

# Perceived impact on efficiency and safety of experienced American physician assistants/associates in acute hospital care in England: findings from a multi-site case organisational study

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## Summary

**Objectives:** To investigate the contribution, efficiency and safety of experienced physician associates included in the staffing of medical/surgical teams in acute hospitals in England, including facilitating and hindering factors.

**Design:** Mixed methods longitudinal, multi-site evaluation of a two-year programme employing 27 American physician associates: interviews and documentary analysis.

**Setting:** Eight acute hospitals, England.

**Participants:** 36 medical directors, consultants, junior doctors, nurses and manager, 198 documents.

**Results:** Over time, the experienced physician associates became viewed as a positive asset to medical and surgical teams, even in services where high levels of scepticism were initially expressed. Their positive contribution was described as bringing continuity to the medical/surgical team which benefited patients, consultants, doctors-in-training, nurses and the overall efficiency of the service. This is the first report of the positive impact that, including physician associates in medical/surgical teams, had on achieving safe working hours for doctors in training. Many reported the lack of physician associates regulation with attendant legislated authority to prescribe medicines and order ionising radiation was a hindrance in their deployment and employment. However, by the end of the programme, seven hospitals had published plans to increase the numbers of physician associates employed and host clinical placements for student physician associates.

**Conclusions:** The programme demonstrated the types of contributions the experienced physician associates made to patient experience, junior doctor experience and acute care services with medical workforce shortages. The General Medical Council will regulate the profession in the future. Robust quantitative research is now required.

## Keywords

health policy, health service research, medical management, non-clinical, other medical management, physician assistant

## Background

Medical workforce shortages in many health care systems have led senior clinicians and managers to consider skill mix options within medical/surgical teams, often looking to 'mid-level' or advanced clinical practice roles to assist.<sup>1</sup> Physician assistants (known as physician associates in the United Kingdom, UK) are one such role. Physician assistants are well established in the United States (US), trained in the medical model to take histories, undertake physical examinations, order diagnostic tests and commence treatment within their scope of practice as agreed with their supervising doctor.<sup>2</sup> The role has been developed in other countries such as Canada, the Netherlands and the UK, but in others such as Australia, the role has been piloted but not progressed.<sup>3</sup>

Physician associate role development in the UK has been in the context of one of the lowest ratios of doctors to head of population in Europe and shortages of doctors.<sup>4,5</sup> Following pilots<sup>6</sup> and research in general practice in England, which found physician assistants acceptable, safe and cost effective,<sup>7</sup> there has been national policy to train significant numbers of physician assistants.<sup>8</sup> Thirty UK Universities now offer the two-year post-graduate physician associate course. In the near future, physician assistants will be regulated by the General Medical Council,<sup>9,10</sup> which opens the route for legislation for physician associate authority to prescribe medicines and order ionising radiation.

While physician assistants have been supported by some UK Royal Colleges since the mid-2000s, not all the medical profession have been supportive and many doctors have had little contact with physician assistants.<sup>11,12</sup> An innovative programme in England created opportunities for more clinicians to experience working with physician assistants through the

recruitment of experienced American physician assistants for a two-year period (2016–2018).<sup>13</sup> The National Physician Associate Expansion Programme (here-on referred to as the programme) recruited 27 experienced physician assistants to be employed in seven National Health Service (NHS) hospital organisations (known as trusts) in four regions of England. Four of the trusts were urban teaching hospitals, three were district general hospitals and one an urban specialty hospital. The trusts were varied in size. Two were classified as smaller hospitals, i.e. with an operating income of below £300 million<sup>14</sup>) and staff numbers ranging from 1000 to 17,000 (Table 1).

The physician assistants had worked as physician associates for between 5 and 23 years. The majority were female ( $n = 22$ ). The physician assistants worked in a range of specialties: acute medicine, cardiology, emergency medicine, geriatrics, gynaecology, oncology, paediatrics, surgery, trauma orthopaedics and vascular surgery. Twenty-two of the physician assistants had previous experience of working in the specialty and five did not. Matching the previous specialty of the physician assistants who applied to the programme to the posts created in the trusts was not always possible. At the end of the two-year programme, 10 physician assistants sought to extend their contracts, 10 returned to the US and 7 had returned earlier.<sup>15</sup>

This paper reports on a study which addressed the following questions: what does the presence of experienced physician assistants contribute to medical/surgical teams and the delivery of care; what factors are considered to facilitate or hinder the contribution of physician assistants in medical/surgical teams; and does the experience of working with experienced physician assistants influence views on a future place for physician assistants in medical/surgical teams?

## Methods

A mixed method, multi-site case study design was used in which data were collected from semi-structured interviews, and documentary review.<sup>16</sup> The interviews were conducted at two points (spring

2017 and late spring/early summer 2018) with a purposive sample. Interviews at time point one were with senior clinicians (medical directors and consultants). At time point two, senior clinicians were interviewed as well as other team members with whom the physician assistants worked. Invitation to participate at time point one was via the programme, and at time point two via consultants and the physician assistants. Thirty-six interviews (Table 2) were conducted with topic guides (tailored to each type of interviewee) that addressed questions of perceptions of contribution physician assistants, to the team/service, relationships with other team members and evidence of impact on efficiency, safety and cost.

Interviews were digitally recorded, transcribed, anonymised and the recordings deleted. Transcriptions were coded and thematically analysed, with differences resolved in team discussion.<sup>17</sup> Requests were made to clinicians and managers for any quantitative evidence of the contribution and/or cost-benefit analysis regarding the experienced physician assistants. Publicly available trust documents, e.g. operational plans and board minutes (2016–2018), were obtained ( $n = 198$ ) and analysed for any evidence of commentary or plans regarding physician assistants.<sup>16</sup> Data were then synthesised against the questions. The study was framed by a theory of the adoption of innovation in health care in which context, resources, knowledge purveyors and end-users interact to facilitate or hinder uptake and diffusion.<sup>18</sup>

## Findings

We report on the interviews and then the documentary analysis. The interview analysis identified three overarching themes: motivation to recruit experienced Physician assistants, changing views about the physician associate contribution to the team and perceptions of physician assistants positive contributions.

**Table 1.** Size of workforce in participating trusts.

Size of workforce	Number of participating trusts
<5000	3
5001–10,000	2
>10,000	3

**Table 2.** Participants at time point one and two.

	Time point one	Time point two
Medical Directors and deputies	8	8
Consultants	6	8
Doctors in training		2
Nurses		3
Manager		1

### *Motivations to recruit experienced Physician assistants*

All the senior clinicians interviewed reported that their organisation was involved in the programme because of the need to re-shape the workforce to address a number of medical staffing problems. These problems included shortages of medical staff, reliance on temporary staff and ensuring doctors received their training at the same time as providing safe staffing for service delivery. The extent to which medical directors saw physician assistants as integral to the re-shaping of the workforce, prior to the programme, varied. In two trusts, the employment of physician assistants, as well as other mid-level advanced clinical practitioners, was written into operational plans at the same time as the programme began. In contrast, medical directors from other trusts reported they were trying out the concept of physician assistants in medical/surgical teams:

“We were looking at physician associates and other ways of expanding health practitioners’ roles and so when this [the opportunity to employ experienced physician assistants via the programme] came up . . . we felt it might be a very useful thing to try for a couple of years.” Medical Director ID 6, time point one

### *Changing views about the physician associate contribution to the team*

At time point one, there were mixed views reported by senior clinicians as to the value of the physician assistants. Some reported they were yet to be convinced of the contribution of the physician assistants – particularly in view of the restrictions on physician associate practice such as not having authority to prescribe medicines or order ionising radiation:

“I think just in terms of having an extra body in the team, particularly on-call, at the weekends on-call is extremely busy and our trainee doctors constantly say, ‘We need more people’, . . . and this is another person who can go on the ward round, who can clerk patients, who can do some of the jobs, but they don’t speak in any broader sense in terms of improving quality.” Consultant ID 3, time point one

“I think we are incredibly hamstrung by the fact that the physician associates cannot prescribe or order investigations and without that their role is really quite limited and that is a huge, huge, huge impediment to going forward.” Medical Director ID 4, time point one

However, there were senior clinicians that reported from relatively early on that the physician assistants were making significant contributions:

“I know that the [speciality] team would have another one of [physician associate’s name] tomorrow because of the impact on the 18-week wait for [type of] cancer – [the physician associate] certainly almost single-handedly turned around that pathway to meet the target and more.” Associate medical director ID 10, time point one

Senior clinicians reported that, overall, the physician assistants were welcomed by other health professionals although there was some puzzlement about the role. In some services, it was reported they were initially mistaken to be equivalent to a health care assistant, a misunderstanding which was then addressed. Early weeks in post were described as induction and orientation to the English language as used in the UK, UK medical and surgical practice and the NHS:

“There certainly were [settling-in issues], but the type of individual that she is, she just kind of took that head-on, which is fine by us as a bunch of surgeons, and we spent a lot of time laughing, and that was just the language differences before we get into all the medicine !” Consultant ID 15, time point one

A learning process over time was described by the senior clinicians and other doctors in which the medical staff both came to understand what the experienced physician associate role could offer and also to trust the individual physician associate to undertake more and different types of work:

“When they [the physician assistants] come to me and discuss a case, I’m very satisfied that these guys [the physician assistants] know exactly what they’ve been asking, what they’ve been examining, and they’re always very concise but very thorough at the same time with what they tell me. I trust them implicitly . . . they’ve [the physician assistants] impressed me, and I think this is partly because I didn’t know what to expect when the guys first came over.” Doctor in training ID 8, time point two

There was reported widespread acceptance of the physician assistants and their role in services which extended across the health care team:

“I think if ever there was any scepticism, if ever anyone wasn’t convinced that they could be a success or that they could work, then the PAs [the physician

assistants] that have worked here have quashed that straightaway” Consultant ID 10, time point two

### *Physician associates’ contribution perceived to make positive difference to service delivery*

The widespread acceptance was attributed by interviewees to the types of contribution, detailed below, the experienced physician assistants made to medical/surgical teams.

**Contribution to continuity.** At both time points, the experienced physician assistants were reported to particularly contribute to continuity in the medical/surgical teams. Continuity was reported as problematic through the demands of the doctors’ rotas and doctors in training moving frequently. The physician assistants were reported to provide continuity in different ways: knowledge of individual patient status and management plans; knowledge of the preferred processes and procedures of consultant(s) and services; knowledge of the hospital systems and people; and in relationships with patients and their families:

“[the physician associate] understands the type of patients that we see and understands the management pathways that are required and is able to interdigitate with the medical staff to facilitate care – enhancing of the quality of care across the service . . . . In the way we have experienced it, the person who’s been in post, has enhanced the fluid running of the service as a whole.” Consultant ID 3, time point two

The continuity the physician assistants provided was described as important for patient safety and experience as well as reducing the need for costly temporary locum staff. This continuity was reported to have positive benefits for: patient care, patient flow, the consultants, junior doctors and nursing staff:

“Having the PAs [the physician associates] are that link, it’s like having not really junior doctors and not senior doctors but having someone you can rely on at the time you need a medical person around.” Ward sister ID 7, time point two

**Release of doctors’ time.** Another positive contribution described was the release of doctors’ time for attending more complex or new patients. The doctors all gave examples of the different types of work the physician assistants undertook and the ways in which this

work released doctors to be able to utilise their time more effectively:

“They’re [the physician assistants] very useful, they do a formal medical clerking of [paediatric] patients and they also have a lot of skills in other things such as taking blood, doing lumbar punctures, they can also do discharge summaries provided they don’t have medication on them which saves a lot of time and allows the more senior doctors to review patients and not be as involved in tasks such as doing bloods and things like that. . . most of our new junior doctors would not even attempt [taking bloods and cannulation] without numerous training sessions on the child so the registrars used to end up doing it.” Consultant ID 4, time point two

**Support to service efficiency.** Many of the experienced physician assistants were trained by their supervising consultants to undertake specific types of activities, which both aided their team to provide efficient care and also helped release the doctors’ time. Examples included physician assistants providing a central line insertion service across a speciality, providing a telephone clinic service to patients in a cancer service, providing a rapid access chest pain clinic and assisting in the placement of percutaneous endoscopic gastrostomies. In these types of examples, the consultants described patient waiting times as reduced, with the service now matching demand:

“[Experienced physician associate name]’s seen three months’ worth of patients, which means that those patients have been brought forward on the waiting list by three months, sorry haven’t got figures.” Consultant ID 7, time point two

**Support to doctors in training.** The senior clinicians recounted ways in which the physician assistants actively supported junior doctors in their induction to that service and in their training. Some of the experienced physician assistants, highly skilled in a procedure such as lumbar puncture, were reported to be a key learning resource for doctors in training:

“We’ve had a change over this week of junior doctors –out of about 23 junior doctors only six of those have worked in [speciality] before. By having [names of two experienced physician assistants], they show the new trainees how things work and support them learning [procedure common in the speciality].” Consultant ID 4, time point two

**Perceived contribution to patient experience.** The experienced physician assistants were perceived to be widely accepted by patients. Some of the consultants reported very positive patient reactions in response to the physician assistants. One of the consultants explained that patients ‘warmed’ to the physician associate because of their level of knowledge, while another considered the physician associate, ‘talked to patients in a language they understood.’ No negative patient comments were reported or requests by patients to be attended by a doctor instead.

### Documentary analysis: growth and evidence of positive contribution

The analysis of trust board minutes and reports over time identified a growth in plans to employ physician assistants. At the beginning of the period, two trusts had public documents mentioning the employment of physician assistants (amongst other advanced clinical practitioners). By the end of the two years, seven of the eight trusts had plans to increase the numbers of physician assistants in their workforce and support student physician associates’ clinical placements. In most trusts, this commitment was not quantified but one senior manager reported their demand analysis indicated 35 physician assistants were being requested across the medical and surgical specialties.

There was evidence in trust documents that the experienced Physician assistants had a positive effect for junior doctor working hours. In three trusts’ board minutes, guardian of safe working reports stated that the presence of the experienced Physician assistants had been a factor in the reduction of exception reports (formal reports by junior doctors of more hours worked than scheduled, rest breaks not taken, training opportunities missed<sup>19</sup>).

None of the documents provided quantified details of the physician assistants’ impact on costs, such as locum doctors’ costs, or service efficiency. Neither were interviewees able to provide quantifiable evidence of the physician assistants’ impact on services although they could give examples of clinical audit activity undertaken by physician assistants leading to a service improvement change.

### Discussion

This study found that over time, the experienced physician assistants became viewed as a positive asset to medical/surgical teams, even in services where high levels of scepticism were initially expressed. The positive contribution was described in terms of bringing continuity to the medical/surgical team which benefited patients, consultants, doctors-in-training, nurses

and the overall efficiency of the service. The contribution physician assistants make to continuity in medical/surgical teams in acute care has been reported before from the US, the Netherlands and the UK<sup>20–22</sup> and in support to doctors in training in the UK and US.<sup>22,23</sup> The study reports for the first-time indications of the positive impact that including physician assistants in medical/surgical teams had on achieving safe working hours for doctors in training. This merits more systematic investigation given the continuing widespread reports of doctors working beyond the safe and contractually agreed hours.<sup>24</sup>

While no quantifiable evidence was offered of impact on patient experience, outcomes, service efficiency, safety or costs, by the end of two years, all but one of the eight trusts had made public commitment to increase the numbers of physician assistants employed and host clinical placements for student physician assistants. This commitment was despite the repeated view throughout the study that the lack of physician associate regulation, with attendant legislated authority to prescribe medicines and order ionising radiation, was a hindrance in their deployment and employment. This is a situation that is due to change with the announcement of the General Medical Council as the regulating body for physician assistants in the UK<sup>10</sup> and longer-term investigation is required to assess the impact.

Greenhalgh et al.<sup>18</sup> argued that context, resources, knowledge purveyors and end-users interact to facilitate or hinder uptake and diffusion of innovation; physician assistants are an innovation in the UK, as was this programme. The context in 2016–2018 was one of growing shortages of all health professionals, unprecedented pressure on NHS acute services leading to suspension of all elective surgery for a short period and a strike by doctors in training over their contract.<sup>25–28</sup> This turbulent period was one of substantial doctor shortages, which are predicted to continue within the NHS with international recruitment as one of the solutions, albeit more problematic since the global pandemic.<sup>29</sup> The experienced physician assistants, together with their supervising consultants, acted as knowledge purveyors demonstrating the value Physician assistants brought to patient services. They demonstrated this to the wider organisation and influenced the views of clinicians and managers. Furthermore, they also influenced the views of a wider network of end users which included the multi-disciplinary team and the doctors in training who rotated between hospitals. While at a local level in our study, there was support to increase physician associate and other advanced practice posts, this support is not universal, for example in late 2019, junior doctors’ representatives voted against

their inclusion in the workforce.<sup>30</sup> This type of friction has been reported previously<sup>11</sup> and in other countries.<sup>3</sup> Longer term investigation is required to understand the extent and influencing factors of the spread, implementation and continuance of these new health professional roles.

### Strengths and weaknesses

The strength of this study is the use of multi-site case studies drawing on different forms of data collection and types of informant to triangulate the findings. It is strengthened by the use of underpinning theory, supporting generalisation at a theoretical level and pointing to the need for longitudinal studies. The greatest weakness is the absence of quantitative data which, while sought, were not readily available, a situation reported in other studies.<sup>20,22</sup> One issue the study could not explore was whether the personal characteristics of these experienced physician assistants made them and their practice different in some way from other experienced physician assistants. These were individuals who were willing to re-locate to a different country on a two-year contract to work in job which was novel in the UK without a registration or licensing structure. The similarity of the overall findings to other UK and international studies<sup>20–23</sup> suggest that this was not a factor but further study of medical/surgical teams with and without physician assistants is required as suggested above.

### Implications of findings

The NHS has been experiencing severe workforce shortages which is unlikely to change in the short-term and the longer-term impact of the pandemic on the workforce remains to be seen. Plans have already been implemented to increase the numbers of medical students.<sup>29</sup> The views offered here suggest that experienced physician assistants can support medical/surgical teams to provide high quality, efficient care at the same time as enhancing the working conditions for doctors in training as well their induction and training. Robust studies are now required that allow quantitative comparisons between similarly organised specialities with and without physician assistants. One challenge, in the English NHS context, will be supporting the large numbers of graduating and recently graduated physician assistants to become experienced physician assistants.

### Conclusion

Introducing overseas experienced physician assistants to NHS hospitals, which were naïve to the concept of

physician assistants/associates, demonstrated the contributions physician assistants made to continuity of patient care, junior doctor experience and acute care services with medical workforce shortages. In this, the physician assistants and their supervising consultants acted as knowledge purveyors to the wider service, organisation and network of care. Even though physician assistants were at this point not regulated, with attendant authority to prescribe medicines and order ionising radiation, all but one of the trusts planned to increase the numbers of physician assistants employed. However, concern remains in some quarters of the medical profession as to the place of such types of professionals. More robust quantitative research is required with methodological designs that can separate the impact of one type of health care professional from others in the complex delivery of acute medical and surgical care.

### Declarations

**Competing interests:** None declared.

**Funding:** This study was independently commissioned and funded through National Health Service (NHS) innovation and workforce development funds administered by Hillingdon Hospitals NHS Foundation Trust. The views expressed in this paper are those of the authors and not those of the funders, Hillingdon Hospitals NHS Foundation Trust or the NHS.

**Sponsor:** The Joint Faculty of Kingston University and St. George's University of London.

**Ethics approval:** The study was reviewed and approved by the host University (FREC 2017-01-008) and the NHS Research Ethics Committee (REC reference: 18/NI/0026).

**Guarantor:** VMD


**Contributorship:** VMD and MH conceived and designed the study. VMD, RL, MC and FT undertook data collection. All authors undertook data analysis. VMD drafted the paper and all authors have been involved in revising the work critically and approved the final version.

**Availability of data:** Data are available from VMD subject to appropriate approvals.

**Acknowledgements:** Our thanks to those who participated and to those leading the NHS National Physician Associates Expansion Programme.

**Provenance:** Externally commissioned and peer reviewed.

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