Revised December 2009. Amended February 2010 Amended April 2011

Full proposal

Title: Investigating the contribution of physician assistants (PAs) to primary care in England

Aims and objectives

This study aims to investigate the contribution of physician assistants (PAs) to the delivery of patient care in primary care services in England.

The research questions addressed are:

1. How are PAs are deployed in general practice and what is the impact of including PAs in general practice teams on the patients experience and outcomes?
2. What is the impact of including the PAs in general practice teams on the organisation of general practice, working practices of other professionals, relationships between professionals and the practice costs?
3. What factors support or inhibit the inclusion of PAs as part of English general practice teams at the local and macro level?

Background

Physician assistants (PAs)

Ensuring that health teams have the right mix of skills to meet patient need and service delivery in the most cost effective and safe way is a major imperative in the health service. The UK, like a number of other countries, has been exploring the use of PAs to address the need for a re-designed workforce particularly in primary care and first contact services (DH 2002). There is some confusion about PAs as the title is also being used in some hospital Trusts in the UK to describe medical technicians with NVQ qualifications at levels 2 or 3. This study is concerned with PAs either trained in the USA or trained in the UK at postgraduate level to the American model.

PAs were introduced in the USA in the 1960s in response to medical shortages and misdistribution. PAs are health professionals, with a PA qualification, who undertake physical examinations, investigations, diagnosis, treatment, and prescribing within their scope of practice as agreed with their supervising doctor (Mitteman et al 2002). Studies have demonstrated equivalent and safe care to physicians for the case mix they attend and acceptability to patients (Ruby et al 1998, Cawley et al 1999, Roblin et al 2004a). In the USA PAs have been shown to have a same task productivity of between 50- 80% of a physician, dependent on practice setting and experience of the PA, with attendant cost savings to the organisation dependent on the remuneration levels of both the PAs and the physicians they were replacing (Gryzbicki et al 2002, Larsen et al 2001, Roblin et al 2004b).

PAs are one type of ‘mid-level’ health practitioner i.e. a qualified health professional (non-medical and non-dental) practising at a level above that of the basic level of qualification for most health professionals in the UK and with authority to assess, investigate and commence or change treatment within the agreed scope of practice with their employer and/or clinician

supervisor ((Watson et al 1996). PAs and nurse practitioners are two examples of mid-level practitioners.

PAs in the UK

Two pilot projects in the UK have employed USA trained PAs in primary care, emergency departments and surgical specialities in England (2002-2005) and Scotland (2005-2008). These evaluations reported they were well received by patients, worked either at the level of a nurse practitioner or a generalist doctor in training but noted caveats, for example higher than anticipated demands on mentors and little reduction on the demand on doctor's time in the same service (Woodin et al 2005, Farmer et al 2009) . The evaluation study in England used manually, professional self recorded activity data only and in their conclusions point to the need for a study that considers cost effectiveness more systematically (Woodin et al 2005). The Scottish pilot evaluated supernumerary PA posts of which only 3 were in general practice and the small amount of quantitative data was of self reported professional activity (Farmer et al 2009).

In England the development of the PAs has been led by the Department of Health, involving the Royal College of Physicians and General Practitioners, who have agreed a competency and curriculum framework, modelled closely on that of the USA (DH 2006). Post graduate diploma courses for PAs have commenced in 4 Universities plus two further that train PAs in the speciality of anaesthesia only. The supply of UK educated PAs will increase as Scotland is also likely to commission a PA education programme (NHS Education for Scotland 2008). A small but growing number of general practices are employing PAs in the UK. The UK Association of PAs reported that they have membership of about 40 UK based PAs (UKAPA 2008) and this number is set to grow with the first graduates from the UK courses.

While there has been hostility to introducing the role from both medical and nursing professions in the past (e.g. Casteldine 1996, Hutchinson et al 2001), there has been an increasing acceptance over time that the addition of PAs to multidisciplinary teams, such as first contact services, can enhance the delivery of care (see for example Gavin 2002). Members of the research team recently completed an interview survey of 20 general practice employers of PAs (Drennan et al 2009, 2011). GPs reported that they were motivated to employ PAs in order to increase the practice capacity to manage patient demand, within government targets for access, while considering value for money and broadening the skill mix in their teams (Drennan et al 2009,2011). The GPs reported that the PAs were primarily being used to see 'same day' and 'urgent' appointment patients, although some also had forward booked appointment clinics, some chronic disease management clinics and some undertook home visits. That study did not quantify or collect details on the work activity of PAs.

General Practice Workforce

There are 10,000 general practices in the UK, and as a sector, these have been characterized by entrepreneurial developments in service delivery as well as practice organizational forms (Huntingdon 1996, Meads et al 2004). Many of these developments have arisen through individual enthusiasms and values (Jones et al 2006 , Iliffe 2008) but others have developed in response to incentives and health professional labour market fluxes (DH 2002, Exworthy et al 2003). The new general medical services contract and local flexibilities (DH 2006b) have created opportunities to explore different organisational forms and skill mixes appropriate to the needs of general practice patient populations and to the provision of out of hours and extended hours services. General practitioners as both health service professionals and employers exemplify the human resource policy stream articulated first in the NHS Improvement Plan: '*more staff working differently* (DH 2000). There is a trend towards increased numbers of part-time and salaried general practitioners (RCGP 2006) and the use of professionals with special interests (DH 2007). Over the past twenty

years general practitioners have developed practice teams and services with an increasing range of staff and staff performing new functions(see for example the range of nurse led minor illness services in surgeries documented by the Department of Health funded Working in Partnership Project (WiPP). General practice has enlarged to become a major employer of administrative staff (RCGP 2006b) and nurses (Drennan and Davies 2008). Evidence suggests that appropriately trained nurses provide equivalent care to doctors for patients presenting with minor illness (Laurent et al 2005) and that nurse practitioners [NPs] could undertake at least 25% of the work currently undertaken by GPs (Wanless 2004).

Although widely used in the US, only a small number of British general practices currently use PAs. With growing interest in the role, evidence is urgently needed of the potential impact of PAs in the context of the NHS.

This study will both describe the use of PAs in general practice teams and consider the impact of PAs on patient care and practice organisation and costs as part of a whole practice team through the comparison with matched practices which do not currently include PAs in the practice team

Need

This proposal addresses questions of the implications of changing workforce in primary care within the research brief (sections 4 iii and 4.3). It aims to provide information for commissioners and managers as to the impact for patients, professionals and for service efficiency as to the introduction of a new professional role, the PA, in general practice settings.

Primary care has a pivotal role in the National Health Service. It is currently being developed to ensure increased delivery of care outside of hospitals at the same time as addressing issues of effectiveness, accessibility, equity, patient choice, and affordability (Department of Health [DH] 2006a, 2008a, 2008b). This policy stream together with views from within general practice itself argues that the delivery of services will require differently skilled and different types of health professionals working in practice (Royal College of General Practitioners [RCGP] 2007, DH 2008a). The predicted financial pressures on health services are likely to make commissioners and managers focus on issues of effectiveness and efficiency in workforce deployment. There are estimates that ‘mid-level’ practitioners such as nurse practitioners and PAs could safely, undertake at least 25% the activities of a GP, freeing up the GP time for more complex clinical activity or reducing costs (Wanless 2004). However, the detailed evidence is not yet available in the NHS as to the effect of introducing PA personnel into general practice on issues of patient outcomes, service efficiency, and safety. To date there have been only qualitative evaluations of PAs in the NHS as part of funded pilots schemes. This study aims to address this knowledge gap.

Methods

This investigation uses an evaluative framework suggested by Maxwell (1992) to examine the contribution that PAs make to the effectiveness, appropriateness, equity, efficiency, acceptability and costs of primary health care. It aims to describe how PAs are used in general practice, explore the factors that influence PA use, and also assess the impact of PAs on patient outcomes, patient safety and practice organisation through comparisons: with a) similar general practices not employing PAs and b) general practitioner consultations in surgeries seeing similar case-mix.

The study has two elements. The first investigates the research questions at the macro and meso- level through a rapid review of empirical evidence, a scoping survey of key informants at a national and regional level and a survey of current work deployment of PAs in UK general practice. The second element uses a comparative case study design of 12 general

practices to investigate the research questions at the micro level. The overall timescale will be 25 months.

Element One: Macro and Meso level

1.Rapid Review. A rapid review (Royal and Milne 2003) of electronic and grey databases will be undertaken to up date and extend the evidence base we already hold regarding the deployment and impact of PAs. This will address questions 1, 2, 3.

We will undertake this rapid review using methods developed by the Social Care Institute for Excellence (Coren and Fisher 2006), incorporating both qualitative and quantitative evidence (Dixon-Woods et al 2004). We will search for literature across health and social care electronic databases including MEDLINE, EMBASE, CINAHL, PsycINFO BNI, CAREDATA, Cochrane Library (including DARE, NTIS, SIGLE), Social Science Citation index, National Research register, Papers First (conference presentations) and the specialised register of the Cochrane Effective Practice and Organisation of Care Group (EPOC), Dissertation Abstracts, Department of Health and similar websites. Preliminary searching will begin with a strategy based on keyword / index (MESH) terms. In addition 'lateral searching' techniques will be used such as checking reference lists of relevant papers, and using the 'Cited by' option on WoS, Google Scholar and Scopus, and the 'Related articles' option on PubMed and WoS, as recommended in searching for studies of complex interventions (Greenhalgh and Peacock 2005). In addition, leading researchers and expert practitioners in the field will be contacted to help identify unpublished research. Abstracts and brief records from databases will be checked against those we already hold and new ones be screened for relevance to the research questions and filed in a bibliographic management package (ENDNOTE). A common data extraction sheet will be developed for evidence relevant to research questions. Each new retrieved study will be assessed by two researchers independently. Analysis and synthesis of evidence will address questions 1, 2, and 3. A report will be written this element. New or emerging data from other countries will be used to inform our research tools and subsequent analysis in element 2.

2. Scoping survey.

A scoping survey (Arksey and O'Malley 2005) of key informants will specifically address research question 3 (What supports or inhibits the use and development of PAs in the primary care?) and will provide the broader context within which PA development in England and Wales sits. The Department of Health and Social Services (Wales), unlike the Departments of Health for England and Scotland, has not explored the use physician assistants. A purposive sample of up to 30 key informants at national and regional level in England and Wales will be recruited. These will be at senior level from central departments of health, professional organisations, regulatory organisations, patient organisations, and commissioning bodies who are concerned with the development of primary care services, workforce development, and health professional regulation. Semi-structured interviews will be conducted using a brief aide- memoire exploring knowledge of mid-level practitioners, PAs and perceptions of the factors that are currently and will in the future support or inhibit their use and development in the UK settings. Notes will be taken during the interview and with permission the conversation will be taped. These will be transcribed; the tapes will then be in destroyed. All efforts will be made to anonymise the data. The transcriptions will be analysed in a qualitative analysis software programme NVIVO, using the constant comparison method (Strauss and Corbin 1998) by two researchers, independently and then compared. A report will be written of this part of the study, using illustrative non attributable quotations, and shared with informants. No material that identifies an individual will be included. Emerging issues will inform our research tools and subsequent analysis in element 2. This group of informants will be invited to a seminar in the last three months of the study.

In this the findings of the second element of the study will be shared and informants invited to both comment on the findings and help identify research questions not yet answered

3. Survey of current use of PAs in general practice.

This descriptive survey aims to map which patient groups and surgery activities the PAs are used for. Our earlier interview survey asked general questions of employers as to how they used PAs (Drennan et al 2009) without quantifying the detail. This electronic survey will ask for the weekly work schedules of PAs in order to quantify the extent to which PAs are deployed in telephone triage, seeing patients with same day /urgent appointments, seeing patients with non-urgent booked appointments or chronic disease management clinics. Contextual information will also be sought on the experience level of the PA, the practice population, number of GPs and other practice staffing configurations.

The sample will be contacted via those who have already participated in the interview study and via the membership of the UKAPA. The UKAPA estimates that there are 40-50 PAs working in the UK at any one time although the number fluctuates and not all of these are working in general practice. The returned weekly schedules will be entered into an EXCEL spreadsheet and analysed by percentage time spent of different types of patient contact as detailed above. Aggregate descriptive statistics will be used to assess the most dominant types of PA deployment in the practice. A report will be written of this element and will help address question 1 above at the meso level. The findings from this survey will be used to inform the research tools and check sample size calculations in element two. Practices will also be asked whether they are interested in participating in element 2.

Element Two: the Micro level

A comparative case study design (Yin 1991) will be used to address the three overarching research questions at the micro level of analysis through examination of up to 12 case studies i.e. 6 general practices currently employing PAs and 6 matched practices not including PAs in their staffing. . This element of the study will specifically address the questions:

a. How PAs are deployed and supervised in general practice and how do their roles and responsibilities compare to the doctors, nurse practitioners and practice nurses?

b. How do PA outcomes of care differ from those of GPs, specifically with respect to prescriptions rates, referrals, investigations, re-attendances for the same problem within 2 weeks, patient safety, and patient satisfaction?

c. How do patients understand the role of PAs and what is the experience of patients when consulting PAs?

d. How does employment of PAs affect practice organisation, staffing configurations and costs?

e. What are the factors that support or inhibit the employment of PAs?

This element will employ a mixed methods approach to both describing and quantifying the impact of PAs in the context of general practice. The 6 practices employing PAs will be chosen to demonstrate diversity in: general practice size, practice population socio-demographic characteristics, rural and urban coverage and in PA s (e.g. US and UK trained, single employment in a practice, more than 1 in a practice). Practices will be approached as

identified from the survey in element one. One practice, employing 2 PAs in South West London has already agreed in principle to be a case study site. Potential matching practices in similar areas will be identified through requests sent out to practices already committed to undertaking research within the UKCRN comprehensive research networks and the Primary Care Research Networks in the same areas as the PA employing practices.

A note on language : 'General practice' is the term used for the organisation and 'surgery' is the term used for the specific session.

Data will be gathered through 7 activities. These will be refined through piloting with a general practice currently employing PAs, who will not then be part of the main study.

1. **Semi structured interviews** of physician assistants, general practitioners, practice staff (n=up to 30). The interview schedules will address questions a,b,d,e above, Interviews will be recorded, analysed as described in the scoping survey above. The tapes will be deleted.

2. **Consultation record review and linked patient survey**

    a. **Patient surveys** will be undertaken through self completion questionnaires offered by reception staff to all those consulting PAs in the PA employing practices and specified GPs in the non-PA employing practices for a sample of surgeries. These surgeries will be of the type that PAs predominately work in as determined by the survey in element 1. It is anticipated that this is likely to be same day and urgent appointment surgeries. This will ensure we are considering a similar case mix. The sample of surgeries will be taken from 2 weeks in the summer and 2 weeks in the winter – a total of 4 weeks. These will be known as the reference weeks. In the designated surgeries in these reference weeks the reception staff will offer the patients a self report questionnaire focused on patient enablement, outcomes, and consultation experience. It will not include any information that could identify the person. The practice staff will keep a list of the patients and assign them a study ID number (taken from the unique, consecutive, number on the survey – those declining a questionnaire will have that noted on the questionnaire and it will be returned to the study team). Each questionnaire will be accompanied by a stamped addressed envelop to the study team. The practice staff will send out a research team prepared reminder to all those who took a questionnaire. The practice staff will not have access to any of the completed questionnaires, ensuring anonymity is protected. An adapted version of the validated General Practice Assessment Survey (GPAS) will be used, focusing on outcomes and experience (Bower et al 2002, 2003a 2003b). The questionnaire will be developed in conjunction with a patient involvement and a service users group, which currently support other research activity in the Faculty of Health and Social Care Sciences. Data will be entered onto SPSS and analysed. This will address question c (patient experience outcome). The data will then be added to the SPSS data base drawn from the consultation record review.

    b. **Consultation record review**. The anonymous electronic patient records will be analysed of all those who consulted the PAs and specified GPs in the reference weeks (i.e. they were offered the patient survey above). Search queries will be written, determined by the computer system used in each practice, for anonymous patient record data extraction against the lists kept by the reception staff of the patients consulting the PAs and specified GPs in the reference weeks. The practice staff will have a study unique identification and will assign this to the relevant record. The research team will not have

access to any information that will reveal the identity of any individual. The records will be extracted two weeks after the reference weeks and entered into an SPSS database. Descriptive techniques and comparative techniques will be used to examine

i. **The demography of the consulting patients:** age-sex profile (proportion of old and young); ethnicity and index of social deprivation (from full post code);
ii. **The complexity of the conditions patients present with**; number of current problems , number of current and acute prescriptions;
iii. **The consultation process outcomes;** rate of follow-up; self follow-up (i.e. by PA); investigation and referral; spectrum of diagnoses; prescriptions and procedures carried out.
iv. **The subsequent outcomes:** patient re-consulting at the surgery within two weeks for the same condition, patient consulting elsewhere for the same condition e.g. out of hours or A & E. The primary outcome for this analysis is the patient representing at the surgery within two weeks for the same condition.

Presentation of these will involve summary measures of location (e.g. means /medians /proportions) and dispersion (standard deviations/percentiles) appropriate for the type and distribution of the individual variables. Descriptions of difference at the aggregate level between those practices with and without PAs will be made for all patient outcomes, A logistic regression will also be carried out for the primary outcome i.e. the patient re- consulting at the surgery within two weeks for the same condition .

Sample size

In the absence of UK data on Physician Assistants, the sample size calculation has been based upon randomised controlled trial data comparing the outcomes of care delivered by nurse practitioners and GPs in the UK for patients attending 'same day appointments'.

Relating to the primary outcome of interest in this proposal – the rate of re-attendance in general practice within a two weeks of the initial consultation with a PA or GP - these studies report figures ranging from a self-reported 18.2% (Shum et al 2000), through to medical records-extracted 28.4% (Venning et al 2000) and 29% (Kinnersley et al 2000) for patients seeing GPs, and 20.4%, 31% and 37.2% for nurse practitioners respectively.

Taking Venning et al's (2000) analysis as the most robustly adjusted of these, the re-attendance rate within two weeks of the consultation for this sample size calculation is 28.4% for GPs and 37.2% for nurse practitioners (odds ratio 1.42; intraclass correlation 0). Taking an odds ratio of 1.5, we estimate that a sample size of 205 in each group (consultations with a PA or a GP) is needed to give 80% power at a significance level of 5% for a logistic regression using the covariates of age, gender and general practice. An adjustment was made since a multiple regression of the independent variable of interest on the other independent variables in the logistic regression obtained an R-squared of 0.100.

It is estimated that anonymised clinical records data could be available for up to approximately 600 patients attended by Pas and GPs in the 12 practices in the two, 2 week data collection periods. Only a proportion of these will be able to be matched to

a patient survey response, and it is for these patient cases that we would seek to include in the regression analysis. Assuming a response rate of 30%, our recruitment target is 600 patients, equating to 50 patients in each of the 12 general practices.

These data will be used to address questions a, b, d.

All patient records identified as re-consulting for the same problem within two weeks will be reviewed by a panel of experienced general practitioners to determine whether the actions in the first consultation were clinically appropriate.

The patient sample for the reference weeks will be compared with anonymised data for patients consulting in similar types of surgeries in the preceding two weeks to determine the extent to which the sample are representative of patients consulting in those types of surgeries, by demography and type of presenting complaint.

3. **Patient interviews** (n=up to 45 in six PA employing practices) will be used to explore issues in patient experience not captured by survey. The patient questionnaire will include details of this aspect of the study and ask people to make contact with the research team if they were willing to be interviewed. Interviews will be face to face or telephone as preferred by the patient. These will explore issues such as patient choice, understanding of the role of the PA, perceptions of consultation with regard to communication, perceived expertise, degree of trust and issues of risk. Interviews will be recorded, thematically analysed and the tapes deleted as described in the scoping survey. This will address the patient experience (questions b,c) and allow greater exploration of issues identified in 2 above.

4. **Work activity diaries** completed by PAs and other professionals (GPs, and nurses in the practice) for 1 week each in the summer and the winter. These diaries will be adapted from those used by the national general practice workload survey 2006/7(The NHS Information centre 2007). For those not willing to complete work diaries data will be gathered from other sources e.g. numbers of patients seen in surgeries from the practice administrative systems and interviews.This will give data on numbers of patients who have been seen, other responsibilities e.g. administration, supervision of other staff. Data will be entered onto a SPSS data base and analysed descriptively. This will address question a) above.

5. **Observations of a sample** of same day appointment patient consultations with PAs and GPs. The consultations will be videoed, with permission, and then analysed using ALFA, a computer mediated consultation observation technique developed to provide an analysable overview of the consultation (de Lusignan et al 2008). We aim to record one surgery, of up to 10 cases, per PA and a GP seeing a similar case mix. The consultation will be assessed by two assessors using an adaptation of the Leicester Assessment Package for assessing competence in general practice on dimensions of interviewing and history taking, patient management, problem solving and behaviour and relationship with patients (Fraser et al 1994, Redsell et al). The analysis of the videos will involve judgements as to the “level” at which the PAs are working (e.g. protocol driven care or making diagnosis), the level of support and supervision required and how PAs seek help and information to support their consulting. We would specifically look at how drug alerts and other potential patient safety issues are dealt with. This will also allow a descriptive comparison between PAs and GPs in consultation style and enable triangulation as a method of checking the validity of analysis (Robson 2002) with data from 2 above. Finally, we carry out a visual study of consultation room layout contrasting GP and PA consulting rooms.

Additional field observations (notes only) will also be undertaken in a sample of practice clinical meetings (n=up to 3) in each of the PA employing practices to understand more broadly how the PAs interact with the GPs in clinical decision making in the practice. All tapes will be deleted following analysis. This element will address questions a), b) and e). Analysis of these consultations will also offer the opportunity to examine the validity of analysis by triangulating data on patient and professional experience from 3, 4 and 1 above.

6. **Practice level papers/reports** on staff resources (doctors, nurses, administrative), workloads, clinical and Quality and Outcomes Framework performance, practice based commissioning and other issues (e.g. complaints) as relevant to the study questions, will be requested for the previous year and through the period of the study. Documentary analysis will be undertaken (Silverman 1993) and information used to address questions a), b) c) and e) above.

Data will be analysed both quantitatively and qualitatively and evidence synthesised to address the research questions. Qualitative data will be managed through a software system such as NVIVO and through ALFA for the videotaped consultations. The methods of analysis have been described above. Quantitative data will be managed through SPSS. The methods of analysis have been described above. Comparison will be made with national reference data where available.

The economic analysis will focus on the resource implications and costs of different team configurations. Practice level data on staffing will be used to calculate total human resource costs, and costs per patient. Skill mixes will be compared between practices and the relative contribution of different practitioners will be compared within and between practices, and evaluated after adjustment for case mix differences. The impact of PAs on processes (e.g. prescribing, referral and investigations), and on outcomes (e.g. re-attending, consultation satisfaction), will be explored through comparisons with GPs and across practices. The implications of PAs on total practice costs (human resources and patient care) will be estimated and the issue of cost effectiveness addressed. Sensitivity analyses will be conducted to allow for uncertainties in the estimations.

The relationship of the data collection to the research questions for element 2 are summarised in table 1 below.

Element two summary	
Questions	Data collection element
a) How PAs are deployed and supervised in general practice and how do their roles and responsibilities compare to the doctors, nurse practitioners and practice nurses?	Semi structured interviews of professionals Work activity data Practice level papers/reports Consultation observation
b)How do PA outcomes of care differ from those of GPs , specifically with respect to prescriptions rates, referrals, investigations, re-attendances for the same problem within 2 weeks, patient safety and patient satisfaction?	Semi structured staff interviews of professionals Patient interviews Practice level papers/reports Consultation record review and patient survey Consultation observation Expert panel review of patient records who re-consult for the same problem within two weeks
c) How do patients understand the role of PAs and what is the experience of patients when consulting PAs?	Patient interviews Patient survey
d) How does employment of PAs affect practice organisation, staffing configurations and costs?	Semi structured staff interviews of professionals Work activity data Practice level papers/reports Consultation record review
e) What are the factors that support or inhibit the employment of PAs?	Semi structured interviews of professionals Practice level papers/reports

Table 1: Element 2 of the study - relationship between the research questions and the data collection

The data from the two elements will be synthesised by the research team against the three research questions, conclusions and recommendations drawn and a final report prepared.

Ethics and governance
This study will involve NHS patients and staff and therefore require NHS ethical review.

Research governance approval will be sought from the PCTs in which the practices are located. Individual consent to participate will be sought from staff and patients for interviews and other forms of data collection. Permission and consent for observation of consultations will be obtained by the practice staff prior to the patient entering the consultation room. All informants will be assured of anonymity and confidentiality in the transcription, analysis and reporting of their interviews or consultations. Explicit agreements and permissions will be sought for any video-recording of consultations and assurances given as to how confidentiality and anonymity will be protected. Any direct quotations from interviews or observations used in the report will be non-attributable.

Data will kept on a password protected computer in locked University offices accessible only to the named researchers. Data will be stored and destroyed in line with the Data Protection Act.

Project management
The research team will meet on a regular basis through the study. A research advisory group will be established to act as a 'critical friend'. This will meet up to 5 times during the life of the project. Service user representatives from, for example, such as the Patients Association will be invited to join this group. Additional members will come from the management and general practice academic community who have completed research into workforce in primary care.

Patients and service users will also be involved in the development of the research tools. Consultation will occur through already convened groups, with membership diverse in terms of age, gender, ethnicity, and disabilities, who work closely with the Faculty of Health and Social Care Sciences on service user input into education and research.

VMD will direct the study as principal investigator, supported by MH as project manager, and lead on the national scoping survey and final seminar. MH will be the project manager, ensuring overall co-ordination of activity, manage the researchers, leading the survey of PAs, engage in data collection and analysis for both elements. A full time research associate for the length of the study plus a part time researcher for the 15 months of the data collection, will be employed. SL will lead on patient data retrieval and video consultations, also providing expertise in general practice. Statistical advice to date has been provided by Dr T Chan, senior lecturer at SGUL in the first version of this proposal and by Dr A. Douiri, lecturer in medical statistics with the NIHR funded London Research Design Service. VMD is currently recruiting a senior quantitative methodologist to join her research group and this person will join the research team with responsibility for the quantitative analysis. An honorary research fellow will write data retrieval queries and external GPs expert in consultation analysis will support the video consultant analysis and the expert panel assessment of consultations. HG will lead on the economic analysis. JG will lead on qualitative aspects of the study, in particular issues of patient experience as well as the national scoping survey and final seminar. SB will lead in co-ordinating service user involvement in the study and ensuring patient perspectives are core to the research activity.

Resources required

The study will commence 1st August 2010 for 25 months. Detailed costs are given in the application. The majority of the costs are for staff time in overseeing and carrying out the study. A full time researcher will be employed for the duration of the project; a second

researcher for the period of the data collection only. Finance is required to purchase a secure, encrypted lap top with IBM memory stick together with secure server back up for videos of confidential patient consultations with GPs and PAs. The security level required is in excess of that which would be required for an ordinary lap top. Service user involvement will also require resource to offer reimbursement and expenses in line with national guidelines to those who contribute time and expertise. Additional minor costs are requested for administrative items (including postage). NHS costs are also requested for the NHS staff to participate, support the patient recruitment, administer the patient survey questionnaire and run queries to extract anonymised patient electronic records as well as assist in any subsequent queries. Additional costs relate to travel to the case study sites, expenses for the advisory group meetings and hosting a seminar for all participants as part of the dissemination strategy.

Timescale
Start date 1st August 2010

Length of study 25 months and activities are detailed in the following GANTT chart

Activity		2010 Aug - Sept	Oct- Jan	2011 Feb – April	May - July	August- October	November -Jan	2012 Feb– April	May - July	August- October
	Pre-start	2 month	4 months	3 months	3 months	3 months	3 months	3 months	3 months	3 months
Ethics submission and governance commenced	x									
Recruitment of research associate 1 for length of study	x	In post								
Recruitment of researcher 2 part time for data collection period only			x	In post				Post ends		
Research team meetings		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Research Advisory Group		**X**		**X**	**X**		**X**		**X**	
Reports				**X**			**X**			**X**
ELEMENT 1 Rapid review		x	x							
Scoping survey		x	x							
National PA survey		x	x							
Piloting data collection tools and process		x	x							
ELEMENT 2										
Recruitment of practices and research governance in appropriate areas			x	x						
Data collection from the practices				x	x	x	x	x		
Analysis of element 2					x	x	x	x	x	
Seminar									x	
Synthesis of findings and final report writing									x	x

We will apply for UKCRN adoption and then apply for NHS support costs for the general practices, using the Primary Care Research Networks template , through the relevant comprehensive research networks.

Research Outputs

Reports- There will be two interim reports comprising material from the reports generated from the activities as listed in the Gantt chart above. A final report will be prepared.

Dissemination – There will be a seminar, inviting all study participants, including the national key informants at which the findings will be discussed and explored. This will act as one dissemination activity. Submissions will be made to appropriate conferences for professionals, managers, and health service researchers to present the findings during the course of the study. In addition, papers will be prepared for submission for publication in public, professional, managerial, health service research journals and publications. A study webpage on the University website will be used to publicise the ongoing study and linked material.

References

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