to 3m, starting pre quit, quit, day 4, average 7.  

Outcomes | Abstinence at 6m (7days at 3m & 6m)  
|---------------------------------------------------------|
| Validation: CO =< 8ppm.  
| 7-12% disconfirmation rate. Participants who did not provide samples remained classified as quitters |

Notes | Intervention participants received an average of 7 calls. 95% received at least one. Participants could call Nicoderm support line, 21% of control vs 8% of intervention did so. |

Allocation concealment | B |

---

**Study** | **Thompson 1993**
---|---

Methods | Setting: Workplace and community, USA  
|---------------------------------------------------------|
| Recruitment: initially from 4 workplaces, targeting blue collar workplaces, widened to general community to meet targets. Callers gave oral consent and baseline assessment of smoking characteristics prior to randomisation  
| Randomisation: method not specified |

Participants | 382 (341 smokers, 41 recent quitters). Majority in contemplation or action stage, 24% 'blue collar'  
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>59% F, Av. age 41, av. cigs/day 18-22</td>
</tr>
</tbody>
</table>

Interventions | Reactive  
|---------------------------------------------------------|
| 1. Callers to hotline received general information based on fact sheets, and sent S-H  
| 2. Callers were given information based on stage, and encouraged to take next step in cessation process. Script tailored to blue collar workers using focus groups |

Outcomes | Abstinence at 6m (subset followed to 12m)  
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation: saliva samples sought but not tested. Surrogates asked to confirm status</td>
</tr>
</tbody>
</table>

Notes | 2 vs 1, comparison between stage based and nonspecific brief counselling  
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The stage-model counselling was based on the approach used by the Cancer Information Service. 1991 gives data about call rates from original target worksites</td>
</tr>
</tbody>
</table>

Allocation concealment | B |

---

**Study** | **Zhu 1996**
---|---

Methods | Setting: Community, USA  
|---------------------------------------------------------|
| Recruitment: From callers to an advertised helpline  
| Randomisation: pseudo-random, according to last 2 digits of telephone number |

Participants | 3030 smokers who called a smokers’ helpline and were ready to quit in next week  
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>57% F, av. age 36, av. cigs/day 20</td>
</tr>
</tbody>
</table>

Interventions | Proactive following initial call to helpline.  
|---------------------------------------------------------|
| 1. Self-help materials only  
| 2. S-H materials and a 50-min pre-quit session of telephone counselling  
| 3. Self-help and pre-quit plus up to 5 further sessions of counselling at 1,3, 7, 14 and 30 days |

Outcomes | Abstinence at 13 months, sustained for 12m  
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation: Cotinine &lt;10mg/nl in a convenience sample. Disconfirmation rate not used to correct data, but refusal and misreport rates similar in all groups</td>
</tr>
</tbody>
</table>
Notes 2 & 3 vs 1 in effect of TC compared to S-H alone.
3 vs 2 in effect of multiple sessions

Allocation concealment C

Study Zhu 2002

Methods Setting: Community, USA
Recruitment: From callers to an advertised helpline
Randomisation: method not stated. 60/40 split. Only randomised when counselling demand exceeded capacity

Participants 3282 smokers who called quitline, were ready to quit within 1 week and wanted counselling.
56% F, Av. age 38, av. cigs/day 20

Interventions Proactive following initial call to helpline
1. S-H pack, motivational materials, counselling provided if smoker made contact to request it.
2. S-H as 1> prequit and up to 6 post-quit calls within 3 months. Incl quitting history, motivation, self-efficacy, social support, planning, relapse prevention

Outcomes Abstinence at 13 months, sustained for 12m
Validation: none

Notes New for 2003/1 update. 2 vs 1, effect of TC versus S-H alone.
Authors also analysed subgroups of control who did and didn't seek counselling. 32% of C and 72% of T group received counselling

Allocation concealment B
TC: Telephone counselling, S-H: Self-help materials

Characteristics of excluded studies

Study Reason for exclusion
Ahijevych 1995 Pilot study with 12 weeks follow-up, after which the advice and control groups were offered the intervention. The intervention was 4 weekly mailings and telephone calls from a lay facilitator. No participants in any group (n=64) quit smoking.
Amos 1995 Not a controlled trial. Callers to a workplace helpline set up in conjunction with a non-smoking policy were followed up. 16% of smokers reported they had quit 3 months later, 28% of those who had tried to quit. It was estimated that between 3 - 3.3% of smokers in the company had called in the first 3 months.
Balanda 1999 Callers to a helpline were randomised to one of two self-help materials. No counselling was given. Follow-up only one month after receipt of materials. There was no difference in cessation rates between the booklet groups. Overall 16% of 515 respondents reported 7day abstinence at one month.
Best 1977 Allocation not stated to be random. Telephone follow-up compared to group behavioural treatment with aversive smoking only. Abstinence rates were lower for the telephone group.
Borland 1989 Not a controlled trial. Evaluation of calls to a helpline.
Cummings 1988 Callers to a helpline were randomised to one of 4 different self-help programmes or an information control. No counselling was given. There was no difference in outcome between any of the self-help booklets or the control, with sustained abstinence rates of 4-8% at 6 months.
Cummings 1989 Does not measure smoking cessation. Assess impact of a media campaign to get women smokers with young children to call a quit line. Call rates compared in media markets with and without a campaign. Campaign increased call rates 10 times compared to control markets. Proportion of calls from target group also increased. Cost per caller estimated at $61.
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis 1992</td>
<td>All participants were women with young children who called a hotline and received same stage based counselling. They were randomised to receive 3 different self-help guides. Quit rates did not differ and were approximately 10% for surrogate validated 7 day abstinence at 6 months.</td>
</tr>
<tr>
<td>DeBusk 1994</td>
<td>Telephone component cannot be evaluated independently of face to face counselling. The intervention included in hospital physician advice and counselling by a nurse as well as post discharge telephone contact, and was compared to usual care.</td>
</tr>
<tr>
<td>Decker 1989</td>
<td>Not random or pseudo random. Interventions ran sequentially. Participants receiving mailed materials had access to a hotline.</td>
</tr>
<tr>
<td>Dubren 1977</td>
<td>Recent quitters were randomised to access to recorded messages, not a counsellor. Short follow-up (4 weeks).</td>
</tr>
<tr>
<td>Johnson 1999</td>
<td>Telephone component cannot be evaluated independently of face to face counselling. The intervention included in hospital counselling by a nurse. Quasi-random design.</td>
</tr>
<tr>
<td>Koffman 1998</td>
<td>Three worksites allocated to different interventions. No way to distinguish variation due to worksite from effect of intervention.</td>
</tr>
<tr>
<td>Leed-Kelly 1996</td>
<td>The intervention included one session of face to face counselling with telephone follow-up. Results, which did not show any intervention effect, are given in Bobo 1998.</td>
</tr>
<tr>
<td>Manfredi 1999</td>
<td>The intervention included the opportunity of a motivational telephone call following provider advice and self-help components. Follow-up was only 5 to 8 weeks.</td>
</tr>
<tr>
<td>Ockene 1992</td>
<td>Telephone support could not be evaluated independently of combined intervention.</td>
</tr>
<tr>
<td>Owen 2000</td>
<td>Not a controlled trial. Survey of callers to UK quiltine. Conservatively assuming that non-responders at one year were continuing smokers and assuming 20% of reported successes would fail biochemical validation gave an adjusted quit rate of 15. 6% (95% CI 12.7% to 18.9%).</td>
</tr>
<tr>
<td>Platt 1997</td>
<td>Not a controlled trial. A panel sample of callers to the Scottish Smokeline was followed up for one year. 607 (71% of original sample) were reached. The quit rate was 23.6%, 8.2% reported not smoking for &gt;80% of the previous year. It was estimated that 5.9% of the adult smokers in Scotland called during the year.</td>
</tr>
<tr>
<td>Prue 1983</td>
<td>The amount and timing of telephone contact is unclear. The main component was a self help programme, compared to a waiting list control. Total of 40 participants.</td>
</tr>
<tr>
<td>Reid 1999b</td>
<td>Not a controlled trial. Followed 258 nicotine patch purchasers who enrolled for support program of four calls from a trained nurse counsellor. 36% quit rate at 8 months.</td>
</tr>
<tr>
<td>Schneider 1995</td>
<td>Evaluated a telephone support system. All smokers recruited had access to the interactive programme. Random subsets were selected for access to messages about nicotine gum, sent a reminder to call, or sent a user's manual.</td>
</tr>
<tr>
<td>Shiffman 2000</td>
<td>Follow-up 12 weeks. At this point there was no evidence that the addition of a single proactive call 2 days after the target quit date increased cessation rates over 6 mailings of tailored materials.</td>
</tr>
<tr>
<td>Simon 1997</td>
<td>Telephone component cannot be evaluated independently of face to face counselling. The intervention included brief counselling and NRT.</td>
</tr>
<tr>
<td>Stevens 1993</td>
<td>Telephone component cannot be evaluated independently of face to face counselling. The intervention included in hospital physician advice and counselling by a nurse as well as post discharge telephone contact, and was compared to usual care.</td>
</tr>
<tr>
<td>Taylor 1990</td>
<td>Telephone component cannot be evaluated independently of face to face counselling. The intervention included in hospital physician advice and counselling by a nurse as well as post discharge telephone contact, and was compared to usual care.</td>
</tr>
<tr>
<td>Wadland 1999</td>
<td>Not randomised. The treated groups were recruited by different means and given different interventions both of which included telephone counselling by nurses or counsellors.</td>
</tr>
<tr>
<td>Wadland 2001</td>
<td>Only 3 months follow-up.</td>
</tr>
<tr>
<td>Westman 1993</td>
<td>Telephone component cannot be evaluated independently of face to face counselling.</td>
</tr>
<tr>
<td>Zhu 2000a</td>
<td>Not an RCT. All participants called the California Smokers’ Helpline and received one session of counselling and planned to use NRT. Those who chose to receive further counselling were compared to those who did not.</td>
</tr>
</tbody>
</table>
### Characteristics of excluded studies (Continued)

#### ANALYSES

#### Comparison 01. Proactive counselling

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Long term cessation - Telephone counselling compared to minimal intervention only</td>
<td>4</td>
<td>2078</td>
<td>Peto Odds Ratio 95% CI</td>
<td>1.08 [0.87, 1.33]</td>
</tr>
<tr>
<td>02 Long term cessation - Telephone counselling as adjunct to face to face intervention without pharmacotherapy</td>
<td>4</td>
<td>1499</td>
<td>Peto Odds Ratio 95% CI</td>
<td>1.08 [0.82, 1.43]</td>
</tr>
</tbody>
</table>

#### Comparison 02. Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Long term cessation - Telephone counselling v all less intensive controls</td>
<td>13</td>
<td>16462</td>
<td>Peto Odds Ratio 95% CI</td>
<td>1.56 [1.38, 1.77]</td>
</tr>
<tr>
<td>02 Long term cessation - Telephone counselling v all less intensive controls (Zhu 2002 subgroup B only)</td>
<td>13</td>
<td>15301</td>
<td>Peto Odds Ratio 95% CI</td>
<td>1.66 [1.46, 1.89]</td>
</tr>
</tbody>
</table>

#### Comparison 03. Proactive counselling - Multiple versus single session

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Long term cessation - Up to 6 calls compared to single call and self help materials</td>
<td>1</td>
<td>2189</td>
<td>Peto Odds Ratio 95% CI</td>
<td>1.36 [1.01, 1.83]</td>
</tr>
<tr>
<td>02 Long term cessation - Four calls compared to single call and in hospital intervention</td>
<td>1</td>
<td>1000</td>
<td>Peto Odds Ratio 95% CI</td>
<td>1.40 [1.00, 1.96]</td>
</tr>
</tbody>
</table>

#### Comparison 04. Reactive counselling - Helplines/hotlines

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Long term cessation - Effect of availability of a hotline</td>
<td></td>
<td></td>
<td>Odds Ratio (Fixed) 95% CI</td>
<td>Totals not selected</td>
</tr>
<tr>
<td>02 Long term cessation - Effect of offering different services for helpline callers</td>
<td>2</td>
<td>1804</td>
<td>Odds Ratio (Fixed) 95% CI</td>
<td>1.12 [0.84, 1.50]</td>
</tr>
</tbody>
</table>
INDEX TERMS

Medical Subject Headings (MeSH)
Counseling [methods]; *Hotlines; Randomized Controlled Trials; *Smoking Cessation

MeSH check words
Humans

COVER SHEET

Title
Telephone counselling for smoking cessation

Authors
Stead LF, Lancaster T, Perera R

Contribution of author(s)
LS and TL contributed to developing the protocol, extracting data and writing the review. RP became an author from issue 1 2003 and extracted data and contributed to updating the text.

Issue protocol first published
2000/4

Review first published
2001/2

Date of most recent amendment
14 November 2005

Date of most recent SUBSTANTIVE amendment
15 October 2002

What's New
Updated for Issue 1, 2003. Four new trials, of which 3 contribute to meta-analysis. No major changes to conclusions.

Date new studies sought but none found
Information not supplied by author

Date new studies found but not yet included/excluded
Information not supplied by author

Date new studies found and included/excluded
15 October 2002

Date authors’ conclusions section amended
15 October 2002

Contact address
Mrs Lindsay Stead
Review Group Co-ordinator
Department of Primary Health Care
Oxford University
Old Road Campus
Headington
Oxford
OX3 7LF
UK
E-mail: lindsay.stead@dphpc.ox.ac.uk
Tel: +44 1865 226977
Fax: +44 1865 227036

DOI
10.1002/14651858.CD002850

Cochrane Library number
CD002850

Editorial group
Cochrane Tobacco Addiction Group
## Analysis 01.01. Comparison 01 Proactive counselling, Outcome 01 Long term cessation - Telephone counselling compared to minimal intervention only

Review: Telephone counselling for smoking cessation
Comparison: 01 Proactive counselling
Outcome: 01 Long term cessation - Telephone counselling compared to minimal intervention only

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Peto Odds Ratio 95% CI</th>
<th>Peto Odds Ratio 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Telephone contact versus most intensive self-help alone</td>
<td>Borland 2001 35/497</td>
<td>20/501</td>
<td>1.80 [1.04, 3.09]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Curry 1995 8/150</td>
<td>10/329</td>
<td>1.88 [0.68, 5.19]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lichtenstein 2000 25/355</td>
<td>15/349</td>
<td>1.67 [0.88, 3.16]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miguez 2002 27/100</td>
<td>14/100</td>
<td>2.21 [1.11, 4.39]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orleans 1991 86/474</td>
<td>92/338</td>
<td>2.13 [1.53, 2.97]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prochaska 1993 17/187</td>
<td>23/191</td>
<td>0.73 [0.38, 1.41]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prochaska 2001 25/361</td>
<td>25/362</td>
<td>1.00 [0.56, 1.78]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rimer 1994 88/463</td>
<td>93/463</td>
<td>0.93 [0.67, 1.29]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zhu 1996 190/2189</td>
<td>46/841</td>
<td>1.56 [1.16, 2.10]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zhu 2002 179/1973</td>
<td>90/1309</td>
<td>1.34 [1.04, 1.73]</td>
<td></td>
</tr>
<tr>
<td>02 Telephone contact and self-help versus neither</td>
<td>McBride 1999 16/288</td>
<td>14/292</td>
<td>1.17 [0.56, 2.43]</td>
<td></td>
</tr>
<tr>
<td>03 Telephone contact and offer of self-help materials versus neither</td>
<td>Lando 1992 20/716</td>
<td>10/683</td>
<td>1.88 [0.91, 3.88]</td>
<td></td>
</tr>
<tr>
<td>04 Telephone contact versus self-help materials % hotline reminders alone</td>
<td>Ossip-Klein 1997 18/92</td>
<td>17/85</td>
<td>0.97 [0.47, 2.04]</td>
<td></td>
</tr>
</tbody>
</table>
### Analysis 01.02. Comparison 01 Proactive counselling, Outcome 02 Long term cessation - Telephone counselling as adjunct to face to face intervention without pharmacotherapy

**Review:** Telephone counselling for smoking cessation

**Comparison:** Proactive counselling

**Outcome:** Long term cessation - Telephone counselling as adjunct to face to face intervention without pharmacotherapy

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Peto Odds Ratio</th>
<th>Weight</th>
<th>Peto Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>95% CI (%)</td>
<td>(%)</td>
<td>95% CI</td>
</tr>
<tr>
<td>01 Calls compared to physician prompt and tailored mailing alone</td>
<td>Lipkus 1999</td>
<td>10/52</td>
<td>18/55</td>
<td>6.1</td>
<td>0.50 [ 0.21, 1.18 ]</td>
</tr>
<tr>
<td></td>
<td>Subtotal (95% CI)</td>
<td>52</td>
<td>55</td>
<td>6.1</td>
<td>0.50 [ 0.21, 1.18 ]</td>
</tr>
<tr>
<td></td>
<td>Total events: 10 (Treatment), 18 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for overall effect z=1.58 p=0.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Calls following physician intervention compared to physician alone</td>
<td>Ockene 1991</td>
<td>42/386</td>
<td>46/457</td>
<td>23.0</td>
<td>1.09 [ 0.70, 1.70 ]</td>
</tr>
<tr>
<td></td>
<td>Subtotal (95% CI)</td>
<td>386</td>
<td>457</td>
<td>23.0</td>
<td>1.09 [ 0.70, 1.70 ]</td>
</tr>
<tr>
<td></td>
<td>Total events: 42 (Treatment), 46 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for overall effect z=0.39 p=0.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03 Calls following intensive cessation clinic compared to clinic alone</td>
<td>Lando 1996</td>
<td>177/542</td>
<td>165/541</td>
<td>68.7</td>
<td>1.10 [ 0.86, 1.43 ]</td>
</tr>
<tr>
<td></td>
<td>Subtotal (95% CI)</td>
<td>542</td>
<td>541</td>
<td>68.7</td>
<td>1.10 [ 0.86, 1.43 ]</td>
</tr>
<tr>
<td></td>
<td>Total events: 177 (Treatment), 165 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for overall effect z=0.76 p=0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04 Calls compared to a single information session or self help materials alone</td>
<td>Brown 1992</td>
<td>7/23</td>
<td>2/22</td>
<td>2.2</td>
<td>3.69 [ 0.87, 15.63 ]</td>
</tr>
<tr>
<td></td>
<td>Subtotal (95% CI)</td>
<td>23</td>
<td>22</td>
<td>2.2</td>
<td>3.69 [ 0.87, 15.63 ]</td>
</tr>
<tr>
<td></td>
<td>Total events: 7 (Treatment), 2 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for overall effect z=1.77 p=0.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total (95% CI)</td>
<td>1003</td>
<td>1075</td>
<td>100.0</td>
<td>1.08 [ 0.87, 1.33 ]</td>
</tr>
<tr>
<td></td>
<td>Total events: 236 (Treatment), 231 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for heterogeneity chi-square=5.89 df=3 p=0.12 I=49.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Test for overall effect z=0.69 p=0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analysis 01.03. Comparison 01 Proactive counselling, Outcome 03 Long term cessation - Telephone counselling as adjunct to pharmacotherapy

Review: Telephone counselling for smoking cessation
Comparison: 01 Proactive counselling
Outcome: 03 Long term cessation - Telephone counselling as adjunct to pharmacotherapy

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Peto Odds Ratio</th>
<th>Weight</th>
<th>Peto Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>95% CI (%)</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>01 Calls compared to nicotine patch and physician advice alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reid 1999</td>
<td>46/197</td>
<td>48/199</td>
<td>36.0</td>
<td>0.96 [0.60, 1.52]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>197</td>
<td>199</td>
<td>36.0</td>
<td>0.96 [0.60, 1.52]</td>
<td></td>
</tr>
<tr>
<td>Total events: 46 (Treatment), 48 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.18  p=0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Calls compared to nicotine patch, single group session and hotline access alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lando 1997</td>
<td>21/162</td>
<td>46/347</td>
<td>25.3</td>
<td>0.97 [0.56, 1.69]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>162</td>
<td>347</td>
<td>25.3</td>
<td>0.97 [0.56, 1.69]</td>
<td></td>
</tr>
<tr>
<td>Total events: 21 (Treatment), 46 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.09  p=0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03 Calls compared to nicotine patch alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solomon 2000</td>
<td>21/106</td>
<td>16/108</td>
<td>15.4</td>
<td>1.42 [0.70, 2.87]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>106</td>
<td>108</td>
<td>15.4</td>
<td>1.42 [0.70, 2.87]</td>
<td></td>
</tr>
<tr>
<td>Total events: 21 (Treatment), 16 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.96  p=0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04 Calls compared to nicotine gum and physician advice alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ockene 1991</td>
<td>48/263</td>
<td>18/117</td>
<td>23.3</td>
<td>1.22 [0.69, 2.17]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>263</td>
<td>117</td>
<td>23.3</td>
<td>1.22 [0.69, 2.17]</td>
<td></td>
</tr>
<tr>
<td>Total events: 48 (Treatment), 18 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.68  p=0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>728</td>
<td>771</td>
<td>100.0</td>
<td>1.08 [0.82, 1.43]</td>
<td></td>
</tr>
<tr>
<td>Total events: 136 (Treatment), 128 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity chi-square=1.13  df=3  p=0.77  I=0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.55  p=0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Telephone counselling for smoking cessation (Review)
Copyright © 2006 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd
Analysis 02.01. Comparison 02 Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms, Outcome 01 Long term cessation - Telephone counselling v all less intensive controls

Review: Telephone counselling for smoking cessation  
Comparison: Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms  
Outcome: Long term cessation - Telephone counselling v all less intensive controls

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Peto Odds Ratio 95% CI</th>
<th>Weight (%)</th>
<th>Peto Odds Ratio 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borland 2001</td>
<td>35/497</td>
<td>20/501</td>
<td>1.80 [1.04, 3.09]</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Curry 1995</td>
<td>8/150</td>
<td>24/987</td>
<td>2.89 [1.02, 8.15]</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Lando 1992</td>
<td>20/716</td>
<td>10/683</td>
<td>1.88 [0.91, 3.88]</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Lichtenstein 2000</td>
<td>25/355</td>
<td>15/349</td>
<td>1.67 [0.88, 3.16]</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>McBride 1999</td>
<td>16/288</td>
<td>14/292</td>
<td>1.17 [0.56, 2.43]</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Miguez 2002</td>
<td>27/100</td>
<td>14/100</td>
<td>2.21 [1.11, 4.39]</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Orleans 1991</td>
<td>86/474</td>
<td>92/938</td>
<td>2.13 [1.53, 2.97]</td>
<td>13.4</td>
<td></td>
</tr>
<tr>
<td>Ossip-Klein 1997</td>
<td>18/92</td>
<td>17/85</td>
<td>0.97 [0.47, 2.04]</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Prochaska 1993</td>
<td>17/187</td>
<td>45/569</td>
<td>1.17 [0.64, 2.14]</td>
<td>4.1</td>
<td></td>
</tr>
<tr>
<td>Prochaska 2001</td>
<td>25/361</td>
<td>41/712</td>
<td>1.22 [0.72, 2.07]</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>Rimer 1994</td>
<td>88/463</td>
<td>162/1251</td>
<td>1.63 [1.20, 2.20]</td>
<td>16.2</td>
<td></td>
</tr>
<tr>
<td>Zhu 1996</td>
<td>190/2189</td>
<td>46/841</td>
<td>1.56 [1.16, 2.10]</td>
<td>16.8</td>
<td></td>
</tr>
<tr>
<td>Zhu 2002</td>
<td>179/1973</td>
<td>90/1309</td>
<td>1.34 [1.04, 1.73]</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>7845</td>
<td>8617</td>
<td>1.56 [1.38, 1.77]</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Total events: 734 (Treatment), 590 (Control)  
Test for heterogeneity chi-square=11.59 df=12 p=0.48 I =0.0%  
Test for overall effect z=7.21 p<0.00001
**Analysis 02.02. Comparison 02 Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms, Outcome 02 Long term cessation - Telephone counselling v all less intensive controls (Zhu 2002 subgroup B only)**

Review: Telephone counselling for smoking cessation

Comparison: Proactive counselling compared to minimal intervention. Alternative analysis using all minimal control arms

Outcome: Long term cessation - Telephone counselling v all less intensive controls (Zhu 2002 subgroup B only)

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Peto Odds Ratio 95% CI (%)</th>
<th>Weight</th>
<th>Peto Odds Ratio 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borland 2001</td>
<td>35/497</td>
<td>20/501</td>
<td></td>
<td>5.7</td>
<td>1.80 [1.04, 3.09]</td>
</tr>
<tr>
<td>Curry 1995</td>
<td>8/150</td>
<td>24/987</td>
<td></td>
<td>1.5</td>
<td>2.89 [1.02, 8.15]</td>
</tr>
<tr>
<td>Lando 1992</td>
<td>20/716</td>
<td>10/683</td>
<td></td>
<td>3.2</td>
<td>1.88 [0.91, 3.88]</td>
</tr>
<tr>
<td>Lichtenstein 2000</td>
<td>25/355</td>
<td>15/349</td>
<td></td>
<td>4.1</td>
<td>1.67 [0.88, 3.16]</td>
</tr>
<tr>
<td>McBride 1999</td>
<td>16/288</td>
<td>14/292</td>
<td></td>
<td>3.1</td>
<td>1.17 [0.56, 2.43]</td>
</tr>
<tr>
<td>Miguez 2002</td>
<td>27/100</td>
<td>14/100</td>
<td></td>
<td>3.6</td>
<td>2.21 [1.11, 4.39]</td>
</tr>
<tr>
<td>Orleans 1991</td>
<td>86/474</td>
<td>92/938</td>
<td></td>
<td>15.1</td>
<td>2.13 [1.53, 2.97]</td>
</tr>
<tr>
<td>Ossip-Klein 1997</td>
<td>18/92</td>
<td>17/85</td>
<td></td>
<td>3.1</td>
<td>0.97 [0.47, 2.04]</td>
</tr>
<tr>
<td>Prochaska 1993</td>
<td>17/187</td>
<td>45/569</td>
<td></td>
<td>4.6</td>
<td>1.17 [0.64, 2.14]</td>
</tr>
<tr>
<td>Prochaska 2001</td>
<td>25/361</td>
<td>41/712</td>
<td></td>
<td>6.0</td>
<td>1.22 [0.72, 2.07]</td>
</tr>
<tr>
<td>Rimer 1994</td>
<td>88/463</td>
<td>162/1251</td>
<td></td>
<td>18.3</td>
<td>1.63 [1.20, 2.20]</td>
</tr>
<tr>
<td>Zhu 1996</td>
<td>190/2189</td>
<td>46/841</td>
<td></td>
<td>19.0</td>
<td>1.56 [1.16, 2.10]</td>
</tr>
<tr>
<td>Zhu 2002</td>
<td>96/1275</td>
<td>35/846</td>
<td></td>
<td>12.8</td>
<td>1.80 [1.25, 2.58]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>71/47</td>
<td>8154</td>
<td></td>
<td>1000</td>
<td>1.66 [1.46, 1.89]</td>
</tr>
</tbody>
</table>

Total events: 651 (Treatment), 535 (Control)

Test for heterogeneity chi-square=9.95 df=12 p=0.62 I =0.0%

Test for overall effect z=7.66 p<0.00001

---

**Te l e p h o n e c o u n s e l l i n g f o r s m o k i n g c e s s a t i o n (R e v i e w)**

Copyright © 2006 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd
### Analysis 03.01. Comparison 03 Proactive counselling - Multiple versus single session, Outcome 01 Long term cessation - Up to 6 calls compared to single call and self help materials

**Review:** Telephone counselling for smoking cessation  
**Comparison:** 03 Proactive counselling - Multiple versus single session  
**Outcome:** 01 Long term cessation - Up to 6 calls compared to single call and self help materials

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Peto Odds Ratio 95% CI (%)</th>
<th>Weight</th>
<th>Peto Odds Ratio 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhu 1996</td>
<td>104/1046</td>
<td>86/1143</td>
<td>1.36 [1.01, 1.83]</td>
<td>100.0</td>
<td>1.36 [1.01, 1.83]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>1046</td>
<td>1143</td>
<td></td>
<td>100.0</td>
<td>1.36 [1.01, 1.83]</td>
</tr>
<tr>
<td>Total events: 104 (Treatment), 86 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=2.01 p=0.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **0.1 0.2 0.5 1 2 5 10**  
  - Favours control  
  - Favours intervention

### Analysis 03.02. Comparison 03 Proactive counselling - Multiple versus single session, Outcome 02 Long term cessation - Four calls compared to single call and in hospital intervention

**Review:** Telephone counselling for smoking cessation  
**Comparison:** 03 Proactive counselling - Multiple versus single session  
**Outcome:** 02 Long term cessation - Four calls compared to single call and in hospital intervention

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Peto Odds Ratio 95% CI (%)</th>
<th>Weight</th>
<th>Peto Odds Ratio 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller 1997</td>
<td>100/540</td>
<td>64/460</td>
<td>1.40 [1.00, 1.96]</td>
<td>100.0</td>
<td>1.40 [1.00, 1.96]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>540</td>
<td>460</td>
<td></td>
<td>100.0</td>
<td>1.40 [1.00, 1.96]</td>
</tr>
<tr>
<td>Total events: 100 (Treatment), 64 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=1.96 p=0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **0.1 0.2 0.5 1 2 5 10**  
  - Favours control  
  - Favours intervention
Analysis 04.01. Comparison 04 Reactive counselling - Helplines/hotlines, Outcome 01 Long term cessation - Effect of availability of a hotline

Review: Telephone counselling for smoking cessation
Comparison: 04 Reactive counselling - Helplines/hotlines
Outcome: 01 Long term cessation - Effect of availability of a hotline

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Odds Ratio (Fixed) 95% CI</th>
<th>Odds Ratio (Fixed) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Hotline and self help materials compared to self help only</td>
<td>56/894</td>
<td>34/919</td>
<td></td>
<td>1.74 [1.12, 2.69]</td>
</tr>
<tr>
<td>Ossip-Klein 1991</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Hotline and self-help materials for cessation maintenance compared to nothing</td>
<td>180/873</td>
<td>105/438</td>
<td></td>
<td>0.82 [0.63, 1.08]</td>
</tr>
<tr>
<td>McFall 1993</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03 Hotline access for relapse prevention in quitters</td>
<td>200/225</td>
<td>193/219</td>
<td></td>
<td>1.08 [0.60, 1.93]</td>
</tr>
<tr>
<td>Brandon 2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis 04.02. Comparison 04 Reactive counselling - Helplines/hotlines, Outcome 02 Long term cessation - Effect of offering different services for helpline callers

Review: Telephone counselling for smoking cessation
Comparison: 04 Reactive counselling - Helplines/hotlines
Outcome: 02 Long term cessation - Effect of offering different services for helpline callers

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Odds Ratio (Fixed) 95% CI</th>
<th>Weight (%)</th>
<th>Odds Ratio (Fixed) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Stage based counselling versus general information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thompson 1993</td>
<td>40/197</td>
<td>34/185</td>
<td></td>
<td>32.4</td>
<td>1.13 [0.68, 1.88]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>197</td>
<td>185</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total events: 40 (Treatment), 34 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.48 p=0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Tailored counselling versus standard counselling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orleans 1998</td>
<td>74/733</td>
<td>63/689</td>
<td></td>
<td>67.6</td>
<td>1.12 [0.78, 1.59]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>733</td>
<td>689</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total events: 74 (Treatment), 63 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.61 p=0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>930</td>
<td>874</td>
<td></td>
<td>100.0</td>
<td>1.12 [0.84, 1.50]</td>
</tr>
<tr>
<td>Total events: 114 (Treatment), 97 (Control)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity chi-square=0.00 d.f=1 p=0.96 I =0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.77 p=0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>