DETAILED PROJECT DESCRIPTION – Final 23.5.14

Tele-First: telephone triage as an alternative to face to face contact in general practice.

Summary of research

A recent innovation in general practice involves all patients requesting a face-to-face consultation being asked to speak to a doctor on the phone first. Reported gains include the ability to deal with two thirds of requests on the phone, greatly reduced waiting times for appointments, improved continuity of care, improved patient experience and reduced A&E attendance and emergency admissions.

Management support for this innovation is being offered by commercial companies as well as being promoted in NHS England literature. We will work with the providers to evaluate the impact of the scheme on practices enrolled with them, but with the potential to include a wider range of practices taking a similar approach in our analyses.

We propose a mixture of qualitative and quantitative data collection. The quantitative analysis will be based on before-and-after difference-in-differences analysis comparing study practices with all practices in England allowing for baseline and pre-intervention trends and controlling for practice size, rurality, deprivation and age/sex/ethnicity of the population for the following outcome measures:

- Patient experience of making appointments and being able to see or speak to a doctor of their choice using data from the English GP Patient Survey.

- Hospital utilisation including A&E attendance, outpatient attendance and emergency admissions using Hospital Episode Statistics.

- The proportion of patients who leave a practice without changing address as a marker of poor patient experience.

For practices using a full triage system, we will also survey patients who have experience of using the system in the previous two weeks. Questionnaires on patient experience will be sent to a minimum of 15 patients in each of 28 practices (420 patients). In addition, we will survey practice managers in all study practices to get their views on the experience of changing to the new system.

For a sample of practiceswe have the ability to carry out additional before-and-after analyses including overall consultation rates, mean waiting times for appointments, mean waiting times in surgery, DNA rates, recall rate, mean length of consultation and continuity of care.
Our economic analysis will be a cost-consequences analysis with estimates of the costs of implementation and routine operation of the scheme, changes in the cost of consultations (both telephone and face to face), referrals and A&E attendances, and consequences measured in terms of patient experience.

The qualitative element of the study will focus on eight practices which have used the approach, including surgeries who have overcome problems and one or two which have returned to a traditional booking system. Surgeries will be in rural and urban locations and include surgeries located in deprived areas. Interviews will be conducted with four patients or carers and four staff in each of these practices (64 interviews). Patients will be selected to include some elderly people, some people who work, some with disabilities, some with chronic conditions and some with English as a second language. The proposed research focuses on evaluating the approach in a group of practices willing in principle to adopt telephone triage. If the findings support the use of telephone triage in these practices, our work will show how the approach could be rolled out more generally, what the potential barriers would be, and how they might be overcome.

We plan that the findings of the study will also inform the use of telephone triage in practices which wish to make changes short of the full reorganisation offered by commercial providers.

Background and rationale

Practices face multiple demands. In addition to meeting the routine needs of their practice populations, they face an increasing expectation to take work from secondary care, pressure to extend hours to reduce A&E attendance, and to reduce emergency admissions among frail elderly people. Many practices are struggling with demand and seeking new solutions to the problem.

In the early days of the NHS patients simply turned up at their GPs surgery if they wished to see a doctor. Over the 1980s and 1990s, this was gradually replaced by appointment systems, with patients either making an appointment in person or by phone. Practices continue to offer limited opportunities for patients to just turn up, especially for urgent problems. The proportion of consultations carried out over the telephone has been small but increasing, from 3% in 1995 to 10% in 2006 (Hippisley-Cox et al 2007).

A new pathway offers a radical change to this where all patients phoning for an appointment with the doctor are asked to speak to a GP on the phone first. They are rung back by the GP after a short interval and at the end of the telephone consultation a decision is made as to whether the patient needs to come in or whether the matter can be satisfactorily resolved on the phone. It is claimed that over two thirds of requests for appointments can be dealt with over the phone. This has the potential to greatly reduce the number of patients seen in the surgery, both adding to convenience for patients and to the efficient running of the practice. In addition the GP who speaks to the patient on the phone has the ability to direct the patient to a particular doctor for a face-to-face appointment, thereby having the potential to improve continuity of care.

Two commercial providers (Patient Access and Doctor First) offer management support to practices wishing to adopt this new approach. Both make substantial claims of benefits to both patients and practices. The potential for the new approach has been recognised nationally and now appears in literature from NHS England (www.england.nhs.uk/wp-content/uploads/2013/06/urg-emerg-care-evbse.pdf). This NHS England guide (page 35) contains the advice that "Proven and tested systems exist in England, where telephone consultations are used routinely in general practice, whilst other developed systems include telephone assessment of all patients prior to attending the practice….. The 'Doctor First' model has demonstrated a cost saving of approximately £100k per practice through prevention of avoidable attendance and admissions to hospital". These claims are based entirely on data from companies which have a commercial interest in promoting their product and there are clear potential downsides to the schemes (e.g. restriction on patient choice). There is therefore an urgent need that these schemes should be independently evaluated before being widely rolled out across the NHS.

Evidence explaining why this research is needed now

A 2004 Cochrane review concluded that telephone consultations and triage can reduce the numbers of face to face contacts and out of hours visits by GPs, but the evidence on overall service use and patient satisfaction was inconclusive (Bunn et al 2004). Some more recent studies suggest that telephone contact may be associated with shorter waiting times in the case of physiotherapy (Salisbury et al 2013) and may be cost saving for both GP and hospital clinics (Pinnock et al 2005, Pinnock et al 2007, O'Byrne et al 2012). However these studies have mainly been carried out for follow-up patients in primary care and the evidence supporting telephone triage of initial contacts with primary care is sparse.

In a systematic review of a variety of interventions that included GP telephone consultations (Chapman et al 2004), the authors highlighted problems regarding equality of access to services for patients who do not speak English, those with hearing or speech impairments and those with learning disabilities. The qualitative element of our study design seeks to examine the impact of a GP telephone triage approach on groups such as those outlined in this review.

A more recent study (McKinstry et al 2010) highlighted concerns about the safety of telephone consultations. The authors concluded that telephone consultations may compromise patient safety and be more suited to long-term conditions rather than management of acute conditions.

There is no independently published research evaluating the new approach offered by commercial companies in which almost all patients are offered a phone consultation instead of being able tobook directly. This is the reason why this research has been prioritised by HS&DR and why the research is needed now.

Aims and objectives

The proposed research seeks to answer three key research questions;

1. How does a GP telephone triage approach affect patient experience and use of primary and secondary care services?

2. What is the impact of GP telephone triage on the nature of consultations for patients and staff, and how appropriate is this approach for hard-to-reach groups?

3. What are the cost consequences of a telephone triage approach in general practice?

Research plan/methods

To address the research questions we will use a mix of qualitative and quantitative approaches and a cost-consequences analysis for the economic evaluation. We will work with commercial providers to evaluate the impact of the scheme on practices enrolled with them.

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Patient experience

For practices using a full triage system, we will survey patients who have experience of using the system in the previous two weeks. Questionnaires on patient experience will be sent to at least 15 patients in each of 28 practices (minimum 420 patients). Patients selected will be all those who have telephone contact with a GP during one day. This will include patients who have specifically booked a phone appointment and those who have been triaged to receive a phone call (thus including both patients habituated and not habituated to the new system). The sample size assumes at least 15 patients receiving such an appointment in any one day which we believe to be a conservative estimate. We will only include practices in this survey that have been operating the new system for at least six months in order to get past any initial teething problems of the new system. This survey will be a simple descriptive survey with no comparators, but will be one in which we can include detailed questions about the new system. Although we do not have comparators for these data, they do give us the ability to get patients reports on a very recent event in a way that is not possible from national survey data.

In addition, we will analyse patients' experience of making appointments and being able to see or speak to a doctor of their choice using national GP Patient Survey data. Here we will compare responses to the national GP Patient Survey from patients in study and control practices.
The method used for selecting control practices will depend on the findings of an initial survey of 500 practices used to establish the proportion of practices that use a GP triage system. If we find, as expected, that few practices are using a GP triage system then we will be free to select any practice in the country at random as a control practice. By doing so we may select some practices using GP triage systems, however, they will only be a small number and the dilution of estimated effect of the intervention will be small. If however, we find GP triage systems are widespread we will be able to

add these practices to the intervention group and in turn require fewer control practices to achieve the required power. In that (unlikely) circumstance we will select control practices from survey respondents.

In addition, we will carry out a structured questionnaire survey of practice managers in all study practices to assess their experience of changing to the new system, the perceived benefits that it brings for staff and patients, problems associated with the introduction of the new system and whether they have been overcome. A proportion of respondents will be followed up with a telephone interview (see section on qualitative data collection).

Healthcare utilisation

Our quantitative analysis of healthcare utilisation will be based on a before-and-after difference-indifferences analysis comparing study practices with other practices in England allowing for baseline and pre-intervention trends and controlling for practice size, rurality, deprivation, and population age/sex/ethnicity, assessing the following outcomes:

- A&E attendance and emergency admissions using Hospital Episode Statistics (HES). Although our primary hypothesis relates to A&E attendance, we will also analyse data on outpatient referrals, elective admissions and emergency admissions (total and for ambulatory care sensitive conditions).
- The proportion of patients who leave a practice without changing address (used as a marker of dissatisfaction, and available from routine NHS data).

The study and control practices will be the same as those described in the Patient Experience section above.

For a sample of practices we also have the ability to carry out additional
detailed longitudinal data analysis
including waiting times for appointments, waiting times in surgery, DNA rates, recall rate, length of consultation, and continuity of care.

Within the proposed timescale of the study we anticipate that one year’s post intervention data will be available for all practices and two years data for almost all.

Analysis of patient experience and healthcare utilisation data

In the survey of patients in study practices who have recently used the new system, there will be a simple descriptive analysis of the results.

For the analysis of GP Patient Survey data we also have access to data from control practices. We will restrict our analysis to patients who report having contact with their general practice in the previous six months in order to effectively attribute reported experience to the correct period. Using a mixed linear regression as detailed above we will further adjust for patient self-reported age, gender and ethnicity, patient level deprivation score (based on their postcode of residence), as well as practice level variables including practice size, rurality, deprivation and the age/sex/ethnicity profile of the population.

For the analysis of outcomes that permit direct comparison with control practices (patient experience, secondary care usage, and the proportion of patients who leave a practice without changing address) the structure of the analysis will be common across outcomes, however the type of model used (mixed effect linear regression, logistic regression or Poisson regression) will match the outcome variable. We anticipate using data covering a period of up to three years prior to and up to two years post introduction of the triage system. We will perform one set of analyses based on yearly data. In these models practice-level random effects with an unstructured covariance matrix will be included for each year so that the underlying outcome level (and associated clustering/overdispersion) in each practice is incorporated and may change each year. An interaction term between year (following intervention) and intervention group allows us to assess the effect of the introduction of the triage system in each of the two years following intervention. Where possible, a second set of models will model intervention effects with monthly data. These models will be similar but further include a spline approach that models both sudden and gradual changes (using interactions between intervention group and (1) a post-intervention indicator and (2) a linear year variable that begins at the intervention, respectively).

When analysing secondary care usage we will use a mixed-effects Poisson regression to model the count of admissions. For each practice data will be aggregated into 14 age by gender groups (age groups 0–4, 5–14, 15–44, 45–64, 65–74, 75–84 and 85+) and the rate of admissions will be modelled using freely available data on the age and gender profiles of the practice population. In doing so we are able to adjust for patient-level age and gender and will further adjust for the same practice level variables as listed above. A similar model will be used when modelling the count of patients who leave a practice without changing address. However as we will not know the age or gender of these patients it will be modelling for practices as a whole with adjustment only for practice level variable.

A similar analysis strategy will be used when modelling the data obtained from a sample of practices (number of consultations, time taken for GP to call the patient after an initial call, number of calls converted to face to face consultations and provider continuity) although as this will be a beforeand-after comparison and so will not include the interaction term used in the difference in differences approach. Numbers of consultations will be modelled with mixed effect Poisson regression and the number of calls converted to consultations will be modelled with mixed effect logistic regression. For the remaining measures we will use linear regression using a bootstrap approach as needed to account for non-normal distributions.

Our power calculations (implemented via 500 simulations and accounting for the observed variation both between and within practices) assume practices of 3500 patients and four control practices for each intervention practice. With 90 intervention practices we estimate that we will have 90% power to detect:

- A reduction as small as 1.7% in A&E attendance rates. In the conservative case that we have half as many intervention practices as expected we will still have 90% power to detect a 2.4% reduction.
- An odds ratio of 1.15 on overall experience of making an appointment. This is equivalent to differentiating between 86.7% of patients describing their experience as good or very good in the intervention practices and 85.0% in control practices. In the conservative case that we have half as many practices as expected we will still have 90% power to detect an odds ratio of 1.21 or 87.2% of patients describing their experience as good or very good in the intervention practices
- A 11% rise in disenrollment rates beyond any rise seen in control practices. In the conservative case that we have half as many practices as expected we will still have 90% power to detect a rise of 15%

Qualitative data collection and analysis

The qualitative element of the study will focus on a group of eight practices that have used the new approach. We will identify eight practices with the aim to include surgeries that have had a range of experiences adopting the telephone triage approach. This will include surgeries that have had positive experiences as well as surgeries which have overcome problems with the telephone triage approach and if possible one or two which have abandoned the approach and returned to a traditional booking system. We will aim that surgeries will be in rural and urban locations and include surgeries located in deprived areas. Surgeries will be approached by a letter to the practice manager or lead GP, followed up by a phone call from a member of the research team to explain the study and further discuss participation.

Once a surgery is recruited to the study four patients or carers and four staff in each practice will be interviewed (64 interviews). Staff will be identified with the assistance of the participating surgery. Patients or carers from the identified practices will be recruited identified by a tick box question at the end of the quantitative survey which will invite them to leave their contact details should they be willing to be contacted in relation to possible participation in an interview.

Semi-structured interviews will enable participants to raise concerns that may not have been anticipated by the research team, or are specific to the practice. Development of the topic guide for these interviews will be informed by the literature and piloted with one staff member and one patient. We will seek to identify patients to include elderly people, people who work, people with disabilities, people with chronic conditions and those with English as a second language. Interviews with patients or carers will explore patients'/carers' views of convenience, impact of the approach, perceptions of quality of care and impacts on the doctor-patient relationship. The advantages and disadvantages of the telephone triage approach will be discussed.

Interviews with staff will explore the views of a range of staff members such as GPs (salaried, partner and locums), nurses, practice managers and receptionists. Staff will be asked about their views of the telephone triage approach with respect to issues such as convenience, workload, practice environment, impacts on the doctor-patient relationship and quality of care. The advantages and disadvantages of such an approach will be explored.

All interviews will be audio recorded and transcribed verbatim removing any personally identifying information. Analysis will follow the principles outlined by Lofland and Lofland (1995). These form a series of reflexive steps through which data are generated, coded, and re-coded, making particular use of memos to aid analytical thinking. A sample of transcripts will be double coded, following which the researchers will discuss and amend the coding frame. Transcripts will be systematically re-coded following the addition of new codes. The computer program NVivo will be used to assist with data management.

Economic data collection and analysis

Whilst hypothetically, triage of patients should mean that patients in greater need of healthcare will gain access to services more quickly, attempts to quantify any resulting health gain (for example a patient with cancer being seen by their GP 48 hours sooner) would be extremely challenging to measure or model meaningfully. The primary outcomes of interest are anticipated to be process related measures such as reduced waiting time, and patient experience with the system. On this basis, the economic evaluation will comprise a cost-consequences analysis where the costs are presented alongside outcomes described above in a disaggregated manner. Costs will be measured from the perspective of the NHS and will include cost of implementing and maintaining the triage schemes, primary care consultation costs and secondary care costs.

Intervention cost

A survey of the approximately 90 intervention practices will be conducted adapting a previous survey undertaken by members of the research team (Ling et al 2012, appendix E, pp61-63). This survey will request details about changes (additions as well as reductions) in staffing (including grade) and other operating or capital costs attributable to the triage system, for example installation of additional telephone lines and rearrangement of office facilities to accommodate the system. In addition, the suppliers of the triage systems will be contacted for pricing information, and care will be taken to avoid double counting costs from data provided by practices and suppliers.

Staffing costs will be estimated based on the mid-point of the respective staff grade for the price year of analysis. Capital costs will be uprated to the price year of the analysis using the Hospital and Community Health Services inflation index.

Primary Care costs

Primary care costs will comprise prescriptions and consultations. Detailed prescribing data for every GP practice in England is freely available on a monthly basis dating back to August 2010. Prior to this ePACT data provide data on total number of items dispensed by practice. We will extract data on total numbers of items dispensed in each intervention and control practice from three years prior to and up to two years post intervention. Information solely on total number of items will be sufficient to detect any changes in prescribing over and above national trends. However sub-analyses exploring any changes in prescribing volumes by therapeutic class will also be conducted, with a particular focus on prescriptions for ambulatory care sensitive diseases (such as asthma and diabetes) and those which may reflect consultations for minor illness (e.g. antibiotics). Quantities of items will be multiplied by the mean cost per item extracted from the Prescription Cost Analysis for the relevant year. This cost will then be adjusted to the price year of the analysis using the HCHS inflation index.

For a sample of practices the numbers of face to face, telephone and home visit contacts each month will be obtained for a period of up to three years prior to and up to two years post introduction of the triage system.. Equivalent data for the control practices are not routinely available and therefore analysis of consultations will be limited to observed changes after controlling for historic trends and other explanatory variables.

These data will be costed using standard NHS sources for a GP face to face, telephone and home consultations at the price year for the analysis (Curtis et al. 2013).

Secondary Care Costs

All secondary care contacts recorded for patients from intervention and control practices for three years prior to and up to two years post installation of the system will be extracted from Hospital Episodes Statistics with a particular focus on A&E attendance as this is the aspect of hospital utilisation that is claimed will reduce following more efficient use of resources in primary care. However, we will also analyse outpatient referrals, elective admissions and emergency admissions (total and for ambulatory care sensitive conditions). Frequency of contacts will be multiplied by unit costs extracted from the NHS Reference Costs (e.g. Department of Health 2012).

Economic analyses

A common price year will be used for the analysis (to be determined at point of analysis). Primary and secondary care cost will be calculated on a monthly and annual basis for up to three years prior to and up to two years post installation of the system. Cost models will be estimated separately for prescriptions, primary care activity and secondary care activity. The models will allow for time and seasonal trends and other potentially explanatory factors (practice size, rurality etc as described above). A dummy variable will be used to indicate the triage system being in operation in a particular practice from a particular time point. The coefficient on the dummy is the incremental monthly / annual cost which can be assumed attributable to the intervention after controlling for other potential confounders.

Summing outputs from individual prescription, primary and secondary care models will give an estimate of the change in cost per year. The net financial impact of the intervention over the first year of operation is calculated as the sum of these coefficients and the intervention cost itself. Projecting to a longer time horizon, recurring costs will be discounted at the prevailing rate (currently 3.5%).

Steering group and Study Steering Committee

The Study Steering Committee will comprise of a Chair (GP), four PPI members and two additional professional members (one GP and one Practice Manager). The group will meet on two occasions during the lifetime of the proposed project.

Dissemination and projected outputs

The proposed research will have three principal audiences; policy makers, NHS managers in primary care and academic audiences. We propose approaches to dissemination which will report our findings to all these groups. We will publish findings in academic peer-reviewed journals and present findings at academic conferences. We will seek to actively engage policy makers at local and national level, along with local service managers, NHS providers, researchers, patient groups and other stakeholder groups we believe would be the beneficiaries of the proposed research.

Written outputs would include articles in peer reviewed journals as well as a final report as outlined by the Health Services and Delivery Research programme. A summary of the findings of the research and recommendations will be provided in a four page briefing document. This summary will be targeted to busy policy makers and practitioners. Patient and public involvement (PPI) members will be asked to assist in the production of a short summary for a non-technical audience. We would also present findings at national and international conferences, including the annual NHS Confederation conference and the HSRN conference.

At the end of the first year of the project we will hold a learning event for GP surgeries participating in the research. This will be a face-to-face meeting with presentations from the evaluation team and practices themselves, designed to enable a discussion about the interim findings of the evaluation and enable them to input into and reflect on their own experience of use of a GP telephone triage approach.

Near the end of the project we will convene a second workshop with members of participating surgeries, policy makers and patient and public involvement representatives. The format of the workshop would be to report findings from the study for wider discussion of the lessons learnt, barriers and benefits of a GP telephone triage approach. The workshop would inform the formulation of key messages for dissemination to a wider audience.

We plan that the findings of the study will also inform the use of telephone triage in practices which wish to make changes short of the full reorganisation offered by the commercial companies.

Plan of investigation and timetable

The research will be conducted over a two and a half year time frame.

The key deliverables are bolded;

	Month	
Sept 2014	1	Apply for research governance and ethics approval
		Scoping of literature to inform design of study instruments
October 2014	2	Survey of 500 practices to inform sampling strategy for controls
Dec2014	4	Follow up survey for non-responders to survey
Jan 2015	4	Develop survey for cost analysis
Jan 2015	5	Analysing survey to inform sampling strategy for controls
		Identify eight practices for detailed study
Feb 2015	6	Recruit eight practices to study
		Visit practices to test and complete survey of costs
March 2015	7	Anticipate ethics and research governance approvals gained
		Identify samples of staff and patients for interview
April 2015	8	Start practice visits to identify patients for questionnaire surveys
		Interviews with patients/carers (conducted over 12 months)
		Interviews with staff (conducted over 12 months)
July 2015	11	Collect and analyse first round of quantitative data
Oct 2015	14	Analysis of interviews commences
Nov 2015	15	**First learning event for practices**
Dec 2015	16	**Interim report (16 months)**
July 2016	18	Collect and analyse second round of quantitative data
May 2016	24	Collect and analyse third round of quantitative data
Nov 2016	28	**Second learning event in London**
Feb 2017	30	**Final report (30 months)**

Project management

Prof Martin Roland (University of Cambridge) as the PI will have overall oversight of this project. Dr

Emma Pitchforth, Research Leader at RAND Europe will have oversight of the qualitative elements of the work. The project will be managed on a day-to-day basis by Dr Newbould working across both organisations, who will liaise with the project team to ensure all tasks are completed to schedule. The University of Cambridge and RAND Europe jointly comprise the Cambridge Centre for Health Services Research and the researchers have extensive experience of working together.

Ethical approval

As we will be looking at practice level data, rather than individual level, we will not require ethics approval for the quantitative analysis. However, we will need to apply for ethical approval for the qualitative elements of the study, including staff and patient/carer interviews. Ethical approval will be sought at the start of the project, as will the relevant research governance approvals. The research team has extensive experience of applying for ethical approval for this sort of work.

All participants will be fully informed about the study and given written information about the project. Participants will be given the opportunity to consent or decline to take part in the interview process. Where participants initially agree they will be free to withdraw from the interview or study at any stage. We will endeavour to ensure that staff and patients feel able to comment openly and honestly about the questions that they are asked, assuring all participants of anonymity and confidentiality.

The research team will collect and store all data according to the Data Protection Act (1998).

Patient and public involvement

We consulted with our PPI panel, INsPIRE, in the development of the proposed research (www.medschl.cam.ac.uk/gppcru/index.php?option=com_content&view=article&id=497&Itemid=156) The PPI involvement in this research plan occurred in two stages. In preparation for the outline proposal we received email comments from our PPI panel. Once invited to submit a full proposal a face to face meeting was held with seven PPI members to review the full application and proposed PPI plans.

At outline stage we received written comments from PPI members. One member felt that patients who work may experience particular problems with a telephone triage approach so our sampling of patients for interview has been amended to include those who do and do not work. Many commented on the importance of continuity of GP with use of such an approach, this is reflected in our proposal.

The face to face meeting, held once we were invited to submit a full proposal, led to a fuller and more detailed discussion of our proposed research. PPI members were very engaged in the topic with several commenting on the importance of this research for patients. A number of proposed changes to the research were discussed with the group. In response to these discussions two substantial changes were made to the application.

The first was in response to concern that not enough patients would be interviewed as part of the qualitative element and that there was an in balance with less patient/carer interviews being proposed than staff interviews (we had amended the proposed number of interviews to 4 staff and 3 patients/carers per surgery, in 8 surgeries). In response to this comment we increased the number of patient/carer interviews from 3 per surgery to 4 per surgery, to make a total of 32 patient/carer interviews in the study. This is equal to the number of staff interviews that will be conducted. Participants also recommended an increase in the number of lay members in the steering group. We had originally proposed two lay members of the steering group alongside 3 professional members. PPI members suggested additional lay membership of the steering group, with the opinion that it is not always possible for all lay members to attend all meetings. It was suggested that a proposed membership of 4 lay members would ensure at least 2 were present at any meeting. The proposed number of lay members on the steering group has therefore been increased to four.

Expertise and justification of support required

Martin Roland is Professor of Health Services Research at the University of Cambridge, a GP for 35 years, and an experienced health services researcher with 30 years of experience of evaluative research in primary care. He has 225 peer reviewed publications including 50 in the British Medical Journal. His recent experience analysing the GP Patient Survey, Hospital Episode Statistics and general practice disenrollment data is particularly pertinent to this application.

Emma Pitchforth is Research Leader at RAND Europe. An experienced health services researcher, she has extensive experience of using qualitative and mixed methods approaches to address healthcare policy issues in diverse healthcare settings, including the UK. Her substantive areas of expertise include reproductive and maternal health, focusing on women’s experiences of and quality of care. She also brings relevant expertise to this application through understanding the needs of particular patient groups, including rural populations, poor and minority ethnic groups.

Jennifer Newbould is a sociologist and senior analyst at RAND Europe. She has several years of post-doctoral experience conducting qualitative work on a number of large scale projects. Jennifer is particularly interested in patient experience and much of her work has involved interviews with patients. She currently works on an NIHR funded project with a focus on doctor-patient communication and as part of this has worked extensively with GP practices and managed the qualitative element of the work and a team of three researchers.

Gary Abel is a statistician and senior research associate at the University of Cambridge. He will be taking responsibility for the quantitative analysis. He has extensive recent experience in supervising analyses of the GP Patient Survey, Hospital Episode Statistics and general practice disenrollment data.

Ed Wilson is a senior research associate in health economics at the University of Cambridge. His principal expertise is in economic evaluation and he has supervised the economic aspects of a wide range of health technology assessments.

Marc Elliott is a senior statistician at RAND in Santa Monica. A small amount of time has been built in for him to bring specific expertise in time series analysis and regression discontinuity designs. Dr Elliott already works closely with the Cambridge team, visiting for face to face meetings 2-3 times a year.

University costs include 10% time each for the PI and for senior support for statistics and economics. However the bulk of the work will be done at RAND Europe under the supervision of co-applicants Emma Pitchforth and Jenny Newbould. RAND Europe costs have been calculated in detail for all two and a half years of the project.

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