ORIGINAL ARTICLE

Drugs to support smoking cessation in UK general practice: are evidence based guidelines being followed?

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Background: Prescribing drugs to support smoking cessation is one of the most cost effective interventions in primary care, but there is evidence they are underused. Little is known about how far guidelines have been adopted.
Aims: To examine the context in which nicotine replacement therapy (NRT) and bupropion are prescribed in UK general practice and whether guidelines are being followed.
Design: Patient questionnaire survey.
Setting: Twenty five general practices from the Trent Focus Collaborative Research Network in South Yorkshire and East Midlands, UK.
Methods: Participating practices posted a questionnaire to up to 40 patients prescribed NRT and bupropion respectively in the previous 3–9 months.
Results: The response rate for people prescribed NRT was 44.7% (323/723) and for bupropion 42.5% (77/181). Patients reported initiating the prescription request in 258 cases (65%), whereas GPs were reported as suggesting it in 49 (12%), smoking cessation services (SCS) in 38 (10%), and practice nurses in 36 (9%). Of those who could recall the content of the consultation in which NRT or bupropion was prescribed, 191 (79%) reported receiving advice on treatment use and 209 (68%) were encouraged to set a quit date. Follow up by SCS was recommended to 186 (64%) and practice follow up was offered to 212 (63%), but 41 (15%) reported no offer of follow up support.
Conclusions: The majority of patients reported receiving advice and follow up in line with guidelines. However, relatively few prescriptions were suggested by GPs or practice nurses and, in a significant minority of cases, neither follow up by the practice nor additional support from SCS was recommended. More active implementation of guidelines could increase the impact of general practice on the prevalence of smoking.

Primary care has an important role in identifying and treating smokers motivated to quit.[1–3] Guidelines published in the UK by the National Institute for Clinical Excellence (NICE)[4] recommend that GPs offer drug therapy (nicotine replacement therapy (NRT) or bupropion) and ongoing support from professionals trained in smoking cessation (either within or outside the practice) to all smokers who are motivated to quit. A national network of smoking cessation services (SCS) was established in the UK in 2000. These services may be offered either within or outside the practice setting, and may employ their own staff or train and fund practice based staff.[5] Smokers receiving a prescription for NRT or bupropion from general practice therefore fall into three groups; those who requested it themselves, those referred by SCS, and those identified by the GP or practice nurse as likely to benefit from treatment. A recent national survey found that about twice as many smokers received help from a doctor or other health professional (15%) than from SCS (7%).[6]

The NICE guidelines also emphasise the importance of negotiating a quit date and prescribing for 4 weeks or less at the first consultation, with a second consultation to renew supplies and reinforce motivation. The *British National Formulary* (BNF) recommends that treatment with NRT should last at least 8 weeks, and that a course of bupropion should last at least 7 weeks.[7]

Both NRT and bupropion approximately double the success of a quit attempt compared with brief advice only, although it is unclear whether either is more effective. Quit rates again double when these treatments are used with specialist support.[8] A modelling exercise predicted 12 month quit rates with brief advice for NRT and bupropion of 5.0% and 7.05%, respectively, rising to 14.75% and 17.92% with the addition of specialist support.[9]

Little is known about how NRT and bupropion are used in general practice and whether guidelines are being followed. In a previous study using a large anonymised UK GP dataset we showed that only about 6% of known smokers received a prescription for either product over a 2 year period, suggesting that treatments were not being offered to all motivated smokers, but routine data did not enable us to investigate the context in which a prescription was issued or how the drugs were actually used.[10]

In this survey of patients from 25 general practices who recently received prescriptions for these products, we aimed to determine who initiated the prescription, whether guidelines were followed at the time of prescription, and what additional support was taken up. Secondary aims included comparing how NRT and bupropion were used and an estimate of cessation rates achieved.

METHODS

Forty general practices from the Trent Focus Collaborative Research Network[11] were invited to take part in the study. Of these, 33 initially agreed and 25 completed the survey. Reasons for withdrawal included practice staff shortages, problems with practice computing systems, and delays in obtaining ethics and research governance approval. The study

Abbreviations: NRT, nicotine replacement therapy; SCS, smoking cessation services

Table 1 Responses to question ''Whose idea was it for treatment?''

	Treatment					
	NRT (n = 323)	Valid % (95% CI)	Bupropion (n = 77)	Valid % (95% CI)	Total (n = 400)	Valid % (95% CI)
Mine	204	64 (59 to 70)	54	70 (59 to 80)	258	65 (61 to 70)
GP	40	13 (9 to 17)	9	12 (5 to 21)	49	12 (9 to 16)
Practice nurse	31	10 (7 to 14)	5	6 (2 to 15)	36	9 (6 to 12)
SCS	30	9 (6 to 13)	8	10 (5 to 19)	38	10 (7 to 13)
Friend/relative/other	12	4 (2 to 6)	1	1 (0 to 7)	13	3 (2 to 6)
Missing	6		0		6	

SCS, smoking cessation service.

was approved by Thames Valley Multicentre Research Ethics Committee.

In each practice a sample of up to 40 patients prescribed NRT and 40 prescribed bupropion between 3 and 9 months from the time of data extraction were identified from the electronic patient records using the MIQUEST (Morbidity Information and Query Export Syntax) computer software program.[12] This program allows researchers or other enquirers to write queries and extract data from different types of general practice computer systems using a common query language and has been used extensively in other studies. We did not include patients prescribed treatment more recently as we wanted to assess cessation rates at 3 months, by which time the course of treatment would be completed. A cut off point of 9 months was used to produce an adequate sample size but reduce risk of recall bias. If the sample included patients prescribed both products, we identified the last prescription. In practices where more than 40 patients had been prescribed a product we selected the 40 most recent. We included a maximum of 40 patients per practice for each drug (double what we expected to find for NRT prescribing in an average practice) so our total sample would not be too weighted by a few large or high prescribing practices.

A questionnaire was developed to answer the following: who suggested the prescription (patient, SCS, GP, practice nurse); whether guidelines were followed (setting a quit date, offer of referral to SCS or practice follow up, duration of treatment); any contact with SCS after treatment; use of other supports; and sustained cessation in a 3 month period before completing the questionnaire. We also included questions about age, education, and ethnicity. Intensity of smoking and time until first cigarette were combined to calculate the Fagerstrom index.[13] This is calculated by adding scores of time to first cigarette (<5 minutes = 3, 5–30 minutes = 2, 3–60 minutes = 1, longer = 0) to the score for cigarettes per day (>30 = 3, 21–30 = 2, 11–20 = 1, 10 or less = 0). The questionnaire sent to patients receiving NRT therapy contained additional questions relating to the preparation used and whether supplies were purchased from a pharmacist. The two versions of the questionnaire were printed on different coloured paper to prevent confusion.

The questionnaires were piloted in two general practices. Results showed the questions were understandable and produced appropriate responses. Only minor changes to layout were made, so results from the pilot study were included with those from the main study.

Researchers arranged an appointment with a member of staff in each practice at which time a search of patient records was conducted using MIQUEST. For the purposes of follow up, patients identified from the searches were assigned an anonymised code number identifiable by practice staff only. The appropriate questionnaires, on University letterhead and including patient code numbers, were sent out by practice staff with a covering letter from the GP, an information sheet, and a freepost envelope for return of the questionnaire to the research team. Respondents were given the option of returning the questionnaire uncompleted and indicating that they did not wish to receive reminders. About 2 weeks after the first mailing researchers notified practices of the code numbers of patients who had not replied and asked them to

Table 2 Advice and support at time of initial prescription with GP or practice nurse (if applicable)

	Treatment					
	NRT (n = 295)	Valid % (95% CI)	Bupropion (n = 76)	Valid % (95% CI)	Total (n = 371)	Valid % (95% CI)
How to use treatment						
Yes	191	76 (70 to 81)	64	88 (78 to 94)	255	79 (74 to 83)
No	60		9		69	
Missing/don't know	44		3		47	
Setting a quit date						
Yes	147	63 (57 to 70)	62	84 (73 to 91)	209	68 (63 to 73)
No	85		12		97	
Missing/don't know	63		2		65	
Contacting SCS						
Yes	140	62 (55 to 68)	46	70 (57 to 80)	186	64 (58 to 69)
No	86		20		106	
Missing/don't know	69		10		79	
Offered follow up						
Yes	164	61 (55 to 67)	48	71 (58 to 81)	212	63 (58 to 68)
No	103		20		123	
Missing/don't know	28		8		36	
Offered neither follow up nor contact with SCS, and treatment not suggested by SCS	34	17 (12 to 22)	7	12 (5 to 23)	41	15 (11 to 20)
Missing/don't know	90		17		107	

Table 3 Duration of treatment advised, first prescription, and treatment taken

	Treatment			
	NRT (n = 295)		Bupropion (n = 76)	
	Missing	Median (IQR)	Missing	Median (IQR)
Advised duration of treatment (weeks)	114	10 (6–10)	23	8 (6–8)
Duration of first prescription (weeks)	56	2 (2–4)	18	4 (4–4)
Duration of treatment taken (weeks)	58	8 (4–12)	12	7 (4–8)

send a reminder letter with an additional questionnaire, information sheet, and freepost envelope.

Sample size was chosen to give reasonable precision in descriptive data rather than to compare users of NRT and bupropion. From our previous study[10] we estimated that an average participating practice would have prescribed NRT or bupropion to about 20 patients in a 6 month period. Assuming 25 practices would agree and a 70% response rate, this would yield 350 completed questionnaires. An estimate of precision is that if 50% of responders reported a quit date had been set, the 95% confidence intervals around this would be 44.6% to 55.4%.

Responses were numerically coded and double entered into SPSS version 11. Data were analysed descriptively and 95% confidence intervals (Clopper Pearson) calculated using the Statsdirect program. In making comparisons we used parametric (*t* test) and non-parametric tests (Mann-Whitney) as appropriate. Analysis was not adjusted for clustering of responses by practice and this will tend to underestimate the standard errors and hence the width of the confidence intervals.

RESULTS

From the 25 practices that completed the study, we identified 723 patients prescribed NRT and 181 prescribed bupropion within the 6 months under review. None of the practices prescribed bupropion to more than 40 patients and two did not prescribe it at all. The mean rate of bupropion prescribing over 6 months was 1.2/1000 patients registered (range 0–5.7). Seven practices had prescribed NRT to more than the maximum of 40 patients that were included in the sample for each practice. In the remaining 18 practices the mean rate of NRT prescribing was 4.3/1000 (range 1.0–10.4).

The response rate after one reminder for those prescribed NRT was 44.7% (323/723) and for bupropion 42.5% (77/181), an overall response rate of 44.2%. Twenty four practices included one or more respondents who had received NRT (mean 13 respondents, range 1–26) and 19 practices one or more respondents who had received bupropion (mean 4, range 1–13). We did not have access to medical records and so were unable to compare responders with non-responders.

The mean (SD) age of the respondents was 49 (14.7) years, of whom 230 (58%) were female. The mean (SD) school leaving age was 16 (5.8) years. Three hundred and eighty two respondents (95.5%) identified their ethnicity as ''White British''. None of these characteristics differed significantly by treatment (*t* test and Mann-Whitney, respectively, as ethnicity was dichotomised).

Ten percent of the sample reported they had smoked 10 or fewer cigarettes per day, 93% had smoked every day, and 91% had their first cigarette within an hour of waking. Those receiving bupropion had significantly higher Fagerstrom nicotine addiction scores than those receiving NRT (mean 3.88 (quartiles 3, 4, 5) and 3.45 (quartiles 3, 4, 4), respectively, $p = 0.028$, Mann-Whitney U test). Patients prescribed NRT most commonly used patches (n = 281, 70%), followed by gum (n = 34, 9%), lozenges (n = 19, 4%), inhaler (n = 15, 4%), and nasal spray (n = 7, 2%).

The ''idea for treatment'' was reported as the patient's in 65% of cases, the GP in 12%, SCS in 10%, and the practice

Table 4 Reported cessation rates by type of treatment, idea for treatment, and ongoing support

	No of responders	No response to question on cessation	Not smoked in last 3 months	Valid % (95% CI)
Treatment				
NRT	315	8	117	38 (33 to 44)
Bupropion	77	0	21	27 (18 to 39)
Total	392	8	138	35 (30 to 40)
Idea for treatment				
Patient	254	4	77	31 (25 to 37)
GP	48	1	16	34 (21 to 49)
PN	36	0	14	39 (23 to 57)
SCS	37	1	20	56 (38 to 72)
Advised SCS				
Yes	183	3	59	33 (26 to 40)
No	105	1	41	39 (30 to 49)
Offered follow up				
Yes	210	2	77	37 (30 to 44)
No	121	2	40	34 (25 to 43)
Attended SCS				
Yes	196	4	67	35 (28 to 42)
No	183	2	69	38 (31 to 46)

PN, practice nurse; SCS, smoking cessation services.

nurse in 9% (table 1). These findings were similar for each treatment. For 371 patients (93%) the first prescription was given in a consultation with a GP (n = 261, 66%) or practice nurse (n = 110, 28%). We asked these respondents what was discussed at the consultation and the results are shown in table 2. Of those who were able to recall, 79% reported receiving advice on how to use the treatment, 64% were encouraged to set a quit date, 64% to contact the local SCS, and 63% were offered follow up in the practice. In general, those prescribed bupropion reported slightly more advice and support. Overall, 48 (18%) were not offered referral to SCS or follow up in the practice. Of these, seven reported that SCS had suggested the prescription, leaving 41 (15%) who reported no ongoing support.

We also asked how long in total they were advised to take the treatment, how long the first prescription was for, and for how long they actually took the treatment. Median responses were in line with prescribing guidelines, although the median length of treatment actually taken was shorter than that advised. Detailed results are shown in table 3. Seventy four of those prescribed NRT (23%) reported buying additional supplies from the pharmacist or supermarket. Assistance from SCS was reported by 200 respondents (52%). Of those who attended SCS, 134 (39%) reported completing the programme.

Respondents were asked if they had smoked at all in the 3 months before they completed the questionnaire—that is, between 3 and 9 months of the course of treatment. Overall, 138 (35%) reported they had not smoked. Table 4 shows that cessation rates did not differ significantly for drug prescribed, attendance at SCS, or offer of practice follow up. However, those who reported that the prescription was suggested by SCS were more likely to report cessation than those who initiated the prescription themselves.

DISCUSSION

Summary of findings

This survey provides new information about how drugs to support smoking cessation are used in UK general practice, and will be of use as baseline estimates in interventions to increase the impact of general practice in reducing smoking prevalence.

Both NRT and bupropion were prescribed predominantly to middle aged groups, and to women more than men. Most prescriptions were reported as following a request from the patient rather than being initiated by the GP or practice nurse. The limitations of a postal questionnaire meant it was not possible to explore more complex issues such as how the prescription was negotiated, nor can we know how many smokers declined the offer of a prescription.

The majority of respondents reported appropriate support at the time of the first prescription, including advice on how to use the treatment, setting a quit date, and the offer of follow up. The finding that 15% did not recall advice about contacting SCS or an offer of follow up in practice suggests that a minority of patients are being treated with inadequate support. GPs appeared to be following guidelines for the duration of first prescription and total duration of treatment for both NRT and bupropion. This finding is important, even if some respondents may have been uncertain about whether support in practice was provided by SCS or not. A possible explanation for bupropion being used in more dependent smokers is that GPs use it as second line treatment where NRT has failed, although there is no evidence to support this strategy.

Cessation rates were a secondary aim of the study, given that they were vulnerable to response bias and reliant on self-report, but were included as there is a lack of observational studies in general practice, particularly on the effectiveness of bupropion. Reported quit rates in the 3 month period before completing the questionnaire was 35%, higher than expected from previous studies. If we assume that all non-respondents continued to smoke but that those who did respond did not misrepresent their habit, overall quit rate remains high at approximately 15% and within the range predicted by synthesis of trial data.[9] The only predictor of success was that the suggestion for treatment came from SCS, probably because the most motivated smokers are likely to access these services directly. Similar quit rates were reported by those attending SCS and those supported in practice.

Limitations of survey

The major limitation in interpreting the results is the low response rate, despite using several techniques that have been shown to maximise response such as personalised letters, stamped return envelopes, and including a copy of the questionnaire with the reminder letter.[14] We considered a second reminder, but there is evidence that this may not be justified[15] and the ethics committee advised us against this. However, the response rate we did achieve is similar to other recent health surveys[16] and within the range for papers published in medical journals.[17] Several factors may have contributed to the low response. We relied on participating practices to send out questionnaires and reminders and, in several cases, we know from contacting the practices that this was not done within the suggested time frame. Because of delays in obtaining research governance approval the survey was conducted over the summer months when respondents are more likely to have been on holiday. Additionally, resources did not allow us to produce versions for non-English speakers. Response bias may have caused an over-estimation of quit rates as it is likely that those who stopped smoking would be more likely to respond. As one would also expect an association between evidence based care and cessation, we may also have overestimated the proportion of patients receiving good quality care, including use of SCS.

Another limitation of the survey is that responses to some questions relied on the memory of an event that occurred 3–9 months previously. We dealt with this by giving a ''don't know'' option which was used by a significant minority in response to questions about what was discussed at the time of prescription. Although lack of recall might underestimate support given at the time of prescribing, a bias operating in the opposite direction is that respondents may have been reluctant to appear to criticise their GP or nurse by reporting that certain elements of advice were not given. We tried to minimise this bias by prefacing the question with ''practices may manage smoking cessation in different ways''. In retrospect, there would have been advantages in sending the questionnaire soon after the consultation and sacrificing our secondary aim of assessing cessation at 3 months. Finally, we cannot claim that doctors and nurses in participating practices were representative of the UK. Members of research networks are more involved in teaching and training,[18] and perhaps more likely to be aware of and adhere to guidelines. It is therefore likely that, across the UK, practices are even less actively involved in smoking cessation.

Conclusions

We have shown for the first time that most prescriptions for NRT and bupropion are initiated by patients themselves. These drugs are generally prescribed according to guidelines, but in about 15% of cases no follow up in practice or referral to specialist services was offered. Together with previous findings of low overall prescription rates, our results suggest that more active implementation of guidelines could increase the impact of general practices on the prevalence of smoking.

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