

Research Report

Carbon monoxide verified 4-week quit rates in the English Stop Smoking Services before versus after establishment of the National Centre for Smoking Cessation and Training

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Abstract

Background and aims: The National Centre for Smoking Cessation and Training (NCSCT) was established by the English Department of Health in 2009 to increase quality and reduce local variability of the national network of English Stop Smoking Services. This paper reports the annual carbon monoxide (CO) verified 4-week quit rates before versus after the first three years of operation of the NCSCT.

Methods: Performance data from the Stop Smoking Services are recorded annually from April-March. The percentage of quit dates that led to CO-verified abstinence after 4 weeks in 2008/9 and 2011/12 were obtained for each of the 151 English Stop Smoking Services. The mean and standard deviation of these percentages at the two time periods were compared.

Results: The mean (standard deviation) of the quit rate for the Stop Smoking Services was 34.0% (11.3) in 2008/9 compared with 35.9% (9.4) in 2011/12; $p=0.004$ for the change in mean.

Conclusions: The mean CO-verified 4-week quit rate increased and variability decreased from immediately before to three years after establishment of the NCSCT. While other factors may have led, or contributed, to this change, the figures are consistent with the NCSCT having begun to meet its primary aim. It will be important to continue to monitor the Stop Smoking Service figures to assess the impact of changes taking places in the delivery of stop smoking support.

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Data access: The data files used for the main analyses and the command syntax are available as supplementary files on smokinginbritain.co.uk.

Commentaries: Readers are invited to comment on this article including presenting results of additional data analyses by going to: www.smokinginbritain.co.uk.

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Introduction

The NHS Stop Smoking Services have been in operation in England for more than 10 years and it is estimated that they have helped more than 145,000 smokers to stop for at least a year who would not have done so had they only received a prescription for a stop smoking medicine from their general practitioner, saving lives extremely cost-effectively (1). While this represents a substantial public health impact, it was noted in 2007 that success rates overall were somewhat less than would be expected from randomised controlled trial evidence, the success rates had declined somewhat from 2004, and there was substantial variability across the 151 local services.

This led to the establishment in 2009 by the English Department of Health of the National Centre for Smoking Cessation and Training (NCSCT, initially called the NHS Centre for Smoking Cessation and Training, www.ncsct.co.uk). The overall aim was to improve the quality of service provision by: 1) undertaking research to establish best practice, 2) using the findings to develop a training and assessment programme to ensure that all stop smoking advisors met a minimum level of competence in delivering best practice, 3) providing resources and continuing professional development. An evaluation plan was put into place to assess the performance of the NCSCT. This included: 1) tracking the numbers of stop smoking advisors who registered with the centre, undertook online and face-to-face training, and became NCSCT certified, 2) assessing improvements in knowledge and self-rated skills of advisors before versus after undertaking NCSCT training, and 3) using Department of Health annual performance monitoring data to establish whether after three years of operation there was a detectable improvement in the quality of the services as measured by an increase in the expired-air carbon monoxide verified 4-week quit rates, particularly attributable to an increase in the success rates of the lower performing services.

The first two components of the evaluation showed that after 3 years more than 9,000 stop smoking advisors were certified at stage 1 (knowledge) and some 5,000 were certified at stage 2 (skills) (www.ncsct.co.uk/publication_ncsct_final_report.php), and that knowledge and self-rated skills increased substantially in those undertaking the training (2). The third component of the evaluation is more difficult to interpret because any change, whether for better or worse, could be attributed to a number of factors other than the operation of the NCSCT. Nevertheless, if 4-week quit rates continued to decline this would provide modest evidence that the NCSCT was not achieving its primary goal, and a reversal of the steady decline would suggest that the NCSCT was achieving its goal. To help in the interpretation it would be useful to confirm that (a) the numbers of smokers treated had not declined and (b) any improvement was largely driven by increases in success rates of the lower performing services. To inform the strategy of targeting low performing services for additional training, it would be useful to know how far services were consistent in their performance relative to each other over the three years of the study.

Aims

The primary aim was to compare the means and standard deviations of the 4-week CO verified quit rates of English Stop Smoking Services in the year preceding versus the third year of operation of the NCSCT.

Secondary aims were: to compare the numbers of smokers treated in the two time periods, to assess how far any improvements in quit rates were concentrated in the lower performing services, and to assess the degree to which the services were consistent over time relative to each other as regards their 4-week quit rates.

Methods

Publicly available data from the Health & Social Care Information Centre (www.hscic.gov.uk) were used. CO-verified success rates and numbers of smokers treated for each Primary Care Trust (PCT - the commissioners of the 151 local Stop Smoking Services in England) were extracted for the years 2008/9 and 2011/12. The means and standard deviations of the 4-week quit rates and numbers treated were calculated. Although there were more than 151 PCTs, some changed or merged over the period of the study preventing meaningful comparison.

The mean 4-week quit rates and numbers of smokers treated for each time period were compared by a paired t-test. A Pearson correlation was used to assess consistency of the services relative to each other over time in these parameters. The change in quit rates was assessed separately for low and high performing services taken to be below the median and on or above the median in 2008/9.

Results

Table 1 shows the means and standard deviations of the CO-verified 4-week quit rates and numbers of smokers treated in 2008/9 and 2011/12. It is apparent that the mean quit rate increased and the standard deviation in quit rate reduced. The numbers of smokers treated also increased. The table also shows the changes in quit rates for lower and higher performing services. It is apparent that the increase was solely in the lower performing services.

There was a high degree of consistency in the quit rates of the services across the period of the study, $R=0.71$, $p<0.001$.

Table 1: Mean CO-verified 4-week quit rates and numbers of smokers treated of English Stop Smoking Services in 2008/9 and 2011/12

	2008/9	2011/12
All PCTs (N=151)		
Mean CO-verified 4-week quit rate		
Mean	34.0	35.9 ¹
Standard deviation	11.3	9.4
Number of smokers treated		
Mean	4427.0	5406.9 ²
Standard deviation	2190.1	2847.0
Higher performing PCTs (N=77)		
Mean CO-verified 4-week quit rate	42.4	40.5 ³
Lower performing PCTs (N=74)		
Mean CO-verified 4-week quit rate	25.2	31.1 ⁴

¹Significant increase by t-test, $p=0.004$; ²Significant increase by t-test, $p<0.001$; ³Significant decrease by t-test, $p=0.03$; ⁴Significant increase by t-test, $p<0.001$

Discussion

Over the first three years of operation of the NCSCT, the CO-verified 4-week quit rates increased and variability across the services reduced. The improvement was primarily in the lower performing services. The services showed a high degree of consistency in their quit rates between the two time periods studied.

The findings provide the best available evidence on the impact of the NCSCT in its first three years of operation. If the longer-term slight decline in success rates that preceded the establishment of the NCSCT had continued, this would have raised a question as to how far the NCSCT had met its initial aim. The apparent reversal of this trend represents modest evidence for the impact of the NCSCT although of course it could have been due to one or more other factors operating during that the time. The ban on smoking in indoor places was introduced in 2007, two years before the launch of the NCSCT; to the authors' knowledge there was no significant policy change in relation to smoking introduced during the study period. The findings could also reflect improved performance by services in recording their successes. However, there was no national intervention to improve recording practices during that period.

The three years prior to establishment of the NCSCT (2005/6 to 2008/9) saw a 4% fall in biochemically verified 4-week quit rates in the services nationally. In the 3 years following establishment of the NCSCT (2008/9 to 2011/12) the quit rates rose by nearly 2%. Variance in quit rates across the 151 services reduced by 31% between 2008/9 and 2011/12.

With any before-after evaluation one can never be sure that changes are attributable to an intervention. As far as one can tell there were no other national events occurring at the time that could account for the reversal but it is prudent to consider a range of possible degrees of attribution. If all of the increase in quit success over the first three years of operation of the NCSCT was attributable to its operation, based on a known 70% relapse rate from 4 weeks to 12 months and 20% of the remainder thereafter, its first three years of operation is estimated to have saved 21,500 life years: 6,500 after discounting at 3.5% per year as recommended by NICE (3). Setting up and running the NCSCT for 3 years cost £3 million, so, using Stapleton's tables for calculating the incremental cost per life year gained, the estimated cost per discounted life year saved was less than £500. If only half of the improvement in quit rates was attributable to the NCSCT it would have saved 3,250 discounted life years at a cost per life year of less than £1,000. The NICE threshold for value for money is £20,000 per quality-adjusted life year gained. Much of the cost of the NCSCT in the first 3 years was in establishing the evidence base and creating the online training and assessment programme. Future running costs will be lower and so the cost-effectiveness is likely to be better.

The finding that the improvement was primarily in the lower performing services is consistent with the NCSCT's focus from the start on these services in terms of training. Some of it could have been regression to the mean, as is suggested by the slight decline in performance of the higher performing services but the fact that the improvement in the poorer performing services was three times the decline in the higher performing ones indicates that this could not merely be regression to the mean.

The finding of a high degree of consistency over time in success rates of the services, together with evidence as to what influences success rates of the services, indicates that it is

worthwhile continuing to focus attention on lower performing services to assess how they can improve their performance.

A more robust evaluation of the NCSCT impact nationally may be obtained by a time-series analysis of service performance once it has been in operation for several more years. However, this will depend on being able to partial out other factors that may influence performance. Tracking performance data of the kind reported here will be of critical importance to achieving such evaluation and to service development and improvement. Indeed it will be important to prevent a deterioration in service quality that may arise from pressure on budgets.

From 2013 it will no longer be mandatory to collect nationally agreed data on quit rates so other ways will be required to persuade and incentivise local services to collect and publish them. Clearly there is a vital role for Public Health England in this, but other means may also be needed through local accountability. To this end, the website www.smokinginengland.info provides a map of England that is colour coded according to the assessed quality of a Local Authority's Stop Smoking Services. Over time this will be populated with data to show whether these authorities are publishing performance data and what those data are showing.

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