Detailed Project Description

1. Project title
08/58/02: A randomised trial to increase the uptake of smoking cessation services using Personal Targeted risk information and Taster Sessions

2. How the project has changed since the outline proposal was submitted

1) In consideration of the comments of the HTA Board, we have made the following changes:
   a. We have changed the purpose of our pilot study to be essentially a study of feasibility. Hence the criteria for proceeding to a full study will be based on recruitment figures (as described below), and a demonstration that the uptake of smoking cessation services in the intervention group is greater than in the control group (i.e. the difference in proportions, intervention minus control, is greater than zero).

   b. The primary outcome and the sample size calculations are now focused on the uptake of smoking cessation services. Point-prevalent abstinence for 7-days, 6 months after the initial invitation is sent, is the main secondary outcome. As a consequence, the sample size has been able to be reduced, with a proportionate reduction in costs mainly due to the reduced number of practices and staff requirements. The duration of the research is still the same however, as the length of follow-up after the intervention has not changed.

   c. Although we considered using cluster randomization to reduce the possible risk of contamination between the two arms of the trial using individual randomization, we have for scientific reasons retained the individual randomization plan. We have however introduced measures to reduce contamination between the two study arms.

   d. We have considered methods of reaching hard-to-reach groups, and have included plans to use Census data and Indices of Deprivation when selecting sampling areas.

2) We have changed the start date to March 1st 2010 to allow for ethics approval to be obtained before the start of the trial. This later start date necessitates a small adjustment to costs.

3) In view of the retirement of Dr Tony Johnson early in the trial, Professor Richard Morris, Professor of Medical Statistics and Epidemiology in the Department of Primary Care and Population Health at UCL, has agreed to replace him as the Senior Statistician, acting in a supervisory role to the junior statistician already on the team. Professor Morris has been added to the team as Co-Investigator.

3. Planned investigation
Principal research question
We hypothesize that smokers, identified from general practice records, sent brief personal tailored letters based on characteristics available in their primary care medical records and on a short screening questionnaire, and invited to a 'Come and Try it' taster session designed to inform them about the NHS services, are more likely to attend the services than those who receive a standard generic letter advertising the service.

3.1 Research objectives
Pilot study
1) To assess the feasibility of searching medical records and mailing screening questionnaires.
2) To ascertain recruitment rates, the generation of the tailored letters, the randomisation and delivery of the intervention.
3) To assess the uptake of the taster sessions and subsequent attendance at the NHS smoking cessation services, in order to satisfy the criteria to proceed to the main trial.

Main trial
Primary objective:

1) To assess the relative effectiveness on attendance at the NHS services, of proactive recruitment by a brief personal letter, tailored to individual characteristics available in medical records, and invitation to a taster session to provide information about the NHS services, over a standard generic letter advertising the service.

Secondary objectives:

2) To assess the relative effectiveness of the two methods in biochemically validated 7-day point-prevalent abstinence rates at the 6-month follow-up.
3) To compare the cost effectiveness of the two invitation methods.
4) To assess the relative effectiveness of the two methods in prolonged abstinence measured by self-report of not smoking for periods of 7 days to 24 weeks at the 6-month follow-up.
5) To assess the number of smokers attending the taster session, the number completing the 6-week NHS smoking cessation course, the number of quit attempts made and any reduction in daily cigarette consumption.
6) To determine predictors of attendance at the services, and also predictors of attendance at the taster sessions (in the intervention group).
7) To explore reasons for non-attendance and barriers to attendance.
8) To explore the effectiveness of the intervention by socio-economic status, and social deprivation.

3.2 Existing research and the need for a trial

Recent figures show a reduction in smoking prevalence of 2% between 2005 and 2006, from 25% to 23% and 23% to 21% in men and women respectively [1]. While this suggests that the government target of reducing smoking prevalence to 21% of the general population by 2010 [2] is within reach, there is no room for complacency. Smoking remains a major cause of ill health and mortality, accounting for around 18% of all deaths in adults over 35 in 2007 [3]. Furthermore, the 2006 figures show a 2% increase in the gap in smoking prevalence between those in professional and managerial occupations, and routine and manual workers; 29% of the latter still smoke, increasing to 61% of those currently not employed [1].

The NHS Stop Smoking Services

Government funded specialist smoking cessation services were implemented in 1999 in Health Action Zones, and were rolled out throughout England in 2000 [4]. These services offer intensive advice and support to smokers motivated to quit, in group or one-to-one sessions. However, it has been suggested that most smokers will not attend formal cessation programmes, preferring to quit on their own, consequently such programmes are consistently underused [5,6,7,8]. Current evidence shows that this is still true today. While, in 2007, 74% of current smokers in Great Britain reported that they want to quit, and 31% had made an attempt to quit in the previous year [9], the proportion of the adult smoking population in England setting a quit date using the NHS Stop Smoking Services in 2001-2 was 2.01% [10], and is still estimated to be less than 5% [11,12,13]. Thus, in spite of a desire to quit, only a tiny proportion make use of the free service provided by the NHS [14].

Barriers to the use of smoking cessation services

A wide range of factors, such as lack of availability and accessibility, perceived inappropriateness of the service, a perception that help is not necessary, or a sense of a lack of empathy from health professionals, as well as a lack of readiness to quit, will bar smokers from seeking help [15,16]. The literature also suggests that many smokers are not aware of, or have insufficient knowledge or unsatisfactory information of the services available [16,17] and this lack of knowledge can also lead to the belief that ‘it wouldn’t help me anyway’ [16].

Health professionals are guided to give brief advice and refer smokers to the services, but the percentage of smokers receiving such advice is small, and only 9% were referred in 2007 [3]. Moreover, smokers are generally left to follow-up their referral and contact the service themselves to make the appointment. Lichtenstein [7] evaluated an intensive and standardised referral protocol, employing a more proactive method of recruitment and referral by inviting smokers to an intervention with a strong referral message to the service and offering information about what attendance at the service would involve. This intervention included an assessment, measurement of CO level with an interpretation, a 10 minute video of group program featuring former successful group members, a voucher fee waiver, and immediate scheduling of the patient for the group. With this intervention, 11.3% of patients attended the first session of the

cessation programme, compared with 0.006% of the control group who received brief advice only.

Proactive recruitment
While recruitment methods to cessation services generally employ a reactive approach, in which smokers are expected to seek out and approach the service [16], evidence suggests that if smokers are proactively and personally invited to use the services, the resultant use will be higher than standard referral by health professionals, or open advertising. Paul [16] explored the acceptability of proactive contact offering cessation services to smokers and the likely utilization of services offered, and reported that 92.8% found it acceptable for the health service to contact people to offer assistance, and 55.7% said they were likely to take up the offer of individual counselling. While this could be an over estimation of the actual take up of the service, it does indicate that proactive contact is acceptable and also suggests that smokers are open to intensive counselling.

Murray and colleagues used a proactive recruitment method to contact large numbers of smokers to ascertain interest in engaging with support [11,18]. The main aim of the study was to increase long term cessation, by informing smokers who may be unaware of, or have insufficient knowledge of the NHS services, and encouraging attendance. Selected practices identified all patients who were recorded as current smokers or with no status recorded, and proactively informed them about the services by letter, giving the option of being contacted by an advisor. The true number of current smokers expressing interest was estimated, based on the responses, to be 13.8%, suggesting that more than the current 5% of the smoking population setting quit dates within the NHS are interested in receiving help, and that novel methods of 'marketing' to engage interested smokers are needed in order to encourage use of the services.

Practices were randomized to an intervention group, where smokers indicating that they would like to speak to an adviser were contacted within 8 weeks by a researcher trained as an advisor and offered advice and an appointment, or to a control group, where smokers received no further contact. Murray reports a 7.7% increase in smokers using the smoking cessation services in the intervention group over the control group, and an increase of 1.8% in validated abstinence at the 6-month follow-up in those smokers requesting contact, over the control group (2.2% v 4%).

We have used a proactive approach to advantage in an ongoing trial, funded by CRUK, of computer-tailored feedback as a stand alone system of self help [19].

Computer tailored interventions
The development of tailored self-help materials, intended to meet the needs of one specific person, based on characteristics unique to that person [20] has enabled the generation of highly tailored behavioural feedback reports for smoking cessation [21]. Two of the applicants (HG and SS) have developed a computer-based system to generate individually tailored feedback reports designed to encourage and help smokers to quit, and demonstrated a positive effect when used as an adjunct to telephone counselling (via the national Quitline) [22], a finding consistent with other studies [23]. These computer based systems offer a method for further personalising communications to patients and have the potential to engage with and recruit a larger proportion of the smoking population. We were able to recruit 12% of the smoking population into a trial of tailored smoking cessation material [24], using a proactive method of recruitment similar to that used by Murray and colleagues[18], and 55% of those recruited said they were planning to quit in the next 6 months. Using our experience of computer tailored feedback, this system will be adapted further to enable the targeting of those people most in need of the services [5,25] with more personally relevant information.

The study by Murray and colleagues was the first to assess a proactive method of recruitment to attract smokers into the services, and their study suggests that this approach is successful in smokers who want help. Their intervention however, could be enhanced by more personal methods of recruitment. Our trial will take forward the excellent work of Murray and colleagues by providing a more intensive intervention to deliver personalized risk information. We will extend and expand the work by combining the proactive recruitment methods used in our

current study of tailored feedback [19], with our expertise using our innovative computer program, to tailor information to make the initial invitation personally relevant, so as to engage a greater proportion of the smoking population. In addition we will provide these smokers with a no commitment introductory session designed to inform them about the service and what it offers.

Thus, the intervention will be much more intensive than that used by Murray and colleagues. It will employ a two pronged approach that consists of computer tailoring technology to invite and encourage people to attend, and taster sessions to allow smokers to find out more about the service before committing to and signing up for a six week course.

Targeting those in need
Intensive clinical treatment is particularly important for 1) smokers at high risk because of chronic conditions; and 2) heavy dependent smokers who have been unsuccessful in previous attempts [5]. Furthermore, a long-term aim of the NHS service is to help disadvantaged people to stop smoking in order to reach government targets of reducing smoking prevalence in manual groups to 26% by 2010 [26]. As part of this strategy the delivery of services to poorer communities has been a priority [10]. While evidence suggests that the services have succeeded in attracting smokers from disadvantaged areas [10,15,27], unacceptable smoking related health inequalities persist [1].

An advantage of the proactive method is the ability to target these at risk groups. By using Census data and Indices of Deprivation, we can encourage involvement from areas of high deprivation, aiming specifically to reduce health inequalities. Murray showed that smokers from the most disadvantaged areas are more interested in receiving help than smokers from areas of low deprivation [11], thus more attractive methods to inform and engage this group are needed, including the use of medical information on chronic illnesses and high dependence to tailor our communications with smokers.

It could be argued that by using these methods of direct mail, smokers not as ready or motivated to quit would be encouraged to attend, and would therefore be less likely to quit than self referred patients [14]. Traditionally smokers with an intention to quit in the next 2 weeks are targeted in the NHS for attendance at specialist clinics, but planning to quit in the near future should not be taken as the only indicator of interest in quitting. Studies have shown that smokers stating that they have no plans to quit have been able to be involved in cessation programmes [28], and we have current evidence from our ongoing trial [19] that our method of proactive recruitment is successful in engaging smokers with no immediate plans to quit in quitting activity [24]. There is also evidence of smokers quitting without entering a preparation stage or planning to quit [29]. Thus, we should consider including those who express a longer period of intent to quit. Lichtenstein [7] found that readiness, motivation and dependence were positively related to follow through, readiness defined as smokers planning to quit in the next six months. We will therefore use the definitions and measures of motivation and readiness used by Lichtenstein, in order to provide the right encouragement to those who might be prompted to quit.

We will further enhance our intervention by the addition of repeated personal letters sent 3 months after the original to all non-attenders. This is also consistent with recommendations made by Lichtenstein [7], who proposed that, with repeated advice over time, a greater proportion will be likely to respond.

How the results of this trial will be used
Personal risk information, generated by computer, is a simple and inexpensive intervention which, if the trial demonstrated benefit, could be widely replicated and delivered cost effectively to a large proportion of the smoking population, prompting more quit attempts, and increasing referrals to NHS specialised smoking cessation services. The programme could be made available to practices, these letters, tailored to the requirements of each individual, offering GPs and practice nurses an efficient way of integrating referrals to the smoking cessation service into a busy primary care practice. Moreover, the introduction of a taster session delivered by existing NHS smoking cessation advisers could be easily implemented into the practice at a small additional cost. A modest success rate could have a large effect on uptake of services

given its recruitment potential, and make a valuable contribution to public health by lowering smoking prevalence.

3.3 Research methods

3.3.1 Design

A randomised controlled trial of a complex intervention that will be conducted in two stages: first we will carry out a pilot trial in 12 practices in 2 PCTs. We will proceed to the full trial in a further 48 practices in 8 PCTs if we find that the pilot trial is successful in terms of recruitment, the rate of uptake in attendance at the taster session, and that the uptake of smoking cessation services in the intervention group is greater than in the control group (i.e. the difference in proportions, intervention minus control, is greater than zero). The criteria for progression to the full trial are detailed in the analysis section (3.3.7).

3.3.2 Setting and study sample

The study will be a trial of a primary care population, utilizing general practices to recruit smokers to the NHS smoking cessation service. We will recruit practices through the PCRN initially in Camden (North London) and in Berkshire East for the pilot phase, followed by a further 8 PCTs in areas that are representative of the English smoking cessation service, in the main trial.

Target Population

The target group will be smokers motivated to quit who have not previously attended the NHS services. We will also target smokers in areas of high deprivation and ethnic minorities, where smoking prevalence is high. In order to achieve our aim we will use Census data and Indices of Deprivation (the Government's official measure of multiple deprivation at small area level which provides a relative ranking of areas across England according to their level of deprivation) to select more practices in areas of high deprivation and of high ethnic communities to ensure full representation of these smokers most in need of help. We will also work with PCTs and the PCRN to identify sufficient practices serving these populations. The majority of Smoking Cessation Services employ advisors fluent in the relevant languages, and, while it is not possible to include a translated version of the tailored letter at this stage, it is possible, should the intervention be effective, to introduce other language versions to cater for non-English speakers, and to provide sessions for these smokers.

The two PCTs participating in the pilot phase (Camden and Berkshire East) both have high proportions of ethnic minorities. The most recent data from Camden (ID 2007) also indicates that the borough is within the 20% most deprived areas on five of the six key measures [30]. Berkshire East also covers areas where deprived and ethnic minorities form a high proportion of the population, e.g. Slough. The non-white population is 26.8% and 36.3% in Camden and Slough respectively, and the proportion born outside the UK and Eire in the two boroughs is 33.6% and 22.4% [31]).

Recruitment procedure

Practices will be recruited through the Primary Care Research Network (PCRN), and all smokers aged 16 and over will be identified from their medical records in participating practices. The list will be screened by GPs to exclude anyone deemed to be unsuitable for the project, e.g. severely or terminally ill, and the list will be scanned to ensure that only one person from the same address is selected. All remaining persons on the list will be sent a brief screening questionnaire with a cover letter from their GP to update their smoking status in their records. A participant information leaflet describing the research will be included, and a consent form to participate in the trial. Participants will be asked to provide consent for the release of relevant data from their attendance at the NHS services to the researchers. These data will be used to validate attendance and quit rates. The questionnaire will also be used to assess the criteria for inclusion in the trial (see below). A Freepost envelope will be included for the return of the questionnaire to the practice. Non-responders will be sent a reminder and duplicate questionnaire after 3 weeks. All smokers returning the signed consent form and eligible to participate will be randomised to the experimental or control intervention.

If a smoker is not eligible to take part in the study we will send an "Ineligible" letter to these individuals indicating that they are unable to be included in the study. Furthermore, some smokers may return their questionnaires outside the timeframe for processing in which case we will send these individuals a "Late Responder" letter. Both letters will be sent from the surgery and will advertise the local NHS Stop Smoking Service and advise the smoker to contact the service for more information or to speak to an advisor.

Planned inclusion/exclusion criteria

All current smokers:

- willing to participate and returning the signed consent form
- aged 16 years and over
- able to read English
- motivated to quit
- have not previously attended the NHS services

will be eligible for inclusion in the study.

For the purposes of this research, motivation to quit will be defined as answering 'yes' to either or both of the following questions:

I. Are you seriously thinking of quitting in the next six months?
II. Would you think of quitting if appropriate help were offered at a convenient time and place?

Exclusion criteria are minimal because the aim is to recruit all smokers into the services. However, smokers younger than 16 will be excluded because of the need for parental consent to participate for this age group, and any patients identified who are considered by the GP to be unsuitable for the project, e.g. severely or terminally ill, will be excluded.

3.3.3 Planned Interventions

Control group

A standard generic letter sent from the surgery advertising the NHS stop smoking service and asking the smoker to contact the service to make an appointment to see an advisor.

Intervention group

There are two components to the intervention:

a) A brief motivational letter sent from the GP that includes information specific to the patient. The letter will be personalized and tailored using known characteristics (i.e. age and gender), and information obtained from the screening questionnaire (i.e. dependence, previous quit attempts, motivation and confidence). Information from medical records about the patients general health status and about chronic conditions e.g. heart disease, diabetes, lung disease, will also be used to offer risk information and to offer help to improve their condition by quitting smoking. The letter will include an invitation and an appointment to attend a 'Come and Try it' taster session to find out more about the services.

We will maximise the amount of tailoring within the constraints of the short screening questionnaire and brief letter. The exact content of the letter will be developed in collaboration with GPs and primary care experts with greater knowledge of medical information available in records.

b) The 'Come and Try it' taster session, run by advisors from the local service. This session will include:

- an explanation that the advice and help offered by the NHS service is based on evidence, with a higher likelihood of success
- information about the services offered, i.e. one-to-one or group sessions, the length of a session and the length of the course, nicotine replacement therapy (NRT) or other pharmacotherapy as well as behavioural support
- information about what to expect when they attend and the content of advice (e.g. help dealing with weight gain, the correct use of NRT, depression, expected outcomes)
- a measurement of expired-air carbon monoxide (CO) with an interpretation
- a 10 to 15 minute video showing group and one-to-one sessions in progress, and testimonials from previous successful attendees. This will be standardised on the

understanding that, while services may differ in the way they are organized, the protocols for delivering advice are standardized.
- the opportunity to ask questions about the service
- the expectations of the service i.e. willingness to set a quit date
- Participants will be asked to fill out a taster session evaluation form at the end of each session. The purpose of this evaluation form is to provide an ongoing assessment of participants' perceptions of the taster session.
- With participant consent, each taster session will be audio recorded to ensure standardisation of delivery of taster sessions throughout the trial.
- Advisors will be required to complete a Stop Smoking Advisor Personal Details Form. The information provided will ensure that "therapist effects" are accounted for in the analysis.

Each PCT will run 6 taster sessions, and approximately 25 participants will be invited to each session which will last approximately 1.5 hours. Attendees will be encouraged to sign up to a group or one-to-one session at a time convenient to them, at the end of the taster session. Participants who fail to attend will receive a further invitation three months later to encourage attendance.

Training

Three advisors in each PCT, already trained to give smoking cessation advice in group and one-to-one sessions, will be trained to lead the taster sessions according to a standard protocol. In order to achieve standardisation and fidelity to the protocol the training will be manualised and include a explanation and clarification of the study protocol and procedures. The same three advisors will lead all sessions in each PCT.

3.3.4 Data Management and randomisation

The patient-level data collected in this trial will comprise information downloaded from practice records, and information provided by participants on the consent form, the baseline questionnaire and in the follow-up telephone interviews.

The practice record information will be used firstly to generate letters inviting patients to participate in the trial, sent from the practice; and secondly to generate the tailored and generic letters, also sent from the practice. Purpose-written programs written in Visual Basic for Applications (VBA) which read and write Excel and Word files will be used to generate these letters.

Procedure for generating letters

Data from medical records will be downloaded to an Excel spreadsheet and stored on a practice computer. The data will be backed-up on either CDs or memory sticks or on another practice computer. Using a computer program written in VBA, stored on a laptop, this data will be used to create a file of invitation letters in MS Word using mailmerge. The file of invitation letters will be copied to a practice computer and a back-up disk and deleted from the laptop. Each patient returning the completed questionnaire, and willing and eligible to participate, and will be coded as "participant" on the Excel spreadsheet and the name and address information checked and updated if necessary on the spreadsheet against the consent form. Participants will be exported to a new spreadsheet. The questionnaire data necessary to produce the intervention letter will be coded onto the new spreadsheet.

A second computer program, also written in VBA and stored on a laptop, will 1) allocate to the participant a study id number, 2) randomise participants to the control or intervention group, and 3) combine the data from the baseline questionnaire and medical records with the correct messages from a message library written using Microsoft Word, to generate two Word files, containing respectively the tailored letters for intervention participants and the generic letters for control participants. Ineligible patients will receive a letter thanking them for responding and informing then that they do not fit the study criteria and will not be included in the trial. The file of tailored and generic letters will be copied to a practice computer and a back-up disk and deleted from the laptop.

Security

This procedure will be managed within each practice by a research assistant (RA) supervised by practice staff. All data files and back-up media will remain in the practice until all eligible participants have been randomised and the tailored and generic letters have been generated. At this point Proprietary encryption software (Truecrypt) will be used to create two separate encrypted files containing (i) personal information (i.e. name and address) and (ii) medical and questionnaire information (including information on medical conditions from the patient records). These files will be copied to a CD and taken by the RA to the study centre at UCL where they will be copied and stored on separate encrypted volumes on a UCL server. This is the only point in the procedure at which electronic data leaves the practice.

The consent forms and questionnaires will be also be taken from the practice to the study centre and stored in locked filing cabinets after the questionnaires have been scanned to enter the remaining data, also stored on encrypted volumes on a UCL server.

All data files will be deleted from the laptop before RA leaves the practice. The only files kept on the laptop are the purpose written computer programs, the message file, the randomisation tables, the practice letterhead file and the file containing GP signature.
The files from different practices will later be merged into a single file of personal information and a single file of medical and questionnaire information stored on separate encrypted volumes at UCL. A subset of this information will be used by research interviewers to conduct the follow-up telephone interviews. All electronic data will be stored on encrypted volumes on a UCL server.

This is a highly secure data management system that avoids the need for web-based transfer of electronic patient-level data.

Randomisation

Randomisation, at the level of the study participant, will be embedded into the computer program according to an externally constructed randomisation plan, using permuted blocks. Participants were randomised in the ratio 3:2 (intervention:control) within practice, stratified by gender, and using a blocksize of 5. For each practice, a computer program was run to create two randomisation tables, one for men and one for women. Each table consisted of 500 rows. In one column, there was a sequence of 2s and 1s in blocks of 5 (e.g. 1,1,2,2,1). This sequence was created by listing all possible permutations of three 1s and two 2s (10 in all), then repeatedly selecting one permutation at random (with replacement) and adding each selection to the sequence. This procedure used the random number generating function rnd in Microsoft Visual Basic for Applications (VBA). For each table, the Randomize statement was used to initialize the random number generator with a seed based on the system timer. Having created the tables for a given practice, another computer program was used to allocate participants from that practice to condition by selecting the first unused code (1 or 2) from the table for men or the table for women, depending on the participant's gender, and then marking that code as used. If the information about gender was missing for a participant, the randomisation table to be used was selected at random. Any imbalances will be controlled for in the statistical analysis using covariates that are identified prior to examining the trial data. The use of a computer program that enforces randomisation after consent and baseline data entry ensures that concealment is preserved and differential entry prevented.

Proposed methods to protect against other sources of bias

It will not be possible to blind participants to the receipt of a personally tailored letter, and invitation to a taster session. By randomising at the level of participant rather than by practice, there is a slight risk of contamination by communication between patients at the same practice in different intervention groups. We consider this the risk of contamination to be low. However, we will take the following measures to reduce the risk further:

- identify potential participants who live in the same household and ensure that only one person from the same household receives a screening questionnaire
- ensure that only participants who have received an invitation to a taster session attend, i.e. not allow any one to attend the taster sessions if they haven't had an invitation
- measure the amount of contamination at follow up by:

i) asking participants whether they have attended a taster session, and if not, whether they personally know or have spoken to anyone else who has been invited to the NHS stop smoking services
ii) validation of self-report by keeping a record of attendance at the taster sessions

The personal letter will be generated by a research assistant in the practice to ensure that the remainder of the research team in all cases will be blind to the allocation of the participant, which will be enforced by the data management. Care will be taken to avoid bias in the outcome assessment. In follow-up interviews, the interviewer will be blinded to the allocation of the respondent.

To establish external validity of our results, anonymised average data will be collected from practices on patients who are invited to participate in the study but do not respond, in order to compare with the responders on certain variables.

As mentioned previously, smokers will be identified from practice records, and, after exclusion by GPs of smokers considered unsuitable for inclusion, all remaining persons will be invited to participate in the study, by returning a completed questionnaire and consent form. At the end of recruitment in each practice, the names of all participants who have responded will be removed from the original list. For those remaining, the names will be removed, along with any other identifying data, i.e. address and NHS number, leaving gender, date of birth, and postcode. The date of birth will be converted to age, and the postcode will be converted to a deprivation score (IMD via GeoConvert), and then removed from the spread sheet. This spreadsheet, containing three variables – gender, age and IMD score – with no identifier, will then be taken to UCL and used to calculate means for these variables for each practice, and will be compared to these variables in responders. This will enable us to identify differences between those who have responded, and those who have not, in order to establish whether our sample is generalisable to the rest of the practice population.

Proposed duration of treatment period and follow-up
See Appendix 1 for plan of the timing of assessments, intervention and follow-up.

3.3.5 Measures
Baseline measures
The questionnaire to be used for baseline screening will be based on that used by Lichtenstein [7] and, in addition to screening for inclusion criteria, will also assess demographics, dependence on nicotine (number of cigarettes per day and time from waking to first cigarette), smoking history (age started and previous quit attempts), determination to quit and self-efficacy.

Outcome measures
Primary outcome measure:
The proportion of people entering the smoking cessation service (i.e. attending the first session of a 6-week course) over a period of 6 months from the receipt of the invitation letter, measured by records of attendance at the NHS services.
Secondary outcome measures:
i) Self-reported attendance data will be presented.
ii) 7-day point prevalent abstinence at the 6-month follow-up, validated by salivary cotinine for all participants reporting abstinence in both the Intervention and Control groups.
iii) Prolonged periods of abstinence of 7 days to 24 weeks measured by self-report.
iv) Self-reported changes in daily cigarette consumption, quit attempts, and changes in motivation and intention to quit in continuing smokers.
v) Use of NRT or Zyban or Champix and other smoking cessation aids.
vi) The number completing the 6-week NHS course.
vii) Process measures:
    a. the number of smokers attending the taster session (intervention group only)
    b. perception of the personal invitation letters
    c. reasons for non-attendance at the taster session and barriers to attendance at the NHS services

Health Economic measures

The economic component will estimate the cost of providing the interventions, using primary cost data from an NHS and PSS perspective as recommended by NICE guidance [32]. We will also measure patients' use of health and social care services using comprehensive service use questionnaires as employed on a number of other trials in the addiction field. QALYs will be calculated from the EQ-5D questionnaire [33] and combined with cost data in the cost-utility analysis.

Evaluation procedure

Research interviewers, independent from the service providers, will conduct follow-up interviews 6-months after the date of randomisation, by telephone, to assess attendance at the services, current smoking status, daily cigarette consumption, reasons for non-attendance and barriers to attendance in all participants. To maximise retention of participants at the 6-month follow up (70% retention obtained in pilot phase), additional procedures, as detailed below, will be utilised to obtain follow-up data.

Interviewers will make a maximum of 10 attempts (based on experience in current and previous studies) to contact a participant by telephone at varying times of day and on different days. If a call to a participant is answered, interviewers will aim to complete the full follow-up telephone interview. However, if a participant does not fully complete or does not wish to complete this telephone follow-up interview, the interviewer will attempt to ask the participant three basic questions most relevant to the outcome measures. If a participant is unable to be contacted, a paper version of the follow-up questionnaire will be sent by post. This paper questionnaire will also be sent to participants who are unable to complete the telephone interview but are willing to fill in a paper questionnaire.

If, after 10 attempts on different days and times, the interviewers have been unable to speak to a participant in person, they will attempt to leave a message, either with another person or on an answer phone/voicemail. At this time, participants will also be sent a text message, prompting a response back to the mobile phone from which it was sent. This message will state, “Six months ago you agreed to complete a follow-up phone interview for UCL smoking study start2quit. Please text/call to let us know when we can contact you”. If a participant replies, they will be given a date and time convenient to them to complete the telephone interview. If no response is received after three days, the participant will be sent the same message a second time. If no response is received after a further three days, the participant will be sent a postal questionnaire.

In addition to validated records of attendance from the NHS services, all self-reported attendance data will be obtained in the 6-month follow up. All participants will be asked if they attended a taster session; those answering negatively will be asked if they know or have spoken to anyone who attended a taster session. We will measure perception of the personal invitation letters using measures from our previous trials of tailored feedback adapted to apply to the personal invitation letters [19,22]. Reasons for non-attendance at the taster session and barriers to attendance at the NHS services will be assessed using open rather than closed questions, to allow more spontaneous answers, and to ensure respondents are not inhibited in their answers to those which the researchers consider to be relevant. All process measures will be included in the follow-up interviews 6-months after the date of randomisation conducted by telephone by research interviewers, independent from the service providers.

All participants who report not attending the SSS will be asked to complete a further postal questionnaire. The 40 item ‘Treatment Barriers’ questionnaire has been validated on a US population and will be used to assess in more depth reasons and barriers to the use of the NHS Stop Smoking program. We will validate this instrument on this UK population [41]. If this questionnaire is not returned within two weeks, a reminder ‘Treatment Barriers’ questionnaire will be sent to prompt the participant to return the questionnaire.

Participants claiming 7-day abstinence will be asked to provide a saliva sample to bio-chemically validate 7-day point prevalent smoking cessation at this 6-month follow-up [34]. Those who agree will be sent a saliva sample kit which they will be required to complete themselves and return by post. They will also be asked to complete a consent form and a short questionnaire to confirm their current smoking status and NRT usage. By way of compensation

for participants' time and to maximise kit return (40), a £5 Marks and Spencer voucher will be included with each postal kit.

If saliva samples are not returned within 7 days, participants will be contacted by a research interviewer who will remind them to return their kit. Interviewers will make a maximum of 10 attempts to contact the participant at varying times of day on different days, as before, ensuring that the correct postal address is held for the participant. After 10 unsuccessful attempts to contact the participant, they will be sent a text message stating "Don't forget to send your UCL smoking study saliva sample back to receive your additional £5 M&S voucher". If the interviewer is successful in contacting the participant but their sample is not returned within 7 days, the participant will be sent the same text message reminding them to return their kit. On the return of a saliva sample kit, the participant will be sent an additional £5 M&S voucher thanking them for returning their kit.

Attendance at the NHS service could be taken up at any time during the 6 months between receipt of the invitation (Intervention Group) or standard letter (Control Group) and the 6-month follow-up. Hence, some participants could still be at varying stages of completion of a course, and at varying stages of a quit attempt. Therefore secondary outcome measures include self-reported prolonged abstinence of periods of up to 24 weeks, a measure that can also apply to those not attending the NHS service. To allow for a prolonged period of 6 months sustained abstinence in participants attending the services during the first 6 months would require a further 6-month follow-up 12 months after randomisation. While this additional data on smoking status would enhance the outcome data, and allow us to assess longer-term abstinence, the process from screening to a 12-month follow-up would take 15 months for each PCT, thus prolonging the study and requiring an extension of the research, with corresponding increases in cost.

We also propose to assess 4-week abstinence in those attending the services using the NHS monitoring data collected by smoking cessation advisors. These monitoring records can be used to compare quit rates of clients proactively recruited through our intervention with those of other attendees at the NHS services.

Anonymised data obtained from participants who are invited to participate in the study but do not respond will be collected from practices, in order to compare with the responders on certain variables. We will analyse gender, age and IMD score of non responders and responders from each practice in order to identify differences between the two groups and to establish whether our sample is generalisable to the rest of the practice population.

3.3.6 Sample size and power calculations

Recent evidence from the RCT by Murray et al suggests that attendance at NHS services can be increased by 7.7% (from 8.9% to 16.6%) using a proactive intervention [18]. This represents an overall increase of 7.7%. To detect a similar effect at 90% power and alpha of 0.05 would require a sample of 420 participants per group. However, in the absence of any other similar trials, we might assume that the uptake of services in those who receive the tailored letter and the taster session could be lower than that reported by Murray et al. Hence, assuming an estimated increase of 4.6% (from 8.9% to 13.5%, OR 1.65) we would require 1029 participants per group, 2058 in all, to detect this difference as statistically significant at the 5% level with 90% power.

We will recruit practices from 10 different PCTs run by a different NHS smoking cessation service. The taster sessions in each service would be run by the same three advisors comprising 10 therapist clusters. Thus before adjusting for clustering we would expect 103 patients per cluster. As previously mentioned we will manualise the intervention and run structured training to reduce the variability between the interventions delivered in each PCT. Nevertheless, to account for any persistent therapist effects that will be applied to those randomised to receive a taster session, assuming a therapist ICC of 0.005 (in the absence of any published data), and a therapist cluster size of 103, would require further inflation of our existing sample size by a factor of 1.51 only in the intervention group where the effects will occur. Thus, 1554 would receive the tailored letter and taster session, 2583 participants in total.

The same RCT [18] found validated quit rates at 6 months of 4% versus 2.2% in the Intervention and Control Groups. With 2583 participants (distributed between intervention and control groups as described above), we will be able to demonstrate a slightly larger reduction in the quit rate at 6 months from 4.0% to 1.8% (-2.2%) with 80% power.

Planned recruitment rate

The PCRN comprises eight clinician-led Local Research Networks, providing comprehensive geographical coverage of England. Team members work with GP practices, health centres, dental practices and in other community locations to facilitate the involvement of staff and patients in clinical studies. Through these networks, we will identify practices (of >4000 list size) in selected PCTs, and write to ask if they are willing to participate in the trial. We will use Census and deprivation data to select a higher number of practices located in low socio-economic areas to ensure full representation of smokers from areas of high deprivation and in areas with a high proportion of ethnic minorities to maximise the generalisability of the results.

Practices generally identify 13% to 22% of their patients as smokers [35], depending on the characteristics of the patient population, and the accuracy and completeness of the records. Therefore 6 practices in each of 10 PCTs with a list size of >4000 would give approximately 240,000 patients and, assuming a conservative smoking prevalence of 15% in patients aged 16 and over, 36000 smokers. Based on the response rate from previous and ongoing studies [18,24] we estimate a response rate of 7% from smokers motivated to quit, from 2 mailings. This would secure 2520 participants, meeting the requirements of the power calculation.

We plan to initially recruit from 12 practices in 2 PCTs. Using the assumptions above this will secure 504 participants to the pilot phase of the RCT. We will proceed to the full RCT to recruit a further 2016 participants in the remaining 48 practices in 8 PCTs after conducting a first stage analyses to confirm we have achieved the criteria outlined in the analysis section.

Potential problems with compliance and likely rate of loss to follow-up

Based on our previous studies using follow-up by telephone [22], we expect approximately 20-25% attrition. For the main analysis participants who cannot be contacted at follow-up will be assumed to be continuing smokers (intention-to-treat analysis).

3.3.7 Details of the proposed statistical analysis

Pilot phase

The pilot phase will run in 8 practices recruited from two PCTs. We will recruit approximately 20% of the total sample in this phase of the study. The methodology of the pilot phase will be essentially the same as the full trial to enable combination of the data from both phases for analysis. However, lessons learnt on recruitment strategies from the pilot phase will be applied to the main trial.

The criteria for judging the success of the pilot phase and proceeding to full trial will be based on:

i) achieving a 7% response rate, i.e. a mean of 42 participants per practice giving consent and agreeing to randomization, in the first 12 practices.
ii) a preliminary analysis that suggests equivalence in each group and that the difference in uptake of smoking cessation services between the Intervention and Control groups is greater than zero.

Main analysis

We will summarize baseline characteristics of participants in the control and intervention arms. Chi-squared tests will compare binary outcomes between the Intervention and Control Groups (e.g. attendance at the services, point prevalent abstinence), with logistic regression to take into account any imbalance in important baseline characteristics between the groups; these factors will be nominated prior to examination of the trial data. Continuous variables (e.g. reduction in daily cigarette consumption) will be compared with the two-sample t-test, and with multiple linear regression to account for important characteristics. Odds ratios for differences in means or medians (as appropriate) will be quoted together with their 95% confidence intervals. Loss to follow-up after randomisation will be reported. Analyses will be based on intention-to-treat (i.e.

those lost to follow-up will be assumed to be still smoking) with sensitivity analysis to examine the influence of loss to follow-up.

Specifically we will conduct an analysis on multiply imputed missing outcome data at six months. The imputation model will use observed baseline covariates and outcome data. Estimates of the attendance at NHS smoking cessations service at 6 months will be compared between the group randomised to the intervention and the control group. A sensitivity analysis will then be possible based on our worst case imputation (i.e. our assumption of non-attendance for all those lost to follow-up) [36,37]. A logistic regression model will be used to adjust for baseline socio-demographic variables. The general practice will be included in the model as a random effect. In addition to the intention to treat analysis we shall estimate the causal effect of the intervention using CACE, the complier average causal effect estimator (or equivalently, an instrumental variables estimator) [38]. In the CACE analysis we will consider attendance at the first NHS smoking cessation service in terms of a binary variable as well as a dose effect (i.e. number of session attended in total). We shall take a parallel approach to the analysis of secondary outcomes (e.g. smoking cessation).

Planned Subgroup analyses

We will examine the predictors of attendance in the two groups i.e. in those proactively recruited and those self-referred after standard advertising. We will also explore any delayed effect of sending repeat reminders to smokers on the uptake of service, and any differences in attendance due to seasonal variations. We are aware however that the study will be inadequately powered to do any detailed subgroup analyses on specific groups of smoker such as those of lower socio-economic status and hence we will merely explore for trends.

We will also estimate if quit rates in recruited sample is similar to that of services based on figures from previous quarterly returns.

Economic analysis

The economic analysis will measure and value the costs of delivering the interventions and the wider changes in health and social care costs. Intervention costs will be calculated by computing the costs of the programmes, which will include materials used in the programmes and the time spent by health professionals in service delivery. These costs are then attributed to patients receiving the interventions. Patients' wider utilisation of health and personal social services resources in the preceding period are also recorded at baseline and follow up. The total costs of the health and personal social services resources are calculated using national unit costs from a range of published sources.

The total costs to health and personal social services are calculated, as recommended by NICE guidance [32], and combined with outcome data to generate the estimated cost per QALY. QALYs are derived from the EQ-5D questionnaire [33] administered at baseline and follow-ups. The probability of the tailored letter being cost effective over and above the generic letter at NICE QALY threshold values will be explored using cost-effectiveness acceptability curves [39]

Proposed frequency of analyses

We will conduct an analysis on completion of recruitment to the pilot study. Following this there will be no further analyses until full recruitment and follow-up has been achieved.

3.4 Ethical arrangements

Multicentre research ethics approval will be obtained before beginning the trial.

Obtaining informed consent from participants

All participants included in the trial will have given their written consent to take part, and for their data to be used in communications to them, and for any subsequent monitoring data obtained as a result of their use of the NHS services to be used for research purposes.

Risks and benefits for trial participants

This study aims to help participants to stop smoking and risks for trial participants are minimal. It is unlikely that there will be any adverse effects. The potential benefit is improved health through a positive change of lifestyle. Referral to the NHS stop smoking services is the aim of

the study, therefore anyone experiencing concern about their smoking habit as a result of the communication will have the opportunity to attend the services to obtain help. Anyone experiencing any other kind of distress as a result of the assessment or intervention will be referred to their GP or practice counsellor.

Informing potential trial participants of possible benefits and known risks
Patients will be informed in the patient information leaflet of the benefits of attending the NHS treatment services in order to obtain help to change their behaviour to be of benefit to their health.

4. Project timetable and milestones
Start date 1st March 2010.

Months 1-8:	Develop tailored letters, search strategies
	Develop taster sessions.
	Produce video for taster session.
	Develop database and computer program
Months 4-9:	Recruit 12 practices in 2 PCTs
	Obtain R&D approval.
	Training for search and mailouts
	Establish premises for taster sessions
	Train advisors for taster session
Months 10-18:	Pilot phase
	Mail screening questionnaire (all 12 practices to be done in parallel), recruit pilot phase participants, mail intervention and control letters, deliver taster sessions, 6-month follow up
Months 19-21:	Assess outcome of pilot phase for decision to proceed to full phase
Months 22-41:	Main trial
Months 22-26:	Recruit 48 practices in 8 PCTs
	Obtain R&D approval
	Training for search and mailouts
	Establish premises for taster sessions
	Train advisors for taster session
Months 27-41:	Mail screening questionnaire (2 PCTs/12 practices in parallel), recruit main trial participants, mail intervention and control letters, deliver taster sessions, 6 month follow-up
Months 42-45:	Close database, data cleaning, and analysis,
Months 44-48:	Produce draft report and paper.

See Appendix 2 for plan of details

5. Trial Management

5.5.1 Research Governance
UCL is the trial sponsor.

The trial will be run through the UK CRC fully registered MRC GPRF and UCL Clinical Trials Unit (PRIMENT) which has special expertise in the design, conduct and analyses of complex interventions. The PI will maintain day to day responsibility for the trial working in close collaboration with the Trial Manager to ensure that the trial is conducted, recorded and reported in accordance with the protocol, good clinical practice guidelines and other essential procedures for running trials as documented by the CTU.

A Trial Management group consisting of the PI, co-applicants, Trial Manager and trial statistician will meet quarterly to monitor the conduct and progress of the trial. The PI, Trial manager and statistician will monitor data from participating practices to identify unusual patterns. They will also verify that research staff at practices have access to documentation necessary for the conduct of the trial.

The study will be overseen by an externally led Trial Steering Committee that will meet twice a year. The group membership has to be determined, but we suggest inviting Linda Bauld as the

chair and Tim Coleman, Caroline Free and Toby Prevost (statistician) as members. Observers from the HTA programme will be invited to all TSC meetings.

We know of no adverse effects of the intervention over and above NHS care which would warrant a separate DMEC.

5.5.2 Expertise in the team
The research team is multidisciplinary collaboration, drawing on the expertise of health psychologists (HG and SS) with extensive experience of research in the field of smoking cessation and behaviour change, a clinical academic (IN) experienced in the design and conduct of large clinical trials in primary care, health economists with expertise in the cost effectiveness of smoking cessation treatments (CG and SP), and statisticians with expertise in medical statistics (RM and AR). The team also includes NHS service managers working in the specialist smoking cessation clinics, experienced in the delivery and management of the services.

The team have a strong collaborative history in studies of smoking cessation in primary care. Four members of the team (HG, SS, IN, CG) are currently collaborating on the Cancer Research UK funded ESCAPE trial (380k), a large nationwide trial of computer-tailored feedback for smoking cessation, involving proactive recruitment of smokers in primary care, using similar recruitment methods to those outlined in this proposal [19]. This experience gives us insight and practical knowledge of the issues of this method of recruiting and of conducting scientific evaluations in this setting, experience on which we can draw for the conduct of the present study. In addition HG and SS have worked closely to develop and deliver complex interventions using computer tailored feedback, helping and encouraging smokers in the wider population to quit. They currently jointly hold two further grants in the same field from Cancer Research UK, exploring technological applications of computer-tailored smoking cessation advice, and are also working with partners in primary care to improve and make more efficient the brief advice given by practice nurses and community pharmacy personnel. They therefore bring expertise in the complexities of smoking cessation trials. Other members of the team bring expertise in conducting trials of complex interventions in primary care (IN), relevant grants held are investigating methodology and knowledge transfer, and dissemination of research findings, which will inform dissemination activities, and the recruitment and retention to randomised trials (both funded by the MRC). The applicants have also worked closely with research networks in the past, and on current projects.

Local service managers (SG and DE) work in delivering smoking cessation services in Camden and Berkshire East PCTs, and therefore have the experience in the management of services required to supervise and deliver the intervention. This proposal therefore fits well with the team's wider research activity.

5.5.3 Roles and responsibilities of the named investigators
HG: PI. A Health Psychologist with expertise in developing interventions for smoking cessation and behaviour change, and in conducting trials. Will be responsible for the development of the screening questionnaires, the tailored invitation letters and the taster sessions in collaboration with the Service Managers. Will maintain overall responsibility for the co-ordination and supervision of the research and of the Trial Manager and Research Assistants. Will be responsible for the analysis and dissemination of the results.

IN: Professor of Primary Care and primary care clinician, Director of MRC GPRF. Expertise in primary care research, and methodology of complex interventions. Will advise on the management, co-ordination and methodology of the trial, on primary care issues, and will have a supervisory role in the conduct of the trial.

SS: Professor of Behavioural Science, expertise on behaviour change and interventions for smoking cessation. Has worked with the PI on previous and ongoing studies of this type of intervention, and will be involved in the development of the invitation letters and development of the measurement instruments, and also act in a supervisory role in the conduct of the trial.

RM: Professor of Medical Statistics and Epidemiology, and Co-Director of the British Regional Heart Study. Is currently working with the team on a previous study of smoking cessation, and will supervise the trial statistician, and advise and assist on any matters relating statistical analysis.

AR: Trial Statistician, will work on daily statistical aspects of the trial, supervised by a Senior Statistician.

CG: Professor of Health Economics with vast experience and expertise in trials of smoking cessation, has worked with the applicants on previous trials of smoking cessation, and will be responsible for the supervision of the analysis and reporting of economic issues.

SG: Stop Smoking Service Manager, with several years experience in the delivery of smoking cessation advice. Will be involved in the development of the taster sessions and in the training of advisors, in collaboration with the PI.

DE: Stop Smoking Service Manager, expertise in the organization and delivery of services. Will be involved in the development of the taster sessions and in the training of advisors, in collaboration with the PI.

5.5.4 Roles and responsibilities of the staff employed on the grant

Trial Manager: Responsible for the day-to-day co-ordination of the trial, to ensure compliance with ethical and research governance procedures, implement robust trial systems, monitor and support search and mailing procedures, monitor and support data collection, supervise data handling, ensure that the project reports in a timely fashion, and co-ordinate the Trial Management Group and other staff.

Research Assistants: Will perform search and mail procedures, mail screening questionnaires, enter data and produce intervention letters, collect validation data from service monitoring records.

Administrator: Will provide administration support for the PI, Trial Manager and other staff, be the first point of contact for telephone enquiries, arrange meetings and organise room bookings, take minutes, process finances, and assist with stationery ordering and mail delivery.

Steve Parrott: Health Economist responsible for the analysis and reporting of economic issues.

Telephone interviewers: collection of data by telephone at the 6-month follow-up.

6. Service User Involvement

This trial will be embedded in the NHS through the inclusion of Smoking Cessation Service Managers as co-applicants, who will be involved in the design, conduct and study analysis. In addition, we have identified a suitable past successful user of the service in Camden who will be invited onto the Trial management Group and will be involved in the study from the design stage onwards. Thus, we will ensure that the interests of all parties and the views of the public are fully represented in the conduct of the study.

7. Publication and dissemination

We will publicise the results of the study by presenting both regionally and nationally at conferences (e.g. the UK National Smoking Cessation Conference) and in relevant peer - reviewed journals such as Tobacco Control and Addiction, and open access journals such as BMC Public Health. The results will also be presented to commissioners at participating PCTs, and feedback obtained from these meetings will inform wider dissemination across the NHS. Results will also be sent to the NICE Smoking Cessation and Behaviour Change Programme Development Groups so that the findings of the trial can be incorporated in the next update on the guidelines.

8. Justification of support required

Salaries
A large portion of the costs are taken up in salaries and costs for the research team, including a Trial Manager and Research Assistants to carry out the work of screening and mailing to patients. Support is requested for a Trial Co-ordinator for 48 months, (Grade 7, 100% FTE), three Research Assistants, two for 34 months and one for 19 months (Grade 6, 100% FTE), and administrative support for 48 months (Grade 6, 50% FTE). Total salary costs for the statistical post (without overheads) are estimated at £41,569. Additional advice and support on trial management will also be offered by PRIMENT CTU at no additional cost.

Equipment
Equipment needed includes four PCs or laptops, for the PI, Trial Manager and Research Assistants, and one printer. We have also included the costs for the filming and editing of the video for use in the taster sessions.

Running expenses
Direct project running expenses include: printing of questionnaires and information leaflets, postage and stationery for screening questionnaires and the interventions (the tailored reports), envelopes, and Freepost Licences. We will employ independent freelance telephone interviewers to carry out the follow-up interviews for both the pilot and the main trial. Other general running expenses include telephone costs for the follow-up interviews, computer support to contribute to the costs of linking the computers to the department network (providing access to email, the internet and online literature searching), software licences and consumables (project related telephone calls and postage, stationery, photocopying and toner cartridges).

Travel
Travel costs include travel to practices for the RAs to carry out searches and mailing and the production of the invitation letters. This is necessary to maintain confidentiality of the data, and to cover the requirement for the letter to be produced within the practice. Also included are costs for the PI to travel to meetings in practices to discuss participation, and costs for Trial Management Group, approximately 4 per year, and the costs of supporting a Steering Group for 2 meetings a year. We have also included an amount of £150 to allow three people to attend an HTA Induction meeting in Southampton.

Other costs
Other costs include developing the computer system for generating the individually tailored invitation letters and for the randomisation of participants.

Other costs also include payment of advisors for training to run the taster sessions, trial website development, cotinine analysis, service user involvement, and publication and dissemination costs.

All costs include a standard 4% compound inflation per year.

NHS cost implications
Costs to the NHS include
i) payment to smoking cessation advisors to run the taster sessions
ii) hire of premises to run taster sessions
iii) costs include start up meetings with GPs and practice staff, and GP time to check the selected sample of patients for suitability.

9. Flow diagram
See Appendix 3.

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Addendum to Project 08/58/02: A randomised trial to increase the uptake of smoking cessation services using Personal Targeted risk information and Taster Sessions

Lead Applicant: Dr Hazel Gilbert
Name of Host Institution: UCL
Start Date: 01/05/2010
End Date: 31/05/2014
New End date: 31/05/2015

Additional Funding Granted: £631263

Additional Time Granted in Months: 12

Reasons for Additional Funding

The start2quit study, assessing the effectiveness on attendance at the NHS services of proactive recruitment by a brief personal tailored letter and invitation to a taster session, is currently recruiting successfully. To maximize the utility of the study, the following additional work will build on and enhance its value.

1) It is important to know whether this intervention also translates to increased quit rates, and if the quit rates in people attending as a result of this intervention differ from the usual quit rates in NHS services. As well as powering the trial for the original primary outcome (the proportion of people entering the smoking cessation service over a period of 6 months), we will now also power the trial for the secondary outcome of 7-day point prevalent abstinence at the 6-month follow-up, validated by salivary cotinine.

   Assuming quit rates of 4% versus 2.2% in the Intervention and Control Groups (mimicking the findings of Murray et al, 2008), an 80% increase in the sample size is required, to 1793 in the Control group and 2707 in the Intervention group (assuming the same therapist effect as the original protocol), a total of 4500. A sample of this size would give 85.4% power to detect a difference of 1.8% at the 5% significance level. The same sample size would have 95% power to detect the difference between quit rates of 4.4 and 2.2% (doubling of quit rate).

   Based on present recruitment figures, we estimate that with an additional 8 SSSs (48 GP practices) we will recruit another 2060 participants, meeting the requirement of the power calculation.

2) Identification of barriers to attendance and the reasons for non-attendance in this sample, following an explicit invitation (either with risk information and taster session invitation or without), will help to develop strategies to overcome the barriers, and to allocate resources to encourage attendance, and thus increase the potential to recruit the optimum number of smokers to the services.

   We are currently assessing barriers to attendance at the NHS services using an open question. For the remainder of the study we will use the Treatment Barriers Questionnaire, a 40-item measure of reasons for not entering smoking cessation programs (Copeland, 2010) that has been recently validated on a low ses population in the USA. This questionnaire will allow us to assess different aspects of smoker's decisions to attend a group or therapy session and highlight any misconceptions or lack of awareness of the service offered. It will also allow us to explore any

associations with demographic and dependence factors, as well as validating the questionnaire on a UK population. Participants who report not attending the services will be sent the questionnaire by post.

The Treatment Barriers questionnaire will be mailed to approximately 3500 participants who report not attending the SSS and who agree to complete an additional questionnaire.

3) Taster sessions are being recorded to ensure fidelity to the protocol. Assessing this fidelity can help to address factors that might have impacted on subsequent attendance and quit rates. Extra time for a full analysis of these tapes, using thematic analysis, will allow the exploration of differences in style and delivery of the intervention and their impact on subsequent attendance.

   Full analysis of the recording of the Taster sessions, using thematic analysis, will be carried out to address factors that might have impacted on subsequent attendance and quit rates.

Proposed new timetable and milestones

Months 16-49:	Main trial
Months 18-39:	Recruit 16 SSSs
	Obtain R&D approval
	Recruit approximately 96 practices (approx 6 per SSS)
	Training for search and mailouts
	Establish premises for taster sessions
	Train advisors for taster session
Months 21-41:	Mail screening questionnaire
	Recruit main trial participants
	Mail intervention and control letters
	Deliver taster sessions
Months 27-49:	6 month follow-up
Months 28-51:	Postal questionnaire on barriers to attendance
Months 51-60:	Analysis of taster session tapes for fidelity
	Analysis and write up of barriers to attendance
Months 52-55:	Close database of primary data, data cleaning, and analysis
Months 55-60:	Produce draft report and paper