



# **EVALUATION OF PHYSICIAN ASSISTANTS TO NHS SCOTLAND**

## **FINAL REPORT**

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**Disclaimer**

The views expressed in this report are those of the Research Team, and not necessarily those of the Commissioner – NHS Education for Scotland.

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## Glossary

**ERN (Extended Role Nurse)** A healthcare professional with a background in nursing who has been trained to practice in an extended role. ERNs may practice autonomously and prescribe within established limits. Examples in the project include Medical Support Nurses (in Grampian) and Minor or Major Injury Nurse Treatment Service nurses in Lanarkshire. See also NP (Nurse Practitioner).

**FY1 (Foundation Year 1)** The first year after graduating with a medical degree. Doctors in training must undertake 3 x 4 month placements or 4 x 3 month placements in different settings.

**FY2 (Foundation Year 2)** The second year after graduating with a medical degree. Doctors in training must undertake 3 x 4 month specialty placements.

**GP (General Practitioner)** A GP is a doctor who is trained to work in primary health care/ family medicine.

**Intermediate Care** Intermediate care is variously defined. Here it refers to care that took place within a Department of Elderly Care and Rehabilitation; it included rehabilitation, step-up and step-down care and medical assessment mainly of older patients.

**Mid Level Practitioner** We define this as a healthcare professional who works within an area of healthcare work between 'basic' care and specialised 'technical' care. They might be perceived as generalists, although some might be specially trained or experienced for their setting. In this report, we make no assumptions about which professional groups work at mid level.

**MMC (Modernising Medical Careers)** A recently introduced programme for organising doctors' post-graduate medical education and career structure.

**MS (Medical Supervisor)** In the PA Project, a fully trained doctor assigned as the formal medical supervisor for a PA. Each PA in the Scottish Project had an assigned medical supervisor.

**NP (Nurse Practitioner)** A healthcare professional with nurse training, skills and the knowledge base to deliver generalist or specialist nursing care (to a nursing model), autonomously. In the UK, there is currently no standard definition of a NP and professionals are often locally trained and educated to work in specific settings. See also ERN (Extended Role Nurse).

**PA (Physician Assistant)** A healthcare professional who has basic medical education, the skills and the knowledge base to deliver generalist care (to a medical model) in a dependent relationship with a medical supervisor.

**PFR (Partnership Forum Representative)** A Partnership Forum is established in each NHS Board. It brings together the interests of trades unions and professional organisations and allows an arena for discussion of staffing issues between NHS Board representatives and staff representatives.

**Registrar** A fully trained medical practitioner who is in postgraduate medical training for a specific specialty. This term was sometimes used by interviewees referring to the system in place prior to MMC and is approximately equivalent to ST2-3.

**SoP (Scope of Practice)** Defines the area, level and types of work that should be done by a professional group.

**ST 1,2,3 (Specialist Trainees)** Are doctors who have completed FY1-2 and been accepted onto a programme of specialist training for 1,2,3 years.

**Staff Grade Doctor** A doctor, conducting a more general medical role in a clinical setting, working under the supervision of a consultant.

## Executive Summary

**Background:** Physician Assistants (PAs) are health professionals with generalist medical education that allows them to work in a variety of settings. They work under the supervision of a fully trained and experienced doctor. The profession emerged in the USA in the 1960s and is now being adopted by other countries, including England, in response to workforce gaps. A Scottish pilot of PAs ran from November 2006 to October 2008. Fifteen USA-educated PAs worked in Scotland at some period during those 24 months in the following settings: primary care; out of hours clinic; emergency medicine; intermediate care; orthopaedics; acute receiving unit. This is a summary of a two-year study of the Scottish PA pilot that aimed to evaluate the impact and contribution made by the appointed PAs to delivering effective healthcare in NHS Scotland.

**Methods:** The evaluation used mixed data collection methods, including: individual and group interviews; monthly feedback forms; recording of scope of practice; work activity data collection and work shadowing. Data were collected longitudinally to assess changes. A case study approach was taken in selected settings to attain richness. For qualitative data management, nVivo was used. SPSS and Excel were used for quantitative data analysis.

### Findings:

**Response:** Six group interviews were held with PAs; 63 interviews with team members; 20 interviews with patients; four with NHS senior managers and three with Partnership Forum representatives. Work activity data were collected for settings; 48% (92/190) of monthly PA/medical supervisor feedback forms were received.

**Safety:** Over 24 months, two minor patient safety issues were noted by supervising doctors: a mix-up with patient notes and a PA advising a patient to change drug regimen without consulting their supervising GP. From this study, PAs appeared safe when working under medical supervision. All patients interviewed were satisfied with PAs, several noting that they appreciated PAs' communication skills.

**Effectiveness:** PAs' scope of practice tended to expand over time, but most thought they had not been able to work to the scope and level they would do in America. Inability to prescribe was a hindrance. PAs usually spent longer time with patients as patient education was reported to be a feature of PA training. PAs were reported to provide continuity in busy settings and to be an educational resource for other staff. Most interviewees reported PAs were working in a range from similar to a nurse practitioner to similar to a mid-level/generalist doctor. The valued distinctive features of PAs were: generalists with a background of medical training, confident and autonomous within their scope of practice, can do differential diagnosis, communication skills, confident in dealing with uncertainty. Medical supervision arrangements varied from close to formal/distant relationships. PAs reported working most effectively, and were most satisfied, where there was a distinct gap in a team that they could fill. NHS senior managers were mostly satisfied that PAs might be one of several new roles developed for the future NHS. Partnership Forum representatives suggested that team members became less anxious about PAs once they were informed and had worked with them.

**Cost-effectiveness:** Teams noted that PAs brought a level of skills and attitudes that overlapped with other roles. Thus PAs were described as complementing team skill-mix, rather than as a potential direct replacement for other staff members. When specifically asked to choose, interviewees suggested the types of existing job designations that PAs could be placed in. These included both nursing and medical roles and the costs of deploying a PA instead of these existing posts were calculated, based on gross salaries at the time of the study. (Towards the end of the study, the newly qualified PA post was evaluated under Agenda for Change at Band 7 (£29,091 - £38,353)). It was found that PAs would cost approximately £15,000 more if they worked in the role of a practice nurse (as one PA was actually deployed in primary care) to saving £43,000 upwards if they worked 'like' a generalist doctor (specialist trainee, staff grade or GP in training). Costs to the NHS would arise from setting up PA education courses, professional development and related structures. The time spent by supervising doctors, with PAs, was also noted as a cost.

This table summarises key issues for different settings.

<p><b>In Out of Hours</b> (Three PAs worked in Out of Hours: one left after a month)</p> <ul style="list-style-type: none"> <li>• PAs need to be able to prescribe to be most productive</li> <li>• Reported to operate like a less experienced or supporting GP</li> <li>• Culturally attuned compared with international locums</li> <li>• Useful addition if team can operate with a GP and a PA (previously had two GPs)</li> <li>• Nurse and paramedic practitioners <i>could</i> do the same job, but with specific training and experience required</li> <li>• May be less directly productive as emphasise element of patient education, although this may benefit in the longer-term</li> <li>• No quantitative evidence of over-referral</li> </ul> <p><b>In Emergency Medicine</b> (Four PAs worked in emergency medicine)</p> <ul style="list-style-type: none"> <li>• Reported to be capable of working like a doctor in training</li> <li>• Provide continuity for trainee doctors and others</li> <li>• Perceived to help meet waiting time targets</li> <li>• Better if they have emergency medicine experience</li> <li>• Comparable productivity to other staff</li> <li>• Perceived as an educational resource</li> <li>• Medical supervision difficult in large, busy departments</li> </ul>	<p><b>In Primary Care</b> (Five PAs worked in primary care)</p> <ul style="list-style-type: none"> <li>• Reported capable of working at the level of a GP in training</li> <li>• In one setting was deployed like a practice nurse</li> <li>• Initially, tended to see less complex patients</li> <li>• Some supervisors and team members thought PAs were useful; others would rather have GPs</li> <li>• Being unable to prescribe was a hindrance</li> </ul> <p><b>In Intermediate Care</b> (Two PAs worked in intermediate care)</p> <ul style="list-style-type: none"> <li>• PAs carved out a distinctive and valued new role</li> <li>• Developed as ‘physician extenders’</li> <li>• Reported capable of working at level of staff grade doctor</li> <li>• Provide continuity in the setting for trainee doctors</li> <li>• Confident, flexible and autonomous</li> <li>• Specialist nurses would like to have trained as PAs</li> <li>• Perceived to have a positive impact on patient throughput</li> </ul> <p><b>In Orthopaedics</b> (One PA worked in orthopaedics)</p> <ul style="list-style-type: none"> <li>• Reported to work like a ‘physician extender’</li> <li>• Exceeded consultant expectations</li> <li>• Reported working almost to level of specialist trainee doctor</li> <li>• An education resource for junior staff</li> <li>• Perceived to have enhanced consultant productivity</li> </ul>
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## Conclusions:

- During the study PA’s practice was found to be safe.
- Patients who were interviewed were found to be satisfied with PAs.
- PAs were reported to be most valued, and expressed most satisfaction themselves, where they were working in a new role or where they could find a distinct space to fulfil their potential scope of practice. Findings suggest they were less able to do this in primary care, compared with other settings. This may be related to the settings and work arrangements in the pilot project.
- Findings suggest a ‘mid-level’ practitioner space, that there are currently challenges filling, in some settings in NHS Scotland. There may be a range of types of practitioner (PA may be one of them) that could fill this generalist space, with appropriate education, training and experience. The skills and attitudes required to fill the space are: critical thinking, diagnostic skills (capacity for differential diagnosis), generalist/holistic medical approach, communication skills and confidence in dealing with uncertainty. Practitioners with these skills and attitudes can provide continuity and a training resource in settings. Given the suggestion that this space exists, it is up to NHS Scotland and its stakeholders to decide whether, and how, to fill it.
- The opinions of team members interviewed in this study concur with evidence from the USA suggesting that PAs add complementary skills and attitudes to teams and should not be regarded as a potential direct ‘substitute’ for a nurse or a doctor. Findings suggest team members think PAs would be one of a range of roles that might be present in an ideal team. If PAs were to undertake some of the work that might ‘replace’ existing roles, then cost savings might result. There would be costs in developing education, accreditation and support structures.
- A strong and trusting relationship is required between PAs and their supervising doctor. Although the NHS tends to be hierarchical, instances of these types of relationships emerged in the pilot showing that this is possible in NHS Scotland. With such a relationship in place, PAs were described as working like

'physician extenders'; conducting a range of routine tasks in the manner that their supervising doctor required and freeing the doctor to concentrate on more complex work.

- PAs could not prescribe in the pilot. This was more of a hindrance in primary care and the out of hours clinic than in emergency medicine and other hospital settings. Piloting of PAs in other settings may be dependent on achieving prescribing rights.
- Findings of this study should be viewed in the light of caveats. PAs were piloted in a small number of settings. There were a small number of PAs, some departed and some arrived during the study, making evaluation complex. PAs could not prescribe and did not think they were given the scope to expand to their full potential. PAs in the Project were often highly experienced and were from the USA. The skills and attitudes of UK or Scottish trained PAs might be different. Sometimes personalities did not fit and this impacted on team members' and NHS Boards' experiences with PAs.
- The PA profession is spreading internationally in response to workforce gaps. This study suggests PAs may offer some promise in meeting Scottish policy goals. Scotland's choice is to become part of the world-wide development of the PA profession and/or to develop existing professional groups into the mid-level, generalist 'space' identified.

## **I. Background**

### **I.1. What is a Physician Assistant?**

Physician assistants (PAs) are health professionals with generalist medical education that allows them to work in a variety of settings. They have 'dependent' status - that is they work under the supervision of a fully trained doctor<sup>1,2</sup>. The profession emerged in the USA in the 1960s and is now being increasingly adopted in other countries. In the USA PAs are described as:

*'...health professionals licensed to practice medicine with physician supervision. Physician assistants are qualified by graduation from an accredited physician assistant educational program...within the physician/PA relationship, physician assistants exercise autonomy in medical decision-making and provide a broad range of diagnostic and therapeutic services. The clinical role of physician assistants includes primary and specialty care in medical and surgical practice settings in rural and urban areas.'*<sup>3</sup>

According to the English Department of Health (DoH), a PA is:

*'...a new healthcare professional who, while not a doctor, works to the medical model, with the attitudes, skills and knowledge base to deliver holistic care and treatment within the general medical and/or general practice team under defined levels of supervision.'*<sup>4</sup>

And a PA can:

*'Formulate and document a detailed differential diagnosis, having taken a history and completed a physical examination; develop a comprehensive patient management plan in light of the individual characteristics, background and circumstances of the patient; maintain and deliver the clinical management of the patient on behalf of the supervising physician while the patient travels through a complete episode of care; perform diagnostic and therapeutic procedures and prescribe medications (subject to the necessary legislation); and request and interpret diagnostic studies and undertake patient education, counselling and health promotion.'*<sup>5</sup>

### **I.2. International development of PAs**

In the 1960s the USA introduced the new profession of PAs to address a shortage of primary care doctors in rural and urban underserved areas. Since that time, the USA PA workforce has expanded and now addresses: shortages of primary care generalists; secondary care 'gaps' in response to legislation curtailing the working hours of 'resident' doctors<sup>6</sup>; and a large amount of generalist provision and delegated duties from physicians within the Health Maintenance Organisation (HMO) model<sup>7</sup>. PAs and nurse practitioners (NPs) are increasingly deployed to fill generalist/assisting gaps. They cost less to train, compared with USA

doctors, and are willing to work in less attractive locations<sup>8</sup>. Around 75,000 PAs are eligible to practice in the USA<sup>9</sup>. Of those responding to the 2007 PA census, 64% were female. Twenty-five percent worked in family/general medicine, 25% in general surgery/surgery subspecialties, 11% in subspecialties of internal medicine, 10% in emergency medicine, 7% in general internal medicine, 4% in dermatology, 2% in general paediatrics and 2% in obstetrics and gynaecology. Of these, 59% reported performing minor surgical procedures and 24% 'first-assisted' in surgery. Median income for full-time employment was \$82,223. As of 2007, PAs have prescribing rights in all American states.

Physician assistants are also appearing in other countries (Australia, Canada, England, Ghana, Ireland, Kenya, Netherlands, Nicaragua, South Africa, Thailand) in response to workforce gaps<sup>10</sup>. In Canada, PAs have had a historical presence in the military, but now the provinces of Manitoba and Ontario are employing PAs due to medical recruitment difficulties. Manitoba has provided \$3.24 million in funding to higher education and has inaugurated a PA programme<sup>11</sup>. Ontario has a two-year PA pilot project taking place in hospitals, community health centres, community-based diabetes care clinics and long-term care homes<sup>12</sup>. They too, have established two PA education programmes. Australia, (including South Australia and Queensland) are piloting PAs in response to medical workforce shortages, mainly in rural and remote areas<sup>13</sup>. The University of Queensland and James Cook University will each launch a PA programme in 2009. In England, several USA-trained PAs are in place within the health service and four PA education programmes are established<sup>14</sup>. English PA deployment has, to date, been ad hoc and reliant on individuals or organisations that recognise them as valuable. PAs were first piloted in 2003 in response to difficulties recruiting medical staff to work as general practitioners (GPs) in disadvantaged areas and in inner-city emergency medicine departments. An evaluation undertaken in 2005<sup>15</sup> revealed that:

- There was high patient satisfaction arising from continuity of care by PAs in primary care;
- Patients appreciated PA's good communication skills;
- There was considerable similarity between the work that could be done by doctors (GPs and other doctors in later stages of their training, in particular), PAs and NPs;
- PAs in the pilot were confident, experienced and proactive (that might not be representative of all PAs);
- Some PAs in the pilot project felt hindered by being unable to prescribe;
- The PA-supervisor relationship was difficult to maintain if there was a lack of regular contact;
- It was most helpful if PAs had well-honed skills in the clinical area they were working in;
- PAs fitted in best where the organisation was prepared and a good induction was provided;
- Although PAs had lower salary costs when compared with doctors, in some cases they had longer consultation times and generated a lower volume of activity.

The Department of Health has produced *The Competence and Curriculum Framework for the Physician Assistant*. The document sets the standards for education, training and assessment of PAs in England and states that 'the role of Physician Assistant seeks to build capacity in the NHS workforce, by drawing in a new cadre of recruits from sources such as life-science graduates'<sup>16</sup>.

### **1.3. PA Education**

Initial PA education is said to incorporate a curriculum similar to that experienced by medical students, but abbreviated and without long vacations. Most USA PA programmes are full-time and average 27 months<sup>17</sup>. In 2008, there were 144 PA programmes run from different types of institutions, some of which are established university medical schools<sup>18</sup>. Currently, USA PAs can study for a Bachelors degree or a Masters degree.

Duke University in North Carolina was the first to start a PA programme: it consists of 12 months preclinical and 12 months clinical experience. Two of the eight clinical rotations of clinical experience are spent in a medically under-served area<sup>19</sup>. The PA Education Association '*Guide for International Program Development*'<sup>20</sup> indicates that the PA curriculum typically requires pre-requisite courses in basic sciences (anatomy, physiology, chemistry, microbiology), prior healthcare experience and generally a prior degree. Qualification to practice as a PA requires that individuals be graduates of an educational programme accredited by the USA Accreditation Review Commission for Physician Assistants and pass the PA National Certifying Exam. To maintain certification requires PAs to have 100 Continuing Medical Education (CME) hours every two years and recertify by formal examination every six years<sup>21</sup>.

In England, PA education is in its early stages of development. It is stated that, while the theoretical content closely resembles that of medical education, '*the level may be different*'<sup>22</sup>. PA programmes are required to provide their students with a minimum of 1,600 hours of clinical experience of which a maximum of 200 can be in a clinical skills centre setting. One thousand hours of experience in particular clinical fields is specified, with the remainder dependent on the resources and opportunities that a particular institution can access. The DoH *Competence & Curriculum Framework* suggests this should be used to extend experience in community medicine, general hospital medicine, emergency medicine, mental health, obstetrics and gynaecology and paediatrics.

Examples of established English PA programmes are those at the University of Wolverhampton and the University of Birmingham. Both establishments run two year full-time Post Graduate Diploma courses in PA Studies. Entry requirements are: 2.2 or above at Honours in a life science (Wolverhampton); 2.1 or above in a life science, with health service experience favoured (University of Birmingham). Negotiations are in progress to establish a single national assessment of the common core requirements for all UK programmes. The English DoH also state there is a need to establish a regular periodic test of knowledge to be undertaken every five years<sup>23</sup>.

### **1.4. The evidence base about PAs**

There is an extensive evidence base about the PA profession from the USA and some from England. This suggests that PAs are: safe (with fewer medical malpractice cases against them in the USA than

physicians<sup>24</sup>); viewed as communicative and interactive by patients<sup>25</sup>; a cost-effective addition to teams<sup>26</sup>; more likely to work in areas of health professional shortage than doctors<sup>27</sup>; capable of performing many of the routine functions in a general medical practice<sup>28</sup>. Evidence about rates of referral is equivocal<sup>29</sup>. PAs have been found to be less productive (studies have found they achieve 76-100% of surgery visits compared with doctors) and to see less complex cases<sup>30</sup>. It is worth noting, if obvious, that the USA has a different healthcare system from Scotland and therefore findings may not be generalisable. Also, a number of the studies suggest that cost-effectiveness, patient acceptability, productivity and cost-effectiveness are similar for NPs<sup>31</sup>.

### **1.5. Mid-level practitioners**

In this report, we use the term 'mid-level' to define an area of work between basic care and technical care and make no assumptions about which professional groups work at these levels. We understand that the American Association of Physician Assistants (AAPA) dislikes this term<sup>32</sup>; however, it does seem to briefly encapsulate an area of work that emerged as central to this study. We use mid-level in lieu of a better term to summarise that layer of skilled staff who have generalist training and are sometimes working in generalist positions, but sometimes also apply specialist skills within those positions. Saying this, most discussion about professionals at the mid-level considers similarities and differences between those with extended nursing roles, often generically described in the literature as NPs, and PAs. The implicit research question often seems to be: which is 'best' – NPs or PAs? Our evaluation was not tasked with exploring this topic, but it is worth describing supposed differences here. As has been noted, PAs experience a truncated medical educational model and they practice dependent to a medical supervisor; in colloquial terms they are a 'physician extender'. PAs gain a generic model of education that is widely recognised and accepted. This allows them to transfer between different clinical areas and they may specialise if they want to. NPs and other Extended Role Nurses (ERNs) have an initial education in nursing. In the UK they can work as autonomous practitioners in appropriate circumstances and have prescribing rights. While the concept of the NP has been discussed for some years in the UK, it is still not widely accepted as a defined profession either in the service or by the public<sup>33</sup>. To date, certainly in Scotland, a variety of ERNs have been developed in response to local needs. Those with extended nursing roles will therefore tend to train in a specialism within a particular setting and it is difficult for them to transfer to another organisation or specialty. Considering the suggested competencies of UK NPs<sup>34</sup>, it seems possible, technically, that ERNs could work to a similar scope of practice as PAs, given appropriate education, training and experience.

### **1.6. The Scottish PA pilot project**

PAs were piloted within NHS Scotland from November 2006-October 2008 as part of a package of innovative ideas for future health care design (Buchan *et al.*, 2007)<sup>35</sup>, as identified in *Delivering for Health* (2005)<sup>36</sup> and later in *Better Health, Better Care* (2007)<sup>37</sup>. Policymakers were looking for ways to address challenges of shifting the balance of care away from technical interventions to maintaining healthy populations in communities. In an environment of increasing professional specialisation and changes to

training and working time, they considered whether the NHS workforce was fit for the future. They sought ways of attracting additional high quality personnel into the NHS (USA PAs often have a grounding in another life science before becoming a PA<sup>38</sup>). Formative and summative findings from the evaluation of the pilot project, tracking how PAs embedded into various clinical settings and locations, were intended to provide evidence about whether PAs had a role to play in the future NHS Scotland. To be considered valuable, PAs would have to be safe and satisfactory to patients, fulfil a distinctive role that represented a 'gap' and be a cost-effective option. The findings presented here are from the evaluation of the PA pilot, funded by NHS Education for Scotland (NES), that investigated the impact and contribution made by a cohort of USA PAs to delivering effective healthcare in NHS Scotland.

When the Project began 12 USA PAs were recruited to four Scottish NHS board areas (Grampian, Lanarkshire, Lothian and Tayside<sup>39</sup>) where they worked in different settings (emergency medicine, intermediate care, primary care, and out of hours). By Project end, 15 PAs had been involved at one time or another (one PA had worked in acute medicine receiving and another in orthopaedics); some PAs had returned to the USA and others had arrived as replacements. Given the small numbers of PAs and their dispersal across Scotland in a range of clinical and geographical settings, a pragmatic, largely qualitative evaluation design was employed. This used iterations of group and individual interviews (six group interviews; 63 individual interviews with team members (plus four exit interviews with PAs that left during the time of the study); 20 interviews with patients; four interviews with NHS senior managers and three with Partnership Forum representatives) and written personal feedback (information sheets were used to elicit quantitative and qualitative data from PAs and medical supervisors (MSs) at monthly meetings). This allowed us to gain detailed data that were longitudinal and also triangulated different perspectives. While quantitative data on work activity were collected, these were most useful for eliciting commentary on the work of teams rather than to compare productivity.

### **1.7. Aim and Objectives of the Evaluation**

As established in the NES Project Specification of 2006, these were:

**Aim:** to evaluate the impact and contribution made by the appointed PAs to delivering effective healthcare in NHS Scotland.

**Objectives:**

- to assess the role and the contribution of the PAs, particularly in relation to:
  - Scope of practice
  - Patient safety
  - Team working
  - Productivity
  - Patient satisfaction
  - Costs, benefits and resource implications
  - Cultural and social adaptation
- to examine the receptiveness of participating NHS Boards and partnership forums.

- to assess the extent to which PAs integrate into current clinical teams.
- to evaluate the time taken and effectiveness of clinical supervision provided.
- to evaluate the impact of PAs on patients, carers and healthcare professionals.

## 2. Evaluation Methods

The study design used qualitative and quantitative methods and was produced to respond to specific features of the pilot Project: objectives implied the need for exploration and explanation as well as description; there were a small number of PAs and different clinical settings involved; some of the new roles of PAs were innovative and, initially, not clearly defined; we anticipated ‘coming and going’ of PAs during the project and PAs moving between different settings. It was important to ensure there would be data to summarise aspects of PAs’ impact and work in all settings; simultaneously, there was a need for rich data that provided in-depth pictures of PAs’ impact and contribution in the range of different settings. Capturing changes, over time, would be valuable so a longitudinal design was employed. Focusing on quantitative data, in attempts to produce statistically generalisable findings, was not suitable for addressing the research questions or capturing the Project’s complexity.

Figure 2.1 summarises evaluation methods. To assess aspects of PAs’ impact and work in all settings, we employed: recording SoP; group interviews with PAs at two stages and individual interviews with PAs at end stage; interviews with senior NHS Board managers and Partnership Forum representatives (PFRs) at participating boards; monthly forms recording aspects of the PA/MS relationship; and work activity data collection. To capture rich data about individual settings, we selected four case study sites to represent the four participating NHS board areas and different types of setting (emergency medicine, primary care, out of hours, acute receiving). As it transpired, one PA who was initially working in acute receiving moved between this setting and emergency medicine, spending most time in emergency medicine, and then left. We have, thus, not included the small amount of information collected while the PA was in acute receiving. We countered this loss by incorporating additional interviews in order to reflect other settings (including, for example, what we could of the orthopaedic setting where a PA arrived towards Project end). For the case study sites, we interviewed at three stages (Jan/Feb. 2007; October/Nov. 2007; April/May 2008) with MSs, managers and team members (a total of 63 interviews, including a range of GPs, hospital medical staff, nurses, ERNs and paramedic practitioners).

Twenty patients were interviewed, five at each of four settings. Interview schedules and other data collection tools are in the Technical Annexe.

The research team maintained good relationships with PAs, MSs and teams throughout the evaluation and were in regular contact by email and telephone with several PAs and MSs. This meant that information was

often given between, and in addition to, stages of interviewing. The research team also liaised with those conducting local audits or other evaluation of PAs work at the different settings.

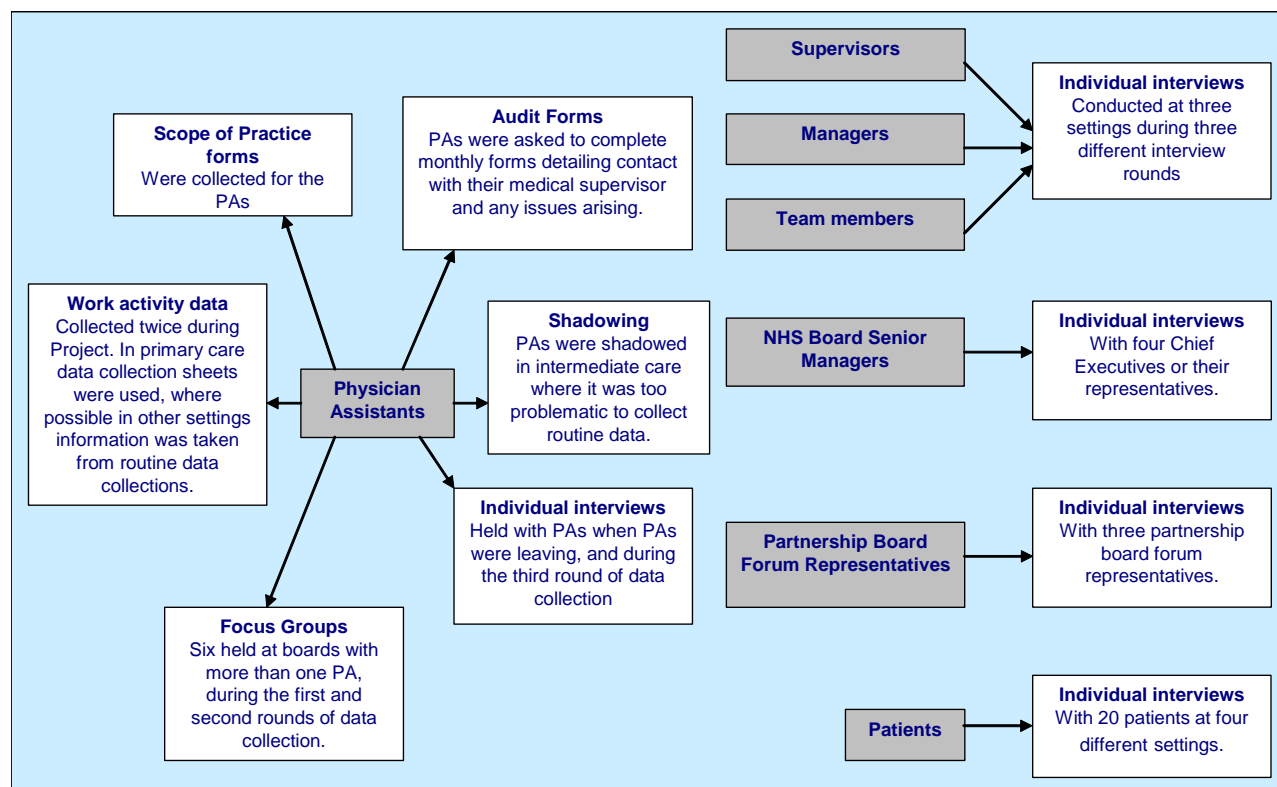


Figure 2.1: Summary of data collection methods

### Data collection for all PAs

**PA Scope of Practice (SoP):** All PAs were asked to record their SoP towards the start of the Project. PAs were given an example template to aid completion. Ten of 14 who could have returned the SoP forms did so (one PA left after a month at the start of the Project). In spite of repeated requests, it was sometimes impossible to obtain a return.

**Group and individual interviews with PAs:** Group interviews were held at two stages to allow for interaction between the PAs and comparison of their experiences. At one NHS board there was only one PA, so an individual interview was held. At the Project end, we wanted to ensure PAs had the opportunity for individual expression so individual interviews were held. Exit interviews were also conducted with four out of the five PAs who left before the end of the pilot project. One PA left without informing us and it was impossible to contact him/her after withdrawal.

**Senior NHS Board managers and PFR interviews:** All four NHS boards were contacted to interview the Chief Executive and a PFR. One chief executive participated; others referred us to senior managers they considered most appropriate to comment. Three PFRs were interviewed; a PFR interview was not

conducted at one NHS Board because their PA had left. These interviews were conducted from November 2007 to May 2008, depending on availability.

**MS/PA monthly forms:** These were designed to gain ongoing data about: time spent in clinical supervision; patient safety issues; to record changes in PAs' SoP; thoughts about their placement setting; and clinical issues. It was useful to have a record of how aspects of PAs' work and the MS/PA relationship changed over time. MS/PAs were asked to complete forms monthly, over 19 months. MS/PAs had to be repeatedly asked to return these forms.

**Work activity data collection:** All settings were asked to collect quantitative data about the activity of PAs at two separate periods: April/May 2007 and October /November 2007. Where possible, settings were also requested to collect data about two other different practitioner groups, also in the setting, for comparison. Because settings were unique, different ways of recording activity were deployed. Those in primary care completed, by hand, sheets that we specifically designed for the study. Out of hours clinic and emergency medicine provided anonymised routinely collected data from their computer systems. In intermediate care, various quantitative methods of recording activity were discussed, but none was considered appropriate to encompass the nature of the work. Therefore, a researcher shadowed the two PAs, each for 2.5 days, and kept field notes. Two ERNs in intermediate care were also shadowed for 2.5 days each. The main aim of generating data about work activity was for this to provide a discussion point at interviews. It is known, from a previous study that we have carried out<sup>40</sup>, that care has to be taken when using activity data to compare productivity as differences in data for different health professionals can be affected by the characteristics of the setting or hidden selection processes.

**Interviews at case study settings:** In four settings, managers, MSs and team members working with PAs were interviewed, individually, at three stages. In most cases, this involved the same members of staff at each stage, although sometimes this was impossible if staff had left, were on holiday or had changed work pattern. By stage three, as one NHS board no longer had a PA; interviews were not conducted in this setting. At the first two stages, interview schedules remained the same, but at stage three, on discussion with the Evaluation Steering Group, interviews asked specific questions about comparing roles, benefits and costs.

**Patient interviews:** Interviews were conducted with five patients in each of the four settings (out of hours clinic, primary care, intermediate care and emergency medicine) in April to June 2008. Patients were given an information sheet about the evaluation when they arrived at a setting (in intermediate care, longer-term patients were given the information leaflet when they had agreed to be interviewed) and asked if they would be willing to be interviewed after they had seen a PA.

To enable analysis, qualitative data from interviews and field notes were transcribed and entered into nVivo for data management. Analysis was undertaken by devising a coding schedule based on the research

questions and emergent themes; then coding the data. The project researcher (MC) conducted the main coding. All transcripts were also read by a second researcher and coding discussed/compared. A large amount of qualitative data, including interesting quotes reflecting generally held views, was generated by the study, but the Evaluation Steering Group requested that no quotes were included in this report. Quantitative data from MS/PA forms were entered into an Excel spreadsheet. Qualitative data from MS/PA forms were added to the interview data set. Quantitative activity data were entered into SPSS to allow generation of basic descriptive information.

### 3. Findings

#### 3.1. Response

Table 3.1 summarises interview responses at three stages of the evaluation, comprising six group interviews, 63 individual interviews (plus four exit interviews). In addition, four NHS senior managers were interviewed once; three PFRs were interviewed once. All 20 patients approached consented to participate in an interview. Ninety-two out of a possible 190 MS/PA forms were returned (48%). Data about work activity were collected for all settings.

**Table 3.1 Summary of interviews at three stages**

Stage	Health Board 1 <sup>1</sup>	Health Board 2	Health Board 3	Health Board 4
1	<p><i>1 x PA exit interview</i></p> <p>Group interview (3 PAs) Interviews with: 1 x manager 1 x MS 3 x team members</p>	<p>Group interview (3 PAs) Interviews with: 1 x manager 1 x MS 3 x team members</p>	<p>Interview with PA  Interviews with: 1 x manager 1 x MS 3 x team members</p>	<p><i>1 x PA exit interview</i></p> <p>Group interview (4 PAs) Interviews with: 1 x manager 1 x MS 3 x team members</p>
2	<p>Group interview (4 PAs) Interviews with: 1 x manager 1 x MS 3 x team members</p> <p><i>All participants, except new PA, same as Stage One</i></p>	<p><i>1 x PA exit interview</i></p> <p>Group interview (3 PAs) Interviews with: 1 x manager 1 x MS 3 x team members</p> <p><i>All participants remain the same as Stage One</i></p>	<p><i>1 x PA exit interview</i></p> <p>Interview with PA  Interviews with: 1 x manager 1 x MS</p> <p><i>PA changed setting and then left.</i></p>	<p>Group interview (2 PAs) Interviews with: 1 x manager 1 x MS 3 x team members</p> <p><i>MS and manager the same, but 2 team members change as PA has changed settings</i></p>
3	<p>4 x individual interviews with PAs Interviews with: 1 x manager 1 x MS 3 x team members</p> <p><i>All participants remain the same as Stage One</i></p>	<p>4 x individual interviews with PAs Interviews with: 3 x MSs 1 x team member</p> <p><i>One team member unavailable; one said nothing further to add. Manager said nothing to add. 2 additional MSs interviewed.</i></p>		<p>2 x individual interviews with PAs Interviews with: 1 x manager 1 x MS 3 x team members</p> <p><i>PAs, manager and MS same as Rounds 1 &amp; 2. Interviewed team members working on day of interviewing.</i></p>

<sup>1</sup>Health Boards have been anonymised here to avoid recognition.

### 3.2. PAs and settings

During the time of the Project (November 2006-October 2008), 15 USA-trained PAs worked, at different times, in six different types of clinical setting (out of hours, primary care, intermediate care, emergency medicine, acute receiving, orthopaedics) at four different NHS Boards (Grampian, Lanarkshire, Lothian and Tayside). Figure 3.1 shows the pattern of PA placement. Four out of five PAs that departed during the project had an exit interview. Reasons for leaving were usually personal or family-related, including difficulty finding suitable spouse employment, problems with children fitting in at school and missing home and family.

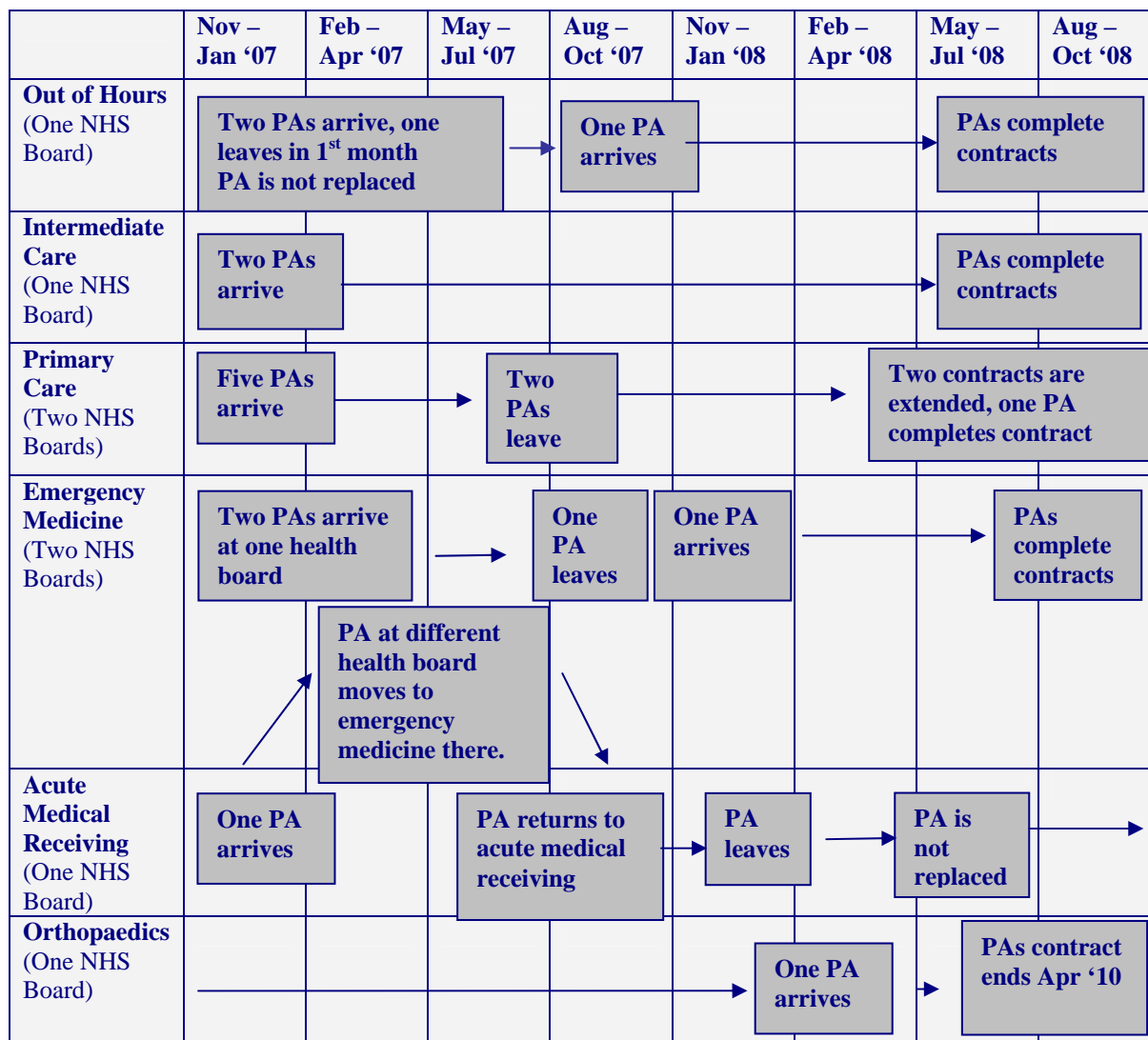


Figure 3.1 Pattern of PA placement

Table 3.2 summarises the age and experience of the USA PAs in the Project. It shows the PAs as a mature and experienced group. Nine had a Bachelors qualification in PA and five had a Masters. Most PAs had other qualifications in addition to their PA qualification, with nine reporting having another undergraduate degree in a life science, two of these also having a Masters degree in another discipline and one, additionally, held a doctorate. PAs had worked in a range of settings; for example, eight had worked at one time or another in their career, in primary care, five in emergency medicine and five in surgery.

**Table 3.2 PA's age, education and experience**

<b>USA PAs age, education &amp; experience (n=14)<sup>1,2</sup></b>		
<b>Age<sup>3</sup></b>	<b>Educational Qualifications</b>	<b>Experience</b>
Range: 33-59	PA Bachelors: 9 PA Masters: 5	<b>Experience as a PA<sup>5</sup>:</b> Primary care: 8 Emergency medicine: 5 Surgery/surgical specialities: 5 Occupational medicine: 1 Management: 1 <b>Years worked as a PA:</b> Range: 3-23 Median: 12
Median: 46	BSc in addition to PA <sup>4</sup> : 9 MSc in addition to PA: 2 PhD: 1 No additional qualification stated: 5	<b>Examples of types of setting as a PA:</b> <ul style="list-style-type: none"> <li>• Family practice in a disadvantaged area</li> <li>• Rural GP clinic (supervising physician 20 miles away)</li> <li>• Small hospital and covering nursing homes</li> <li>• Military</li> <li>• Prison</li> </ul>

<sup>1</sup> The PA who left after 1 month is not included here.

<sup>2</sup> Information based on details given by PAs on information sheet. This may not be completely comprehensive as PAs provided varying amounts of information.

<sup>3</sup> Age was not given by 4 PAs.

<sup>4</sup> Disciplines of undergraduate degrees included: Nursing, Public Health, Biology, Chemistry, Psychology.

<sup>5</sup> As PAs were describing their career history, some had worked in more than one type of setting; thus figures do not add up to 14.

### 3.3. Scope of Practice

Each PA was asked, with their Medical Supervisor (MS), to produce a SoP detailing their clinical and other duties in their placement setting. A few settings had produced SoPs before PAs arrived or in conjunction with PAs early in their placement, but most had not and we requested them all to produce a SoP statement. SoPs were provided in a range of formats and are provided in the Technical Annexe to this Report. As well as the setting type, actual practice was influenced by PAs' previous experience, preferences and personality; in settings with more than one PA, differences in the approach of PAs were reported. Where PAs' SoP extended over time, this was related to building the confidence of colleagues about competence. This process often frustrated the PAs who had not envisaged they would have to 'prove themselves'. Replacement PAs who arrived in settings where PAs had already worked, did not experience this problem. Although PAs often expanded their SoP over the time they were in their placement setting, most thought they had been unable to demonstrate their full capacity. Some stated this was related to differences of healthcare practice in the USA and Scotland, whilst others suggested that the PA profession had been developing for 40 years in the USA and it would take time to develop its distinctive role in Scotland. Several PAs were concerned about losing their competencies having been working in Scotland.

### 3.3.1. SoP in primary care

Five PAs worked in primary care settings. PAs were assigned different SoPs. Box 3.1 provides an example.

#### **Box 3.1 SoP in primary care\***

PA may: elicit a comprehensive history; elicit a problem-oriented history; perform a complete and directed physical examination; formulate a differential diagnosis; formulate a patient-focused management plan of care; demonstrate proficiency of written and oral skills or dictated notes; order appropriate tests and interpret test results; prepare prescriptions for signature; educate and counsel patients and families; arrange for follow-up care and/or referrals to specialists; perform injections, aspirations, basic phlebotomy, dipstick urinalysis, collection and preparation of cultures, fluorescein exam, minor surgery, diagnostic tests, take vital signs; provide basic emergency life support; house calls for nursing and homebound patients.

\*Taken from 1 PA's SoP form

In one setting the PA was deployed in the role of a practice nurse, while in others they engaged in traditional GP tasks. Four PAs were assigned to organise and run COPD and diabetes clinics and/or conduct health promotion outreach. All the PAs were placed in general practices located in areas identified as disadvantaged and all worked in more than one general practice. Initially, regular contact with a small group of team members meant that the PAs' SoP was quickly assessed. As time passed, their SoP altered little, although the types of patients seen did change as PAs moved from seeing patients making 'same-day' appointments (tend to be younger and non-complex) to taking regular general practice surgery sessions and clinics (range of ages and complexity). The difficulty for PAs in finding a distinct role where they were able to show their full competencies within primary care was possibly due to a clearly defined pre-existing primary care team structure of GPs and practice nurses (no distinctive gap PAs could extend into) and practitioners tending to practice in isolation in surgeries rather than together (lack of opportunity to see each other practising and appreciate PAs' skills). MSs were also located separately from PAs. Working in more than one setting meant PAs did not carve out their own areas of responsibility and a pattern of assignment to particular patient types or tasks emerged (e.g. initially, dealing with same-day appointments, then clinics and surgeries). PAs were more likely to expand their SoP when they were shadowed by a colleague who could identify their competencies. Most PAs thought they had been unable to demonstrate their full capacity in primary care placements; lack of prescribing rights was part of the difficulty as PAs had to request busy GPs to sign their prescriptions. PAs thought family medicine/general practice differed in the USA compared with Scotland. In America, clinical staff, including PAs, would be more likely to order diagnostic tests and perform procedures rather than referring.

### **3.3.2. SoP in intermediate care**

Two PAs worked in intermediate care settings. Here the focus was on rehabilitation, step-down and step-up and medical assessment, mostly of older patients. The SoP given is shown in Box 3.2.

#### **Box 3.2 SoP in intermediate care**

PA may perform without direct supervision: ventilation with BVM system; defibrillation; NG tube insertion; wound care and debridement; wound closure; venipuncture; arterial puncture; intravenous cannulation; biopsy of skin lesions; ear lavage; order limited x-ray; perform pap smear; aspiration breast cysts; perform anoscopy; superficial lipoma removal; sebaceous cyst removal; cryotherapy; IV sedation adult; incision and drain abscess; foreign body removal; closed fracture manipulation; reduction of dislocated joints; digital nerve block; ordering some tests. May perform with direct supervision: injection of joints; aspiration of joint fluids.

PAs and ERNs worked on the day-to-day management of the intermediate care wards. Each PA concentrated on one ward for the duration of the Project and provided first line 'medical-type' attention under the supervision of a MS; previously these wards were covered on a part-time basis by a staff doctor. SoP expanded as time passed; by Project end PAs could order tests and investigations as a doctor would do. PAs stated that lack of prescribing rights made it difficult to fulfil their full potential. PAs in this setting noted that in the USA they would delegate tasks such as taking bloods to nurses, whereas in Scotland they were expected to fulfil the range of tasks required in managing a patient themselves (i.e. teams are 'flatter' and nursing roles constrained).

### **3.3.3. SoP in emergency medicine**

Four PAs were placed in two emergency medicine settings at different times during the Project. SoP for the setting where three of the four emergency medicine PAs were located is given in Box 3.3.

#### **Box 3.3 SoP in emergency medicine**

PA may perform without direct supervision: nasal packing; use of slit lamp; reduction of dislocated joints (shoulder & digit); wound care and debridement; wound closure; incision and drain abscess; foreign body removal; digital nerve block; haematoma block; venipuncture; arterial puncture; intravenous cannulation. With direct supervision: ventilation with BVM system; intubation; ventilation of intubated patients; needle thoracocentesis; tube thoracostomy; thrombolytic therapy; external pacing; defibrillation; intraosseous lines; NG tube insertion; gastric lavage; IV sedation adult; closed fracture manipulation (digit); reduction of dislocated joints (elbow & ankle); femoral nerve block; lumbar puncture; injection of joints; injection of soft tissues/tendons; biopsy of skin lesions; avulsion of infected toe nails.

In one setting, PAs who lacked extended experience of 'major' emergency cases were assigned initially to work with 'minor' emergency medicine cases (this extended to 'majors' at Project end). Both emergency medicine settings were large and busy. Placement within large teams meant it was difficult for PAs to gain consistent exposure to colleagues, thus it took time for potential SoP to be realised. There was some initial team resistance and frustration expressed by PAs; however, this changed with exposure, resulting in team members expressing appreciation of PAs' value by mid-Project. Staff shadowing of PAs permitted an understanding of their competencies. By Project end, PAs considered they were almost able to

demonstrate their full capabilities with 'minors'; some employed in tasks that were previously only done by medical staff. Inability to prescribe was less of an issue in this setting as there were many doctors available for signatures. PAs stated that emergency medicine work differed in Scotland, compared with the USA, because clinical process tended to be driven by established evidence-based guidelines in Scotland.

#### **3.3.4. SoP in out of hours**

Three PAs worked in the out-of-hours clinic at varying times. An outline of what they were expected to do is provided in Box 3.4.

##### **Box 3.4 SoP out of hours clinic**

PAs should: assess, diagnose and refer/treat patients with all the common clinical, psychological and social complaints which present in a primary care setting; use practice guidelines / protocols for treatment of acute conditions e.g. asthma, croup, acute MI; assess, diagnose and refer/treat all the common medical, surgical, obstetric, gynaecological, eye, ENT, paediatric and psychiatric emergencies; treat adult and child patients with the common minor illnesses in the UK; treat adult and child patients with the common minor injuries in the UK. PAs in the Out of Hours clinic were expected to have and apply the competencies in: *Primary care, out of hours and unscheduled care: competencies for practice<sup>41</sup>.*

When PAs were in place, the usual model of working at the out of hours clinic was a GP in the clinic, a GP conducting home visits, a PA, ERNs and paramedic practitioners. PAs worked only at the clinic building. PAs did not conduct home visits because they were unable to prescribe and had poor knowledge of the local area. PAs did not conduct telephone triage (managed through nurses) because it was thought that nurses on call would want to speak to doctors and because of poor knowledge about local service options. PAs' SoP was similar throughout; one PA stipulated not wanting to deal with complex conditions. To understand PAs' competencies, doctors worked alongside them, initially. Colleagues suggested PAs could not maintain their skills in the out of hours setting, due to the limited nature of work seen and restrictions on procedures they could carry out (compared with USA). The PAs' MS thought they were used to only 50% of their capability. Inability to prescribe was a major issue, described as 'the only reason' that PAs are not being continued in this setting. PAs had to get GPs to sign their prescriptions and GPs were busy with their own caseloads. PAs stated they had to adjust their SoP for Scotland and that some procedures were done differently compared with the USA.

#### **3.3.5. SoP in orthopaedics**

One PA worked with the MS (orthopaedic consultant) at two sites and the role was evaluated by consultants working in the setting (Gregori *et al.*, 2008)<sup>42</sup>. The PA was recruited to assist the consultant who had to travel between two settings of elective patients between ward rounds. Failing to recruit a suitable practitioner in Scotland, the consultant sought a USA PA who was experienced enough to conduct ward rounds. The PA's SoP was broad, including patient work-ups and assisting in theatre. The PA stated this SoP reflected what would be typical for an orthopaedic PA in the USA, with the exception of prescribing restrictions.

### **3.4. PAs and patients**

#### **3.4.1. Patient safety**

Medical supervisors and PAs were asked to record any patient safety incidents on monthly forms. No patient safety issues were considered as major by the MSs. The only issues reported were, firstly, when a PA discussed changing their drug regimen with a patient; the manager of the setting did not think that this was appropriate without seeking GP advice first. A second issue involved mixing up the records of two people with the same surname who entered the setting at the same time, but this was identified before any treatment was given.

#### **3.4.2. Patient satisfaction**

Twenty patients were interviewed directly after having seen a PA at four different settings (primary care, intermediate care, emergency medicine and out of hours). PAs were informed that interviews would take place, but researchers selected which patients to approach for consent. Ultimately, this was simply the first five patients seen by each PA. All patients approached consented to be interviewed. In addition, team members and PAs were asked about patient satisfaction issues at all of the three sets of interviews undertaken. Patient satisfaction issues were recorded on MS/PA monthly forms.

Fifteen of the patients interviewed thought they could list all of the health care professionals that they had seen in the course of the time they had just spent in the healthcare facility. Fifteen patients could identify that they had been treated by a PA at some point. Three had heard of PAs before. Of these, two were in primary care and had seen the PA at a previous visit; both had specifically requested to see the PA again. When asked 'would you be willing to see a PA again?', all of those interviewed said they would see a PA again. The PAs and team members interviewed suggested that patients tend to find health care staff indistinguishable and were simply happy to be seen.

All patients interviewed were satisfied with the treatment they had received in the setting that day (very satisfied: 11; satisfied: nine). Four specifically emphasised high satisfaction with the PA. Twelve thought that they had received faster service than usual and eight thought that the speed of the service was similar to what they would normally receive. Where service was faster, some patients attributed this to the involvement of PAs.

Nineteen interviewees thought that all staff they had seen had explained things in an acceptable way. The single dissatisfied patient stated that the PA *had* explained things in an acceptable way, but another member of staff had not. Patients expressed appreciation of the service they had received from PAs. PAs were perceived to explain things well and sometimes this was compared with difficulties in communicating with medical staff or 'senior' staff. PAs were perceived to encourage questions patients might have and some stated that they were less intimidated in asking a PA a question in comparison with a doctor. Patients expressed no negative comments about any of the PAs.

Team members said that, in their experience, patients viewed PAs as being friendly and approachable. MS/PA forms for primary care recorded that some returning patients specifically asked to be seen by PAs. Team members thought this might be because PAs' education and philosophy of practice meant they spent time discussing patients' condition and options with them. PAs were generally viewed by their colleagues to be effective communicators, who were well received by patients.

### **3.5. PAs' 'fit' within the team**

#### **3.5.1. Technical fit**

**Primary care:** In the primary care settings, all PAs were introduced as supernumerary; that is they were not replacing a pre-existing role or person and they were not being trialled to fill a perceived gap. In some primary care settings, PAs were deployed to address factors of the general practice population that were associated with disadvantage. For example, PAs were tasked with establishing and running COPD and diabetes clinics and conducting health promotion outreach work about diabetes. From that perspective, the introduction of a PA was a novel application of a new role to chronic ill-health challenges. However, the PAs were deployed on a range of work, including general practice-type surgeries and in multiple settings so they reported it was difficult to carve out an identifiable role. PAs were stated by MSs to have improved capacity to see patients, shortened waiting times and relieved pressure on GPs (although PAs represented an extra member of staff and there is no evidence that changes made were related specifically to the role of a PA). Team members found it difficult to identify what PAs could do that made them distinctive. In one setting, a manager viewed the PA as working to a similar SoP as a practice nurse, while colleagues working directly with the PA thought they were capable of more extended practice. In another setting, an initially sceptical single-handed GP ended up by deploying the PA similarly to a GP. Although the Project does not appear to have revealed an obvious gap that might be filled by PAs in Scottish primary care, two PAs have had their contracts extended beyond the end of the pilot which provides an indication of their value, as perceived by general practices.

**Intermediate care:** Deploying PAs in intermediate care was a novel application of the PA role in the Scottish NHS. The idea was to assist staff grade medical doctors who covered the wards part-time. When the PAs arrived, both of the doctors covering intermediate care wards had gone on long-term sick leave. This provided an opportunity to redesign work, deploying PAs. Each of the two PAs was assigned to a ward of 12-20 patients and worked alongside nursing staff, under the supervision of a consultant. On similar wards, ERNs worked with nursing and medical support. From the start, nurses said they valued the support of PAs on the ward. ERNs reported PAs to have wider, generalist training and experience compared with them. This, they stated, made PAs autonomous and confident practitioners. ERNs stated that, had they had the choice between training to be a PA and an ERN, they would choose to train to be a PA because PAs had generic skills and more flexibility about where they could work. Doctors in training reported that PAs eased the pressure on them as they were assigned to provide medical cover to the elderly care wards. PAs were stated to provide continuity and an educational resource within a training environment for all groups of staff and, as a novel addition, a 'medical' presence on the ward Monday to Friday 9 – 5. Consultants

working with the PAs, while initially sceptical, expressed appreciation for their work as time passed. They valued PAs' medical training, confidence and decision-making abilities; where the ERNs described a condition, PAs would make suggestions for treatment or management. MSs reported that PAs helped the hospital admit patients more quickly and improved the safe discharge of patients back to their homes. Team members suggested that the PAs operated at a range between FY2 and ST2. There was interest in maintaining PAs in this setting because of perceived positive impact on patient throughput, partly attributed to PAs' continuing presence on wards meaning they efficiently dealt with administration.

**Emergency medicine:** Four PAs worked in emergency medicine at different times in the Project. These PAs commenced as additions to teams rather than replacing team members from other professions or filling a perceived workforce gap. Simultaneously, the emergency medicine teams were large and busy, under pressure to fulfil government waiting time targets and experiencing the difference that new MMC training arrangements were making to the quality and experience of rotating doctors in training; it was of interest to assess whether PAs were beneficial in such an environment. PAs did not work with the same senior staff consistently, thus it took time for colleagues to assess their contribution and for PAs to obtain the 'freedom' to fulfil to their capacity. With time, teams reported that they found PAs valuable by providing continuity in a highly dynamic environment. Doctors in training used PAs as a learning resource and ERNs noted that the PAs' role was different to theirs in that PAs could carry out more procedures, were confident in uncertain situations and could provide advice. Some senior medical staff at one setting stated that the department's compliance with the Government's four-hour waiting time target was directly attributable to the deployment of PAs. However, this may be simply because of deployment of additional staff members and not specifically related to the presence of PAs. The other setting had a different experience, with their PA remaining in emergency medicine for only a short time. Comments from team members and PAs suggest the different experiences between settings reflect the importance of factors including: having more than one PA; having a local 'champion' to support PAs; PAs giving talks to explain their profession. Initially, PAs were considered similar to FY2 by senior medical staff. By mid-Project, team members thought PAs functioned at a level of FY2-ST2. By Project-end, a variety of views was given, ranging from FY2-ST3. Most agreed that PAs tended to 'perform-up' where they were given autonomy and were experienced.

**Out of Hours clinic:** Before PAs arrived, two GPs covered the out of hours clinic, while another GP undertook home visits. The PA model was to test whether a GP and a PA could cover the clinic. There were difficulties recruiting sufficiently skilled and experienced medical staff for the clinic. International locum doctors were often hired and some were insufficiently attuned to the working environment, lacked suitable experience and were expensive. In the out of hours clinic, PAs were being piloted to see if they could fill a gap. By Project-end, the value added to the team by inclusion of PAs was assessed. GPs and other team members believed that PAs brought skills in communicating with patients, a holistic/generalist approach, confidence in working outside protocol (where necessary and appropriate), and a diagnostic approach as opposed to simply treating symptoms. The GPs stated that PAs were superior to international

locum doctors as they were good communicators, culturally attuned and their training and experience was more similar to the Scottish system. Their inability to prescribe, meaning waiting for a GP signature, represented an erosion of PAs' efficiency in the out of hours clinic. It also meant PAs could not undertake home visits. GPs suggested that PAs worked to a similar level as a GP registrar (ST2-3) or less experienced supporting GP in this setting.

**Orthopaedics:** One PA arrived to work in orthopaedics towards Project-end. The orthopaedic consultant required a skilled support practitioner to assist in covering two orthopaedic sites and was unable to fill the post with a suitable candidate. The PA was required to conduct ward rounds, conduct patient work-ups and assist in theatre. The consultant MS stated that the PA assisted with the training of doctors in theatre because the PA was skilled and experienced with assisting in procedures. This is reported to have reduced operating times. The PA was viewed as an all-round support and 'physician extender'. This was stated to be beneficial compared with ERNs (suggested as limited to running clinics) and surgical assistants (limited to theatre work). The consultant reported that he expected the PA to work akin to a trainee doctor in theatre, but with the PA in place, thought he/she worked like a more experienced registrar (ST2-3) because the PA has had five years of experience of working in orthopaedics in the USA.

**Summary of team fit:** At the final phase of interviewing we asked colleagues' opinions about aspects of PAs' performance (see Table 3.3). This shows satisfaction with PAs across a number of factors. In one setting, where there was a level of discord within the team, some negative comments were made by a manager and a team member about the PA.

The degree and nature of PAs contribution to teams varied between the different settings and depended on the skills and attitudes of individual PAs. Across settings, PAs were viewed as fitting into a role that varied from being deployed 'like a practice nurse' to performing almost like a consultant, an experienced trainee specialist doctor or a supporting GP. Figure 3.2 summarises reporting about PAs' approach compared with other roles at mid-level. While this is an analysis based on the interpretation of interview data, the data are extensive and consistent across MSs and team members. At the same time, our study focused on the role of PAs and did not explore or compare all mid-level staffing options, in-depth (except at round three where interviewees were explicitly asked to compare roles). Where PAs were thought distinctive was in bringing: a 'culture' of work and their place in teams based on medical education; biomedical knowledge; skills in differential diagnosis; confidence in practice; generalist education and approach, allowing flexible placement across a range of settings; communication skills and enthusiasm for informing patients; confidence in dealing with uncertainty. Where there were many staff, particularly doctors in training, rotating through wards, PAs were appreciated as providing continuity and a knowledgeable, approachable education resource. Simultaneously, the value of PAs was noted to vary in relation to individuals' personality, approach and willingness to adapt. While some PAs would 'take on everything', others were less flexible, reflecting skill sets or personality.

**Table 3.3 Satisfaction with aspects of PA performance**

	<b>Satisfaction with aspects of PA performance</b> <b>A ✓ corresponds to one respondent</b>		
<b>Category</b>	<b>Managers (n=2)<sup>1,2</sup></b>	<b>Med.Supervisors<sup>2</sup> (n=5)</b>	<b>Team member<sup>2</sup> (n=7)</b>
<b>Knowledge</b>	Very satisfied ✓ 'Knowledge gaps' <sup>3</sup> ✓	Very satisfied ✓✓✓✓	Very satisfied ✓✓ Satisfied ✓✓✓✓ Not sure ✓
<b>Clinical skills</b>	Very satisfied ✓ Satisfied ✓	Very satisfied ✓✓✓✓	Very satisfied ✓✓ Satisfied ✓✓
<b>Usefulness in this setting</b>		Very satisfied ✓✓✓✓	Very satisfied ✓✓✓✓✓
<b>Confidence with clinical matters</b>	Very satisfied ✓ 'Overly confident – should ask for help' ✓	Very satisfied ✓✓✓	Very satisfied ✓✓ Satisfied ✓✓ 'Confident, but needs to communicate more'
<b>Ability to deal with medical emergencies</b>	Not applicable ✓✓	Very satisfied ✓✓ Not applicable ✓	Satisfied ✓✓ Not applicable ✓✓✓
<b>Education resource</b>	Not sure ✓✓	Very satisfied ✓✓✓✓	Very satisfied ✓ Not applicable ✓✓
<b>Clinical leadership</b>	Very satisfied ✓ Dissatisfied ✓	Very satisfied ✓✓ Not applicable ✓✓	Satisfied ✓ Not sure ✓ Not applicable ✓✓✓
<b>Problem solving</b>	Very satisfied ✓ Not sure ✓	Very satisfied ✓✓✓ Satisfied ✓	Very satisfied ✓ Satisfied ✓✓✓✓
<b>Communication</b>	Very satisfied ✓ 'some PAs good, others not so good' ✓	Very satisfied ✓✓✓✓	Very satisfied ✓ Satisfied ✓✓✓ Dissatisfied ✓

<sup>1.</sup> One manager declined to be interviewed at this stage as thought had nothing else to add from previous two interviews.

<sup>2.</sup> Where responses do not add up to 'n', this is due to missing responses. These occur either because the respondent did not answer the question or did not answer sufficiently clearly to assign to a category.

<sup>3.</sup> Comments are given to illustrate contrary viewpoints, where these were given.

There was acknowledgment that ERNs and others (including paramedic practitioners) could also function effectively in various enhanced roles, but appropriate education, training, and experience to do this was needed. While the professional literature indicates that the SoP of nurses in extended roles (such as nurse practitioners) could be similar to PAs, the generalist skills and flexibility of PAs acknowledged by interviewees, reflects appreciation of their 'medical model training'. This is in contrast to the more 'protocol based' training, and consequent culture, of other extended role practitioners. Medical staff thought PAs were confident and demonstrated decision-making skills (related to their problem solving approach from the medical training culture). Extended nurse roles are still relatively new and developing. They are not yet fully embedded and many of the role models are specialised, locally trained professionals.

Key Perceived Characteristics from Interview Data						
<b>PA</b>	Medically trained generalist	Confident autonomous decision-maker within SoP	Will provide differential diagnosis	Orientation to patient education	Provides continuity & education resource	Confident in dealing with uncertainty
<b>Moderated by</b>	<i>Personality</i>	<i>Willingness to Adapt</i>		<i>Confidence/willingness to extend practice</i>		
		<i>Prescribing currently prohibited in the UK</i>		<i>Compatibility with setting</i>		
<b>Nurse Practitioner/ERN</b>	Specialised locally trained	Requires confidence	Addresses symptoms		Provides Continuity	Focused on evidence-based guidelines 'protocol focused'
<b>FY1/FY2</b>	Medically trained	Lacks experience/undergoing training			Short rotations	
<b>Staff doctor/ST1-3</b>	Some PAs in some settings said to be capable of operating at this level					

**Figure 3.2 Key characteristics of PAs**

In the Project, some of the PAs were functioning as additional team members (and, in a sense, were supernumerary). Others were functioning where it was possible to create a new way of providing a service, where there was a 'gap' or where PAs were being tried to assess the benefits within a changed or challenged working environment. Findings suggest that, where PAs were (or perceived themselves to be) supernumerary, added-value was less discernible, compared to those working in a more innovative way. PAs were more satisfied and their team members and MSs were most impressed with the additions that could be made to teams by PAs in: intermediate care where PAs were filling roles in a new way where there was no longer a part-time staff grade doctor on the older people's care wards; the out of hours clinic, where PAs worked instead of a second GP and fulfilled a 'support GP' role; orthopaedics where the consultant had identified the need for a skilled general support professional. PAs were less distinctly beneficial in: primary care, where they were replicating the duties of other staff or were endeavouring to start new services in an environment where the social culture was alien to them. In one of the emergency medicine settings, it was reported that it became apparent that PAs were filling a role at the mid-level that would previously have been filled by more experienced doctors in training. In all settings, individual personalities affected the extent to which PAs were seen as valued team members.

### 3.5.2. *Cultural fit*

Cultural differences between working in NHS Scotland and the USA were revealed. In summary, the main differences noted were:

- **PA/supervisor relationship:** In the USA, PAs develop trusted/trusting relationships with their MS, are responsible to them and act as a 'physician extender' (this manifests in a variety of arrangements in practice). In Scotland, MSs initially thought the relationship would be similar to a trainee doctor. Over time, a range of relationship models developed from close to the USA model to more distant and formal (like the UK model of supervision with trainee doctors). This is fully explored in a later section on MS/PA relationship.
- **Allocation/delegation of tasks.** In the USA, PAs would delegate tasks such as blood testing to nurses, simultaneously they themselves might conduct some diagnostic tests or these would be done within the same clinic; in Scotland, PAs found themselves doing some tasks they would delegate in the USA and referring for tasks that they would deal with themselves in the USA. Some PAs accommodated these differences, others did not, with consequences for relationships in teams.
- **Different treatments.** There were some differences in the drugs or treatments used in Scotland compared to the USA.
- **Working strictly to evidence-based guidelines.** Several PAs noted their surprise at a perceived over-adherence to evidence-based guidelines in Scotland. PAs considered this to detract from professional autonomy, hinder them in applying professional skills intelligently and to sap confidence.

While PAs found many of these issues frustrating at first, most adapted to fit in and accepted what they could not change - even if they continued to disagree with aspects of the situation. Initial full induction about the structure of the NHS was important in helping PAs to adapt. Feedback from the first group of PAs improved induction for later arrivals. Induction and ongoing support in adapting are important issues that must be addressed when considering employing personnel from different cultures and systems.

### 3.5.3. *Personal and social fit*

Several team members and MSs, at the first round of interviewing, said they had been ill-prepared for the arrival of PAs. Some said or implied that they had little warning of PAs' arrival or had little choice in accepting PAs onto their team. Some team members reported being resentful and anxious about what PAs would do and PAs reported perceiving some resistance to them. It is difficult to tell the extent to which preparation and support for teams was put into place, but not taken-up; for example, the Evaluation Steering Group have stated that education and preparation about the arrival of PAs was provided, but that there was poor uptake.

Adverse media coverage, for example dubbing PAs "super-nurses"<sup>43</sup> fuelled suspicion and interviews suggested there was some negative discussion about PAs before their arrival. Thus, some PAs entered an atmosphere of resentment and suspicion at work. This appears to have quickly dissipated, with PAs and

team members citing examples of how PAs were welcomed. Colleagues assisted PAs in finding accommodation, gave advice about schools and invited PAs to social events. Over time, five PAs returned to the USA, all cited personal and social reasons for their return. For those with partners and families, there were difficulties obtaining suitable jobs for partners and with children adapting to new schools. One departing PA said she/he felt socially isolated because there were no other PAs working in the same area. In very few settings there was dissonance of personalities within teams. Sometimes this improved, but it could become a chronic challenge. Discord between team members underlies some of the difficulties that were experienced in some settings.

### 3.5.4. Fit factors

Looking across the data, there were recurring factors that were associated with how well PAs were perceived to 'fit' and perform effectively with their placement setting. These are summarised in Figure 3.3.

<p><b>Supervision related</b></p> <ul style="list-style-type: none"> <li>• PA accepts supervision model will be different due to Scottish structural differences</li> <li>• PA reports they are well supervised &amp; supervisor understands their role</li> <li>• Supervisor facilitates PA in achieving full potential</li> <li>• PA and MS report a trusted/trusting relationship</li> <li>• PA works like a physician extender</li> </ul>	<p><b>Team related</b></p> <ul style="list-style-type: none"> <li>• PA has identifiable role</li> <li>• There is a perceived need or gap</li> <li>• PA accepts differences about Scottish system in team working</li> <li>• The team understands what a PA is</li> <li>• PA works in one setting</li> </ul>
<p><b>PA related</b></p> <ul style="list-style-type: none"> <li>• PA has a positive personal approach to work and fitting in</li> <li>• PA is flexible and willing to adapt</li> <li>• There are other PAs close by for support</li> <li>• PA's experience matches the current work</li> <li>• PA is happy with work and family life</li> </ul>	<p><b>System/setting related</b></p> <ul style="list-style-type: none"> <li>• PA has a good induction</li> <li>• PA learns and accepts system differences</li> <li>• PA can do things a US PA would be allowed to do (e.g. referrals, test ordering and ideally, prescribing)</li> </ul>

**Figure 3.3 Matrix of fit factors: key factors in PAs performing effectively**

### 3.6. PA productivity

Data were collected on PA work activity and on the activity of other team members at two stages of the evaluation. These data were collected so that they could be used in interviews with team members and MSs who would be asked to comment on the patterns of work revealed in the data. In doing this, we explored team activity and the role of PAs within that. We know from previous studies comparing the workload and activity of different health professionals that work activity data often tends to reflect underlying explicit or implicit decisions about which health professional will see which patients or conditions, when and how often. Data often conceal decisions that have been made about the amount of time that will be spent with patients on discussion or support. These features of workload data were apparent in this evaluation. We have, in this section, provided a summary of productivity information, but it must be understood in the context of the following caveats:

- I. An element of selectivity of patients occurred in settings, particularly at Project start: for example, initially, in primary care, PAs saw younger patients compared with GPs and nurses. One of the reasons suggested for this was that PAs were seeing same-day appointments that tended to

comprise younger patients. Similarly, in one emergency medicine setting PAs were initially tending to see minor cases, and therefore, cases could be seen quickly and required few referrals. Explicit or implicit selectivity processes impact on: types of patients seen; appointment length; admission rates; referral rates; rates of tests and procedures ordered.

2. PAs were unable to prescribe which meant they were not performing to their potential level of productivity.
3. PAs drew attention to their enthusiasm for patient education, stating that it is part of their role to spend longer with patients discussing their condition and approaches to management. PAs' belief is that providing information will help patients to look after their condition better and might prevent a future consultation. Thus, longer consultations with PAs were predictable.
4. Precise recording of data may be variable between individuals.

Summaries of some data relating to work activity in different settings are provided in Table 3.4 and are explored and explained below. Statistical testing was not conducted for the reasons given above; that work activity data explains more about the patterns of work of different professionals, the types of patients they were given to see and the application of their specialist skills and experience, than about their relative productivity.

In primary care, we provided GPs, PAs and practice nurses with data sheets on which to collect data. PAs, GPs and practice nurses collected data at two stages (i.e. between stages of interviewing). Table 3.4 shows that, by round two, PAs had moved from being more likely to see younger patients (as at round one), compared with GPs and nurses (probably because of seeing same-day appointments) to also seeing older patients. This was attributed to PAs adopting a more similar pattern of appointments to GPs (less selectivity) and some were running COPD and diabetes clinics. It can be seen that GPs referred more to secondary care, reportedly because they were seeing more complex cases. PAs' 10% referral pattern to GPs by round two was linked to them referring-on some problematical cases. A distinct pattern of activity differentiated the work of practice nurses.

The out of hours clinic provided us with anonymised data from their routine data collection system. Data from the out of hours clinic (see Table 3.4) shows that PAs' average consultation length was longer than that for GPs at both rounds of data collection. PAs were expected to spend longer with patients, partly due to their patient education role. PAs often had to wait to obtain a prescription from a GP. GPs referred a higher percentage of patients to primary care and to see their GP, reportedly because GPs were tending to see the more serious cases.

Data were obtained for both the emergency medicine settings from the departments' routine data collection systems. At the first setting, the data shown in Table 3.4 suggest that PAs saw a percentage of patients, comparable with ERNs, that could return home within two hours. At round two, a lower percentage of PAs' patients returned home within two hours suggesting that PAs may be seeing more

major cases at this stage, although the total number of PA contacts for the round two period are low. Data suggest that PAs referred a higher percentage of their cases for x-ray, but senior medical staff suggest this may be an artefact of PA's record-keeping which was meticulous. It was suggested that recording may vary among other groups of staff. Data indicate that staff grade doctors were seeing a greater percentage of patients that took two hours or longer to be seen and who were not returned to home following their emergency medicine episode. Data in table 3.4 relates to the case mix of patients seen by different healthcare professionals.

For the other emergency medicine setting (not shown in Table 3.4), analysis of routine data collected for 539 emergency medicine contacts over a one week period showed that: the PAs' (58) patients were more likely to have a longer stay in emergency medicine (this was because the PA had to wait to get a senior member of staff to sign off patients). The PA's admission rate was comparable with other health professionals. The PA was only at emergency medicine for round one data collection.

In spite of discussions with MSs and PAs in intermediate care about devising a method to collect quantitative data on work activity, it became clear that due to difficulties of categorising and recording work activity, shadowing would be the best way to understand and compare roles in this setting. A researcher observed on the wards for a total of 10 days, allowing 'shadowing' of both PAs and ERNs. PAs and ERNs were found to be fulfilling a similar role. PAs' and ERNs' distinctive contribution was in managing wards and dealing with general level medical/care issues that other staff were not qualified at a sufficient level or experienced enough to deal with. This reduced the time that more qualified/experienced doctors needed to spend on the intermediate care wards. Medical and nursing staff expressed how much they valued having PAs on their teams; however, this may be attributable to PAs providing a full time basic medical presence on wards when previously one part-time staff grade doctor had covered two wards. The importance of full-time presence was emphasised. ERNs and PAs appeared comparably productive, but PAs' confidence and decision-making skills in relation to the demands of the setting were stated to be higher by all team members.

Overall, PAs were viewed as contributing to the productivity of teams. For example, in one emergency medicine department, they were reported by senior medical staff to have contributed to achieving the Government's waiting time target. In primary care, GPs noted that they had relieved heavy and stressful GP workloads. In intermediate care, one MS stated that having PAs meant that more patients could be seen, treated and their administration dealt with efficiently than previously; therefore there was faster throughput of patients. At initial interviews, team members in some settings suggested that PAs tended to refer more readily to secondary care or for tests than other healthcare professionals. Our analysis of activity data showed little evidence of this. Again, we suggest that the data we have been able to provide for workload should be taken more as an indication of the patterns of work of PAs and the types of patients seen rather than used as a mechanism for comparing healthcare roles in terms of their overall productivity.

**Table 3.4 Work activity in primary care, out of hours and emergency medicine**

<b>Work activity in primary care settings (based on data collected specifically for this study)</b>			
	<b>PA<sup>1</sup></b>	<b>GP<sup>2</sup></b>	<b>Practice Nurse<sup>3</sup></b>
	% at round 1: % at round 2		
<b>Mean patient age (years)</b>	40.7: 53.2	45.9: 40.6	57.7: 57.2
<b>X-ray ordered</b>	1.8: 2.2	1.5: 2.4	0.4: 0.0
<b>Routine bloods ordered</b>	8.4: 6.0	7.4: 5.2	21.0: 0.0
<b>Other test ordered</b>	4.6: 11.0	4.6: 4.9	11.2: 0.0
<b>Patient referred to 2ndary care</b>	3.5: 3.3	7.3: 9.4	1.1: 1.5
<b>Patient referred to GP</b>	1.3: 10.4	0.0: 0.3	0.7: 1.5
<b>Work activity in the out of hours clinic (based on routinely collected data)</b>			
		<b>PA<sup>4,5</sup></b>	<b>GP<sup>6</sup></b>
		% at round 1: % at round 2	
<b>Mean consultation length (minutes)</b>		24.4: 23.8	17.0: 16.4
<b>Patient admitted to hospital</b>		5.6: 3.2	9.2: 6.0
<b>Patient advised to contact their GP</b>		6.3: 14.8	11.7: 21.3
<b>Work activity in emergency medicine (based on routinely collected data from 1 setting)</b>			
	<b>% of patients seen by each professional group</b>		
	<b>Round 1<sup>7</sup>: Round 2</b>		
	<b>% with LOS&lt;2hrs<sup>8</sup></b>	<b>% returned home</b>	<b>% x-rayed</b>
<b>PA</b>	86.0: 67.9	85.7: 96.1	35.4: 28.6
<b>ERN</b>	84.2: 81.4	97.7: 92.7	20.6: 13.2
<b>ST1-2</b>	58.5: 63.3	77.3: 68.1	21.5: 11.8
<b>ST3</b>	67.3: 59.6	79.0: 84.1	16.9: 3.8
<b>Staff Grade</b>	29.3: 25.5	30.1: 34.1	7.6: 2.3
<b>Consultant</b>	82.7: 78.9	88.9: 90.4	17.4: 12.2

<sup>1</sup> Based on 393 patient contacts at collection round 1 and 183 patient contacts at collection round 2: PAs collected activity data for all their surgeries over a 2 week period at both round 1 and round 2.

<sup>2</sup> Based on 326 patient contacts at collection round 1 and 286 patient contacts at collection round 2: One GP at each setting collected activity data for 2 days per week over a 2 week period at both round 1 and round 2.

<sup>3</sup> Based on 275 patient contacts at collection round 1 and 194 patient contacts at collection round 2: One practice nurse at each setting collected activity data for 2 days per week over a 2 week period at both round 1 and round 2.

<sup>4</sup> Only PA and GP data were supplied by the out of hours clinic. This was for 2 periods: round one for 2 weeks; round 2 for 2 months.

<sup>5</sup> Based on 54 patient contacts during round 1 and 687 patient contacts at collection round 2: Data collected over 1 month periods. Data gathered from a 2 week period in Round One and 1 month period in Round Two.

<sup>6</sup> Based on 4314 patient contacts during round 1 and 17681 patient contacts at collection round 2: Data collected over 1 month periods. Data gathered from 2 week period in Round One and 1 month period in Round Two.

<sup>7</sup> Total contacts were: Round one: 2443 contacts (PAs:257; ERN nurse: 107; ST1-2:1153; ST3:290; Staff Grade:276; Consultant:167; Round Two: 1773 contacts (PAs:28; ERN:129; ST1-2:832; ST3:233; Staff Grade:259; Consultant:90).

<sup>8</sup> Length of stay less than 2 hours.

### **3.7. Medical supervision**

Questions about MS/ PA relationships were asked of PAs and MSs at the three rounds of interviews. Also PAs and MSs were requested, as part of the evaluation, to complete a monthly form (for each of 19 months) outlining time spent in supervision and issues discussed. Given that we could have expected forms from 13 PAs at different times during 24 months (excluding the PA that left at the start and the PA arriving at the end), a potential 190 forms could have been returned. Of these potential 190 forms, 92 were returned (48%). All PAs returned at least three forms. The maximum returned by one PA was 15.

The pattern of form completion reflected the nature of supervision. One PA rarely completed as she/he saw the assigned MS infrequently, although the PA thought that there was good supervision from other doctors in the setting. In another setting, with a similar MS/PA relationship, the PA completed the form to alert the MS to what he/she was doing, using it as stimulation for discussion. Where forms were irregularly completed, PAs reported this was because they thought they had nothing new to report.

Forms asked PA/MS to report on the time spent per month on supervision. Two MSs reported that they were supervising all the time that they were working with the PA in the same location, but most noted time spent together in discussion: face-to-face supervision: range 20 to 720 minutes per month (median: 105 ); telephone supervision: 0-120 minutes per month (median: 6.5); administration issues: 0-150 minutes per month (median: 30).

Interview data show that, initially, MSs and PAs found it hard to adapt to what each expected of each other with regard to supervision. PAs were used to working dependent to a maximum of three supervising doctors in the USA and to work in a 'physician extender' role. In this, they understood the working patterns of particular doctors and autonomously undertook a range of largely routine medical work, for example, preparing histories prior to doctors seeing patients. PAs were frustrated because Scottish MSs were not used to working to this model; rather, their expectation was to supervise PAs along the model of their supervision of doctors in training, with regular, but infrequent, formal meetings. PAs wanted to extend as fully as possible to their range of skills, while MSs lacked understanding of their potential, were reluctant to allow SoP to expand and thus found it hard to decide where to place them within established teams. MSs reported that supervision took up more time than they had expected, especially as some had to assist with administrative issues related to the arrival of the PA. Initially, some MSs shadowed PAs. By the second round of interviews, MSs were more confident with PAs' SoP and PAs had mainly adapted to the Scottish system. By Project end, relationships had stabilised. Some PAs had developed trusted 'doctor-PA' relationships. A small number of assigned MSs worked in different locations to the PAs or maintained a distant formal relationship. This tended to cause resentment for the PAs involved who thought their potential was under-appreciated.

In primary care, PAs tended to work in more than one setting which impacted on supervision. In settings where the PA and MS did not work together, some time was needed for MSs to understand PA

competencies. Primary care PAs tended to receive more supervision from GPs who were not their assigned MS. Several of the GP practices involved had little prior experience of supervision and this added to their difficulties in arriving at a workable model. PAs in the intermediate care setting thought they had a similar role, as a PA, to that they would expect in the USA. One PA had more a distant and formal pattern of contact, but there was other medical supervision available in the setting. PAs reported that it took some time to develop a trusted relationship with their MS. In emergency medicine, PAs worked with, and received supervision from, a large number of medical staff in addition to their assigned MSs. These PAs were not accustomed to receiving supervision from so many different people. At first, they were uncomfortable, but reported they adapted as they became more accepted as part of the team and perceived less suspicion from colleagues. PAs at the out of hours clinic stated that they were used to working with two or three doctors, but in the Scottish setting they received supervision from many different GPs. It took considerable time for GPs to be comfortable with PAs' SoP. Supervision impacted on GPs in the out of hours clinic because, previously, they had been working alongside another GP. Most had no experience of supervising similar colleagues' work. In time, supervising GPs familiarised with the model of working and expressed their appreciation of the continuity PAs provided. Initially, PAs asked about procedural and clinical issues, but by Project end, contact was mainly to check clinical issues and get prescriptions signed. The assigned MS remarked that PAs needed less supervision than ERNs or paramedic practitioners who also worked in this setting. A PA arrived towards Project end to work in orthopaedics. The MS there had good understanding of PAs and the PA and MS worked closely, with a physician extender-type relationship. The PA had an identified place in the team which made it easier to fit in and the expectations of the PA role were clearly established before arrival.

### **3.8. Views of senior managers and Partnership Forum representatives**

We sought to interview the Chief Executives and a Partnership Forum representative (PFR) from each participating NHS Board. Questions were asked about why Boards had wanted to participate in the PA Project and opinions regarding Project 'successes' from their perspectives. Ultimately four members of NHS Board senior management (including one Chief Executive) and three PFRs were interviewed.

Senior managers interviews generally viewed the PA project as positive in each participating Board and within the Scottish NHS. Managers of all four participating NHS Boards said the main reason for their interest was exploring different ways of providing the future workforce and shifting the balance of care. Each described their Board as being innovative – 'at the forefront' and 'open' to new initiatives. Managers viewed Boards as 'vulnerable' in workforce terms, with recruitment and retention of current staff being problematical in key skills areas and gaps created by MMC and European work legislation cited as raising challenges. There was a suggestion that some tasks that were the traditional domain of doctors might be delegated.

New roles were viewed as one way of addressing workforce issues, and PAs were viewed as **one** of those potential new roles. Managers said several complementary new roles were probably needed and there

would likely be overlap among roles in the future health service; however, all roles would have distinctive aspects. Managers said that NHS manpower planning should be more anticipative of changes to future workforce patterns and that the PA pilot project was an example of looking ahead to different ways of achieving a good service.

The PA role was identified as distinctive because training was based on the medical model. PAs were viewed as being able to alleviate doctors' workload and as different to doctors in training because they were experienced professionals. It was suggested that PAs were more equipped to deal with complex patients compared with ERNs. The main challenges raised were logistical and legal, including the lack of UK professional regulation linked to inability to prescribe. The role, it was suggested, required evaluation within Agenda for Change (this has since been completed). In theory, senior managers were generally supportive of the idea of PAs working in their NHS Board area in future. Considering long-term sustainability of PAs as a Scottish NHS professional group, all emphasised that there would be a need to educate and train PAs in Scotland. Settings were suggested as opportunity areas for PA working: primary care, remote and rural, mental health, locations with recruitment and retention problems.

Regarding costs and benefits, managers thought they needed to know where PAs would be graded within Agenda for Change before they could comment. Some commented that the USA PAs were 'overpaid' in comparison with other professional groups and that, if Scotland developed its own PAs, they would have lower pay.

PFR interviewees noted that team members in the various settings in which the American PAs had been placed had initially felt anxious and threatened by the PA role. Working alongside PAs had allayed their fears to a great extent and this happened because there was understanding of their role. One interviewee expressed concern about the 'haste' in which PAs had been introduced to Scotland and argued that there was a lack of appropriate infrastructure and support in place for the PAs when they arrived.

### **3.9. Costs**

Questions about costs were included in interviews with MSs, managers and team members at the three phases of interviewing. Initially, interviewees commented it was too early to respond. Cost issues that were raised centred on the remuneration of PAs *vis a vis* other staff groups. There was contention over the salaries being paid to the US PAs in the Project (stated to be £43,000 which, according to the Evaluation Steering Group, was set at this rate to be comparable to PAs' previous salary and experience within the US). Some interviewees argued this was too much and that ERNs could do an approximately equivalent role, but were paid less. Others argued that PAs had a distinctive SoP and were justified in being paid more than ERNs. Further, others argued that US PAs in Scotland were not working to their full SoP (due to restriction on prescribing or not being given the opportunity to expand), therefore they were being paid for what they *could* do, but not what they were doing.

Towards the end of the study, a National Job Description for a newly qualified PA was evaluated under Agenda for Change and banded at 7 (£29,091 - £38,352). In addition, a Higher level PA (requiring a minimum of five years experience and a Masters Degree) was banded at 8a (£37,106 - £44,527).

At final interviews, interviewees were asked to compare the costs and skills of a PA with the costs and skills of personnel that PAs were assessed to be working equivalent to. A sheet of approximate mid-point take-home salaries of different grades of professionals was used in interviews (this was provided by NES; it should be noted that these are now likely to have changed). Interviewees found this task complex as they generally could not relate PAs to an exact equivalent, but they offered some approximations which are summarised in Table 3.5.

**Table 3.5 Opinions of staff about replacement value of PAs**

Setting <sup>1</sup>	Managers <sup>2</sup>	£ <sup>3</sup>	MS	£ <sup>3</sup>	Team	£ <sup>3</sup>	PAs	£ <sup>3</sup>
Primary care	PA<Nurse	minus 15-9k	PA=FY2	similar	PA=FY2-ST2 or support GP (if they could prescribe)	Up to 43k	PA=GP	Up to 43k
Emergency medicine			PA=FY2-ST2	Similar to 15k	PA=FY2-ST2	Similar to 21k	PA=FY2-staff grade	Similar to 11k
Out of hours	PA=ST2	Up to 21k	PA=2 <sup>nd</sup> /support GP <sup>4</sup> (ERN or paramedic practitioner could also do – with training)	Up to 43k	PA= 2 <sup>nd</sup> /support GP <sup>4</sup>	Up to 43k	PA=GP	Up to 43k

Based on figures provided to interviewees about gross salaries of professionals (provided to researchers by NES): PA £37-£43k; Nurse (grade 6) £28k; ERN £32-37k; FY2 £42k; ST2 £58k; staff grade doctor £48k; GP/consultant £80k.

- <sup>1</sup> Intermediate care teams not subject to full case studies so no data on this aspect for this setting.
- <sup>2</sup> One manager declined to be interviewed at the third round of interviewing as did not feel there was anything to add.
- <sup>3</sup> This can only be considered a rough approximation based on figures given above and forcing interviewees to give an opinion based on a trade-off between staff groups.
- <sup>4</sup> This would always be in addition to a fully trained and experienced GP at the out of hours clinic.

Interviewees' suggestions, shown in Table 3.5, indicate that, at one end of the scale, if a PA was employed when a nurse could do the job, £15,000 would be overspent, while if a PA were to work 'like a GP', then £43,000 could be 'saved'. It should be emphasised that these are very much approximations and should be taken in the light of all the other findings presented here about the advantages and disadvantages of PAs in the settings studied and bearing in mind that PAs are simply one new role that might be considered and not the only new role emerging. Distinctive aspects of each professional role and individuals' personality were very important when interviewees were considering who they would want to work in their teams and most said a mix of staff was needed in the ideal team.

Other costs noted were MSs' time in supervision; the time of managers and human resources staff who dealt with PAs' work issues and general queries and the resources required to establish academic courses to educate PAs in Scotland.

## **4. Commentary**

### **4.1. Summary of findings**

Figure 4.1 summarises findings from the study about piloting PAs in the different settings. It indicates that PAs were more valued in some settings compared with others, that prescribing was more of a hindrance in some settings and that factors about the individual PAs and teams sometimes affected perceptions of benefit. It is important to note that, overall, there were no patient safety issues that emerged that were considered problematical by medical supervisors and patients expressed satisfaction with being seen by PAs. PAs fitted in across the settings and were estimated to fulfil a variety of roles at the mid-level, showing the flexibility of their generalist medical background. They were considered of most value and were most satisfied themselves, where they were filling a distinct role, such as GP support in out of hours, medical cover for wards in intermediate care, support in orthopaedics and potentially a mid-level role within emergency medicine. PAs were not given, and did not carve out, distinct roles in the primary care settings in this study, but they are being kept on in some primary care settings indicating that they are a valued addition to teams. PAs were appreciated in terms of the continuity they could provide both to patients and to staff in training by whom they were often regarded as an educational resource.

### ***In Out of Hours clinic***

- PAs need to be able to prescribe to be most productive
- Reported capable of operating at the level of less experienced or supporting GP
- Better communicators and more culturally attuned than international locums
- At the cost, a useful addition to the team: it can operate with one GP & one PA, whereas would have previously had two GPs
- ERNs and paramedic practitioners *could* do the same job, but with specific training and experience required. They would be specialists for that setting
- Willingness to see a range of cases varied; because of this, there was an element of 'selectivity' of patients for one PA employed
- May be less directly productive as emphasise element of patient education, although this may benefit in the longer-term
- No quantitative evidence of over-referral
- It is difficult to recruit and retain appropriate health care staff to this setting

### ***PAs in Emergency Medicine***

- Reported to be capable of working like FY2-ST2
- Reported to work to a higher level if consultant absent
- Provides continuity for trainee doctors and others in busy departments
- Initially, PAs saw more minors, but extended into majors over time
- Perceived to help meet four hour waiting target
- Better if they have emergency medicine experience
- Comparable productivity to other staff
- Some personality issues clouded some areas of work
- Perceived as an education resource
- Supervision difficult in large departments, with busy senior staff and substantial throughput.

### ***In Primary Care***

- Reported capable of working at the level of a GP in training
- In one setting was deployed like a practice nurse
- In some settings asked to do things that were possibly beyond their cultural and social experience (health promotion in disadvantaged area)
- A personality clash may have occurred in one setting
- Opinions ranged from PAs as highly skilled to difficult
- Initially, PAs tended to see less complex patients because of implicit selection processes
- Some participants thought PAs were useful, while others would rather have GPs in spite of extra expense as GPs can do everything
- PAs were dependent on what their supervisor assigned them to do
- Not prescribing was a hindrance.

### ***PAs in Intermediate Care***

- PAs carved out a distinctive and valued new role
- Developed as physician extenders with trusted & trusting relationships with supervisors
- Reported capable of working at level of staff grade doctor
- Provide continuity in the setting for trainee doctors and others
- Confident, flexible and autonomous
- ERNs said they would like to have trained as PAs
- Perceived impact on patient throughput

### ***PAs in Orthopaedics***

- Reported to work like a physician extender
- Exceeded consultant expectations
- Reported capable of working almost to level of ST2
- An education resource for junior staff
- Perceived to have enhanced consultant productivity

**Figure 4.1 Summary of PAs and settings**

## **4.2. Do PAs add something that is distinctive?**

Study findings suggest a 'mid-level' practitioner space, that there are currently challenges filling, in some settings in NHS Scotland. In terms of this study, this space was not as apparent in primary care as it was in other settings; however this may be due to the settings included and the roles assigned to PAs. Two PAs have had their contracts extended in primary care settings showing that they were perceived as beneficial. There are more PAs in family medicine in the USA than in other 'specialties' and they are a significant presence in hard to fill places like areas of disadvantage and remote and rural areas. However, as Weller<sup>44</sup>

points out, the USA system is different to the UK and fewer generalist doctors are produced, creating a space that can be filled by generalists like PAs in the USA.

This study suggests PAs (and/or those with 'mid level' similar skills and experience) have a role in the out of hours clinic because they are more culturally attuned, good communicators and less expensive than international locums. The PAs in this study appeared to work well in a supporting role to a GP. Lack of prescribing rights for PAs means their deployment is currently problematical. Team members reported that ERNs and paramedic practitioners can also fulfil expanded roles in the out of hours clinic with appropriate training and experience. In emergency medicine PAs were generally appreciated, again filling a mid-level space that appears to have been left in the wake of MMC. A mid-level practitioner, continuously deployed within the emergency medicine department can act as an educational resource and provide stability of staffing in an environment where there are many inexperienced doctors in training, on rotations. Intermediate care may also have a space for a mid-level practitioner with generalist experience and a medical background, helping to produce a stable environment by conveying confidence, providing continuous medical presence and an education resource.

The skills and attitudes described by staff as being important and distinctive among the PAs were critical thinking; diagnostic skills (capacity for differential diagnosis); generalist/holistic medical approach; communication skills; and confidence in dealing with uncertainty. Findings suggest these filled a gap in settings where PAs were valued. Consideration should be given to which mid level practitioner group or groups can meet needs. Perhaps PAs are not the only professional group that can do this. Perhaps there are a number of professional groups that can fill the mid-level space. Another way of considering the mid-level space is that it is a 'generalist' space and perhaps a way to view this, apparently missing, layer of staff is to consider it as the gap that is left as professions specialise. This is perhaps one way of desensitising the notion of introducing new roles at the mid-level; new roles may simply be a reaction to bring back a generalist element in environments that have become highly specialised. Our findings suggest that PAs' shared culture with medical staff facilitates their acceptance onto the team. This provides a shared set of values between medical staff and PAs and bestows PAs with professional confidence that is appreciated across the team. Confidence may be related to PAs' American cultural background, their personality (it takes a specific kind of person to pioneer a profession in another country) and experience (often considerable). It should not be assumed that all PAs will be as confident as those involved in the Project or that PAs trained in the UK will be similar. Indeed, it is noteworthy that, even among the USA group, some PAs fitted into their work environment better than others.

Given a potential mid level gap in some settings, which other professional groups could fill this?

Professional literature on NPs indicates potentially similar SoP and competencies to PAs<sup>45</sup>. Confusion over the development of the NP and other extended nursing roles in the UK has been highlighted<sup>46</sup>. Health boards have tended to train ERNs for specific settings. In contrast, the PA profession is defined, described in competency frameworks and supported by associations and competency testing mechanisms (in the USA

and emergent in England). PAs have generalist training (again defined and standardised) that allows flexibility of workplace and a predictable set of skills and a culture that allows them to be employed across diverse settings. In the Project, ERNs/NPs were stereotypically portrayed by interviewees as adherent to protocol and lacking professional confidence.

So, findings suggest a 'mid-level' practitioner space in some NHS Scotland settings. PAs appear to offer one solution that is safe and satisfactory to patients, although establishing Scottish PA courses would have to be considered and it would take time to produce 'home grown' PAs. There are likely to be other professional groups that could fill the mid-level space. It is for NHS Scotland and its stakeholders to decide how to staff the mid-level, taking into account future workforce supply and demand.

#### **4.3. Are PAs cost-effective vis a vis other practitioners?**

Cost effectiveness is clearly an important consideration in workforce planning. If PAs are deployed in some aspects of roles currently done by GPs (such as support in out of hours clinics), staff grade doctors or specialist medical trainees, then it may be feasible to anticipate cost savings. If ERNs are compared with PAs, then ERNs are less expensive, although all our caveats about comparing PAs and ERNs must be applied. Salary levels for PAs would in any case have to be set definitively and are likely to vary depending on PAs' experience and role. Research evidence suggests it is wrong to consider PAs as substituting for particular roles; rather they should be considered as having distinctive skills, attitudes and deployment patterns that complement teams<sup>47</sup>. Our findings suggest that team members think PAs would be one of several staff roles they would want represented on an ideal team. Consideration of costs of introducing PAs should also account for the costs of developing educational courses and structures for accreditation, validation, examination and continuing professional development and training (the latter alongside other health professions to assist with acclimatising a new role into the NHS culture).

#### **4.4. What would have to change to make PAs a better 'fit'?**

PAs were effective and satisfied when they were acting in the role they have in the USA – that is, as a 'physician extender'. This is premised on a trusting and trusted relationship with their MS. Some PAs in the Project managed to achieve this, sometimes with MSs who were initially sceptical. Various arrangements pertained in the Project from PAs working in big emergency medicine departments who had only irregular contact with their assigned MS, but day-to-day contact with many skilled medical staff who acted in a supervisory capacity. Some PAs rarely saw their MS or were located in a different setting and had infrequent formal meetings. In the USA a close PA/MS relationship is implied, but in reality various arrangements exist and different states also have different stipulations about proximity of PA to MS<sup>48</sup>. Most important is the ethos of the trusting/trusted relationship, the MS accepting the responsibilities congruent with supervising a dependent practitioner, the PA knowing their MS sufficiently well that they work to the same pattern and have agreed their own SoP and when to turn to their MS. The NHS traditionally has a formal, hierarchical structure so working to the USA supervision model represents culture change.

Examples of effective MS/PA relationships in the Project illustrate that this is possible. Interestingly, the DoH suggests MS/PA relationships should be similar to those with doctors in training<sup>49</sup>.

For PAs to operate most effectively in Scotland, they need prescribing rights. In the Project this was more of a hindrance in some settings compared with others. Until it is addressed, it would be difficult to further pilot PAs in some settings; for example, remote and rural areas.

#### **4.5. Strengths and limitations of the evaluation**

Regarding the Scottish Government PA Project design, there are limitations when considering evaluation findings. The experimental settings were not strategically chosen as the areas of most potential need. Therefore, there may be gaps in the Scottish NHS that could distinctively benefit from PAs that have not been investigated. Simultaneously, this implies that our findings reflect an ad hoc group of settings so decision-makers will have to extrapolate from them to their own situations to see what might apply. PAs could not prescribe. This meant they could not do what they did in the USA. It affected PA's productivity and caused irritation within teams. In most cases, PAs did not think they achieved the level of SoP that they would be allowed to do in the USA; to the extent that some were concerned about skills erosion. Some PAs were asked to do things that were outside their professional and cultural knowledge-base. On reflection, there was naivety within NHS Scotland, before PAs' arrival, about what PAs could do and about how they would expect to be supervised. This meant that the first six months of the Project involved rapid adaptation for PAs, teams and MSs. Perhaps this is inevitable when a new role is being introduced from one professional culture to another. PAs were asked to come to Scotland for two years; for most this meant giving up their job, selling their home and, for some, it meant finding employment for a spouse and schooling for children. While PAs were supported in the logistics of moving, it takes a certain kind of person and spirit to make such a life change and the PAs who came to Scotland should be considered in this light: pioneers, those seeking a new challenge, those seeking a new life. Perhaps inevitably, some individuals (actually very few) got involved in personality clashes or professional disagreements (hard and unfair for us to distinguish). Others became soured by constantly having to prove themselves within a sceptical system and feeling part of an 'experiment'. Some PAs seemed to have come to Scotland almost evangelically, expecting that they would be in the vanguard of introducing a new profession. Some PAs, therefore, did not fit so comfortably into settings as well as others. In this study, involving a total of 15 PAs, where in some settings the PA was the only representative of their profession, that PA coloured the perception of the team and the setting about the PA profession.

With regard to limitations of the evaluation methods, the study considered a small group of PAs, with much 'coming and going' during 24 months. This meant vigilance with regard to each PA and each team. Collecting data at three phases was important as there were distinct beginning, middle and end phases in attitudes and application of SoP. Obtaining compliance was a challenge, particularly with completion of SoPs and MS/PA monthly forms. We only ever intended collecting activity data as a tool for discussion and not as a way of measuring productivity because we foresaw caveats about its comparability with other staff

activity; nonetheless stakeholders, enthusiastic for quantitative data, were keen that it was used in this way. This was part of a perception that our mainly qualitative data lacked sufficient robustness. However, with a total of 15 participants in different settings, the collection of meaningful quantitative data is highly limited. Where we present quantitative data here, it is with caveats. The data collected should be viewed as contributing to an overall picture. Ultimately, our pragmatic research design produced an extensive data set, comprising many types of data that both triangulated with each other, but produced findings consistent with the broader evidence base. Involvement of six researchers in data collection and analysis provides high reliability. Similarly, our research team comprising health professionals, researchers and a patient representative provided a useful grouping for discussing emergent themes and ideas from different perspectives. We maintained good relationships with the PAs, MSs, teams and the NES Steering Group and were able to incorporate the ideas of the latter as we progressively planned stages of study.

#### **4.6. Scotland and the rest of the world**

What added value do PAs bring to the NHS in Scotland? One distinctive aspect that the USA PAs brought was their approach to patient education, communication and information-giving. This was appreciated by patients and highlighted by team members. It was distinctive in time taken, tone taken, full explanation given, questions invited. This fits well with the theme of current Scottish policy promoting a '*mutual NHS*'<sup>50</sup>. From this we must move to the theme of mid-level practitioners. We have highlighted what was found distinctive about PAs (medical background, differential diagnosis, etc), but reiterate the plausibility that other professions could fill the mid-level space with appropriate education and training. Given this, mid-level practitioners offer the NHS the opportunity to inject generalists into a system characterised by increasing specialty. This would allow mid-level generalists to cover routine work, administration and support, while freeing-up specialist staff for more complex and technical cases. While this might appear to be supporting moves to service fragmentation, it could also be viewed that mid-level practitioners will be providing the continuity for patients and staff in training that may currently be missing or fragile.

The current wave of international development in deploying and training PAs can also be viewed in alternative ways. Firstly, it could be viewed as a 'fashion'. The PA profession is neatly packaged, emanates from the USA (as many health system 'fashions' do), has some assiduous 'product champions' and is 'promoted' in a panacea-like way. Alternatively, PAs can be viewed as *the* profession, designed as uniquely adaptable, that is moving from the USA to other parts of the world at this time *expressly because* it can meet the world's current health workforce gaps. In the USA it fills the gaps for primary care generalists, secondary care registrars (in the wake of working time changes) and feeds the HMO system by taking care of routine medical work. In non-metropolitan areas of Canada, Australia and the developing world it supplies generalist medical staff where it is difficult to recruit. England has experienced gaps in primary care in disadvantaged areas and is experiencing the same gaps as Scotland in secondary care thrown up by changes in doctor's training and EU working time legislation<sup>51,52</sup>. At the same time, the more radical changes to a mixed market of healthcare provision in England, compared with Scotland, are encouraging a

range of workforce innovation. With the introduction of PA education, England is likely to increasingly produce and employ PAs.

Scotland's choice is to become part of this worldwide development of the PA profession and/or to develop existing professional groups into expanded roles. To opt in will involve development costs. Whatever choice is made, it is important to focus on the skills and aptitudes that the service is indicating that it appreciates in the PA profession and that may represent current gaps: medically trained generalist; confident and autonomous within their SoP; can perform differential diagnosis; good communication skills; provides continuity and an education resource; confident in dealing with uncertainty. As in other countries, there is likely to be an inevitable level of resistance to PAs from established professions, should the numbers employed in NHS Scotland develop. It was significant, in this evaluation, that many medical and nursing professionals who started with scepticism about PAs, changed to enthusiasts who recognised potential in the PA role once they had worked with PAs. What is surely important is to ensure that Scotland develops healthcare professionals who can, will and are enabled to bring the skills and attitudes identified as valuable in this study to patients, teams and the service.

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