

The role of physician associates in secondary care: the PA-SCER mixed-methods study

Vari M Drennan MBE,^{1*} Mary Halter,¹ Carly Wheeler,¹ Laura Nice,² Sally Brearley,³ James Ennis,² Jon Gabe,⁴ Heather Gage,⁵ Ros Levenson,⁶ Simon de Lusignan,⁵ Phil Begg⁷ and Jim Parle²

¹Centre for Health and Social Care Research, Joint Faculty of Kingston University and St George's, University of London, London, UK

²Institute of Clinical Sciences, University of Birmingham, Birmingham, UK

³Centre for Public Engagement, Joint Faculty of Kingston University and St George's, University of London, London, UK

⁴Royal Holloway, University of London, Egham, UK

⁵Department of Clinical and Experimental Medicine, University of Surrey, Guildford, UK

⁶Independent researcher, London, UK

⁷The Royal Orthopaedic Hospital NHS Foundation Trust, Birmingham, UK

*Corresponding author v.drennan@sgul.kingston.ac.uk

Declared competing interests of authors: Simon de Lusignan is a Professor of Primary Care and Clinical Informatics and reports that the University of Surrey runs a physician associate course. Jim Parle chairs the UK and Ireland Board for Physician Associate Education and is director of the physician associate programme at the University of Birmingham. Phil Begg is an honorary faculty member at the University of Birmingham and has taught on the physician associate programme since 2008. James Ennis teaches part time on the University of Birmingham physician associate course. Vari M Drennan was a Health Services and Delivery Research Board Member in 2015.

Published May 2019

DOI: 10.3310/hsdr07190

Scientific summary

The PA-SCER mixed-methods study

Health Services and Delivery Research 2019; Vol. 7: No. 19

DOI: 10.3310/hsdr07190

NIHR Journals Library www.journalslibrary.nihr.ac.uk

Scientific summary

Background

Physician associates (PAs) (previously known in the UK as physician assistants) are a new and rapidly growing occupational group in the NHS. The employment of PAs in secondary care has been advocated by bodies such as the Royal College of Physicians and the Royal College of Emergency Medicine. Around 30 NHS hospital trusts were early adopters of PAs and demand was reported to outstrip the supply of UK-trained PAs by 2014.

Physician associates are trained at a postgraduate level in a medical model to work in all settings and undertake taking histories, physical examinations, investigations, diagnoses and treatments within their scope of practice, as agreed with their supervising doctor. PAs were first included in the NHS workforce plans in 2013. In June 2014, a study by some members of this study team reported that PAs in primary care were acceptable, effective and efficient in complementing the work of general practitioners and provided a flexible addition to the primary care workforce. Attention was drawn to the need to consider the appropriate level of regulation and the potential for authority to prescribe medicines to maximise the contribution of PAs. In August 2014, the Secretary of State for Health announced that there would be 1000 PAs available to be employed in general practice in England by 2020. A Department of Health public consultation on the regulation of PAs was undertaken in 2017 and the Minister of State for Health and Social Care announced in October 2018 that PAs in the UK would be regulated by legislation.

There was little known about the role of PAs in acute care in 2015 (the year this study commenced). Evaluations of small pilot projects in England (in 2006) and Scotland (in 2008) concluded that PAs assisted medical teams safely, worked at the clinical assistant level and were well received by patients; however, there were issues with PAs' lack of authority to prescribe medicines and order radiographs. Although the spread of PAs in English hospitals suggested that the role was seen as advantageous, there was little evidence available regarding the deployment, acceptability, effectiveness and costs of PAs. This study aimed to address that evidence gap.

Objectives

The research questions addressed were:

1. What is the extent of the adoption and deployment of PAs employed in acute hospital medical services?
2. What factors support or inhibit the inclusion of PAs as part of hospital medical teams at the macro, meso and micro levels of the English health-care system?
3. What is the impact of including PAs in hospital medical teams on patients' experiences and outcomes?
4. What is the impact of including PAs in hospital medical teams on the organisation of services, working practices and training of other professionals, relationships between professionals and service costs?

Methods

This was a mixed-methods study using an evaluative framework with dimensions of effectiveness, appropriateness, equity, efficiency, safety, acceptability and cost. There were four interlinked workstreams:

1. Surveys. Two national, electronic, descriptive, self-report surveys – one to medical directors (MDs) of secondary care NHS trusts and one to PAs. These surveys addressed research questions 1 and 2 in the absence of NHS workforce data on PAs and complemented those data gathered annually by the Faculty of Physician Associates. They were used to inform the methods and identify potential hospital trusts for workstream 3.
2. Reviews. A systematic review of published peer-reviewed evidence (PROSPERO CRD42016032895) and a policy review updated that published in the prior primary care study.
3. Investigation, in six hospital trust case study sites, of the deployment, impact and contribution of PAs, utilising (1) semistructured interviews with patients and relatives, senior and operational managers, senior consultants, medical and nursing team members and PAs; (2) requests for routine management data; (3) work diaries and observation of PAs; and (4) pragmatic comparison of patient outcomes and costs through retrospective anonymous record review in emergency departments (EDs) of patients attended (after triage) by either PAs or Foundation Year 2 (FY2) junior doctors as the first clinician. The primary outcome was re-attendance within 7 days. A subsample was also assessed for appropriateness by independent clinicians blinded to the attending staff. Sites included different-sized hospitals in inner-urban, urban and county environments in the West Midlands, London and the South East of England.
4. Synthesis of evidence from the three data-collection workstreams, presented and tested at an emerging-findings workshop with attendees from the research participants, patient and public voice representatives and other advisors to the study.

The patient and public voice was interwoven throughout the study including as part of the research team, membership of the study advisory group and through two patient and public voice groups in London and the West Midlands.

Findings

The reviews

The systematic review found 16 observational studies from North America in the specialties most frequently employing PAs in the UK. The studies were all in single sites and of variable methodological quality. In four studies of emergency medicine and one study of trauma and orthopaedics, when PAs joined the medical team as additional resources, there were variously reported reduced waiting and process times, lower charges, reduced re-attendance and admission rates and good acceptability to staff and patients. Analgesia prescribing, operative complications and mortality outcomes were variable. In internal medicine, from a single-site prospective cohort study, outcomes of care provided by teams that included PAs and teams consisting of doctors only were equivalent. None of the studies examined comparative cost-effectiveness.

The review of English policy and regional health plans found support for increased numbers of advanced clinical practitioners, including PAs, in order to address medical workforce shortages (particularly in general practice) and the growing demand for health-care services. The policy support included public finance assigned to PA training, albeit with particular reference to general practice rather than acute hospital services. By 2017, there were 33 PA studies courses in the UK, compared with two in 2013.

Evidence from the surveys and case studies

The adoption and spread of physician associates

One-third of MDs of acute and mental health trusts (71 out of 214) replied to the survey, the results of which indicated that 20 trusts were currently employing PAs and more were looking to do so. The initial impetus for their employment was junior doctor shortages and perceived growing patient demand. Lack of supply was reported as a constraint by MDs, although not all MD respondents could see a role for PAs. These findings were amplified at the micro-level element of the study. It was reported that developing advanced clinical practice roles, such as PAs, was a necessity in the face of (1) the shortages of junior doctors to cover the medical rotas, (2) the need to release junior doctors to undertake their training, (3) the growing workload created by increased patient demand and expansion of services and (4) recognised quality issues in some service delivery.

Factors inhibiting the employment of physician associates

Those that inhibited their employment were set against the factors that supported the inclusion of PAs in the medical/surgical teams. Foremost among these was the lack of regulation of PAs with lack of attendant authority to prescribe medicines and order ionising radiation. The lack of regulation raised concerns about governance, responsibilities and liabilities. The extent to which this was viewed as an inhibitory factor varied between specialties. A few clinical leaders (medical and nursing) were reported to consider that PAs were not the right group to develop or employ, favouring nurses or others. Likewise, a few consultants working in a high-dependency specialty who had employed PAs were not reappointing PAs when they left, as they considered that doctors were a better fit to the pace and work of that team. The extent to which the lack of authority to prescribe medicines or order radiographs was a factor in this experience was not clear.

The deployment of physician associates

Physician associates, with the exception of those employed in emergency medicine, were mainly deployed to undertake inpatient-ward-based activities of the medical/surgical team on weekdays during the core hours of 07.00 to 19.00. Only a small number of PAs spent a small amount of time in outpatient clinics and theatres.

Although PAs had a core role in undertaking ward work, individual PA roles were 'moulded' to meet the requirements of the specific medical/surgical team and reflected the capabilities of the PA. The longer a PA stayed in a post, the more skilled and knowledgeable they were reported to become in the work of that particular team. This was contrasted with the greater breadth of knowledge and skills developed by early-career doctors. Some PAs had been trained by their consultant(s) to undertake specific clinical procedures in support of faster patient access to these. All grades of doctors described a process of building trust in individual PAs' competencies through working with them.

Patients' and relatives' views

Patients and relatives did not understand the PA role; however, they placed more emphasis on their own care on than the job title of individuals in the team treating them. Patients and relatives reported PAs to be caring, approachable and good at communicating and were content with the physical examination and procedures undertaken. They perceived the PAs as important in keeping them informed about their medical care and management. All participants were happy to have a PA involved in their care in the future. Some additional caveats were added; for example, they thought that PAs were a good idea (to assist with staffing pressures) as long as they were properly supervised.

The impact of including physician associates in medical and surgical teams

One of the most frequently reported impacts on the organisation was that PAs provided continuity of staffing in the medical/surgical team. This provided benefit to patients through:

- continuity in presence on the inpatient wards, thus increasing the medical/surgical teams' accessibility for patients and nurses
- continuity in knowledge about current inpatient status, management plans and patients' progress, thus facilitating updating patients and the medical/surgical teams
- continuity in knowledge about the policies and practices (clinical and otherwise) of the department, the individual consultants and the hospital; this was of particular value for doctors in training who moved posts and hospitals frequently.

Physician associates were reported to work alongside and to support junior doctors in managing the medical/surgical teams' workloads, although in some specialties this was not realised in full because of a lack of authority to prescribe and order ionising radiation. PAs undertook significant amounts of non-patient-facing clinical work for the medical/surgical teams (e.g. preparing discharge summaries). The presence of a PA in the team was considered to release the doctors' time in two ways: (1) to attend more complex patients and (2) to attend patients in outpatient departments and theatre. All consultants, registrars and managers reported the PAs to be safe, with no serious incidents or patient complaints being recounted.

Physician associates were reported by all stakeholders to contribute to efficiency by smoothing and improving patient flow in, during and out of an episode of treatment/care. PAs were considered to provide 'oil' to the system. PAs were also reported to provide a communication 'bridge' between the medical team, the nursing team and those responsible for patient flow.

Initial resistance from doctors and nurses to the introduction of PAs was reported but dissipated over time. There were some reports of doctors and nurses who remained less positive to a new professional group. Some early-career doctors were reported to be concerned that the presence of PAs would reduce their opportunities for training in certain procedures as they thought that consultants would favour the PAs to do these; however, most doctors and PAs described the prioritising of training for doctors and were alert to such problems.

All senior managers and clinicians described the difficulty of attributing patient outcomes and cost to an individual professional when clinical provision was team based and affected by multiple other contextual factors. None of the managers or clinicians in any of the sites was able to provide any routine data or reports from which the impact of the involvement of PAs could be disaggregated. Some reported that the presence of the PAs enabled the senior doctors to be more efficient. Many managers and consultants reported that PAs reduced the use of expensive locum doctors, but although cost was important the primary consideration was patient safety and efficiency.

A random sample of anonymised emergency department (ED) patient records (305 seen by PAs and 308 seen by FY2 doctors) was analysed. The re-attendance rate within 7 days was 8% ($n = 48$), with no statistically significant difference in the rate of re-attendance between cases seen by the PAs and FY2 doctors after adjustment for confounding factors such as age and acuity (odds ratio 1.33, 95% confidence interval 0.69 to 2.57; $p = 0.40$). Clinical review by four independent clinicians, blinded to the type of professional, of a subsample of 40 records found the documented consultation to have been appropriate in the majority of PA and FY2 doctor cases with no errors or omissions likely to have caused harm. Three records (two of FY2 doctors and one of a PA) were identified as having an error or omission that breached clinical guidelines. In one case, the reviewers agreed that a senior doctor had agreed the consultation and plan, but they disagreed in the other two cases. The unit cost per hour to trusts of hiring PAs is higher than that of FY2 doctors who spend a limited period in ED on a training rotation.

Limitations

This mixed-method, multilevel study had both strengths and limitations. Hospitals are highly complex and exist within a dynamic system that is under great pressures. The protocol was changed twice to accommodate real-world pressures, most notably from a prospective comparison in the ED to a retrospective record review.

Future research

Comparative investigation is required of patient experience, outcomes and service costs in single secondary care specialties with and without PAs, and in comparison with other types of advanced clinical practitioners.

Conclusions

Physician associates were found to be acceptable and appropriate by most, but not all, doctors, managers and nurses. PAs positively contributed to continuity in the medical/surgical team, to patient experience and flow as well as to supporting the medical/surgical teams' workloads, thus releasing doctors for attending more complex patients and for their training. Patients had little knowledge of the PA role itself but viewed the PAs very positively within the context of the medical/surgical team. For many doctors, the training of the PAs in the medical model made the PAs particularly appropriate for the work they required in their teams. Although some specialties with high-dependency patients reported that PAs were less appropriate than doctors, most specialties only reported issues in terms of inefficiencies and problems in the workflow created by the lack of PA authority to prescribe and order ionising radiation.

This study has shown that PAs can provide a flexible addition to the secondary care workforce without drawing from existing professions, with benefits to continuity of care and patient flow. However, their utility in the hospital setting is unlikely to be fully realised without the appropriate level of regulation with attendant authority to prescribe medicines and order ionising radiation within their scope of practice.

Study registration

The systematic review component of this study is registered as PROSPERO CRD42016032895.

Funding

The National Institute for Health Research Health Services and Delivery Research programme.

Health Services and Delivery Research

ISSN 2050-4349 (Print)

ISSN 2050-4357 (Online)

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

Editorial contact: journals.library@nihr.ac.uk

The full HS&DR archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hsdr. Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: www.journalslibrary.nihr.ac.uk

Criteria for inclusion in the *Health Services and Delivery Research* journal

Reports are published in *Health Services and Delivery Research* (HS&DR) if (1) they have resulted from work for the HS&DR programme or programmes which preceded the HS&DR programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

HS&DR programme

The Health Services and Delivery Research (HS&DR) programme, part of the National Institute for Health Research (NIHR), was established to fund a broad range of research. It combines the strengths and contributions of two previous NIHR research programmes: the Health Services Research (HSR) programme and the Service Delivery and Organisation (SDO) programme, which were merged in January 2012.

The HS&DR programme aims to produce rigorous and relevant evidence on the quality, access and organisation of health services including costs and outcomes, as well as research on implementation. The programme will enhance the strategic focus on research that matters to the NHS and is keen to support ambitious evaluative research to improve health services.

For more information about the HS&DR programme please visit the website: <http://www.nets.nihr.ac.uk/programmes/hsdr>

This report

The research reported in this issue of the journal was funded by the HS&DR programme or one of its preceding programmes as project number 14/19/26. The contractual start date was in October 2015. The final report began editorial review in April 2018 and was accepted for publication in October 2018. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HS&DR editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HS&DR programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HS&DR programme or the Department of Health and Social Care.

© Queen's Printer and Controller of HMSO 2019. This work was produced by Drennan *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health and Social Care. This issue may be freely reproduced for the purposes of private research and study and extracts (or indeed, the full report) may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Prepress Projects Ltd, Perth, Scotland (www.prepress-projects.co.uk).

NIHR Journals Library Editor-in-Chief

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

NIHR Journals Library Editors

Professor John Powell Chair of HTA and EME Editorial Board and Editor-in-Chief of HTA and EME journals. Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK, and Honorary Professor, University of Manchester, and Senior Clinical Researcher and Associate Professor, Nuffield Department of Primary Care Health Sciences, University of Oxford, UK

Professor Andrée Le May Chair of NIHR Journals Library Editorial Group (HS&DR, PGfAR, PHR journals) and Editor-in-Chief of HS&DR, PGfAR, PHR journals

Professor Matthias Beck Professor of Management, Cork University Business School, Department of Management and Marketing, University College Cork, Ireland

Dr Tessa Crilly Director, Crystal Blue Consulting Ltd, UK

Dr Eugenia Cronin Senior Scientific Advisor, Wessex Institute, UK

Dr Peter Davidson Consultant Advisor, Wessex Institute, University of Southampton, UK

Ms Tara Lamont Director, NIHR Dissemination Centre, UK

Dr Catriona McDaid Senior Research Fellow, York Trials Unit, Department of Health Sciences, University of York, UK

Professor William McGuire Professor of Child Health, Hull York Medical School, University of York, UK

Professor Geoffrey Meads Professor of Wellbeing Research, University of Winchester, UK

Professor John Norrie Chair in Medical Statistics, University of Edinburgh, UK

Professor James Raftery Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

Dr Rob Riemsma Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

Professor Helen Roberts Professor of Child Health Research, UCL Great Ormond Street Institute of Child Health, UK

Professor Jonathan Ross Professor of Sexual Health and HIV, University Hospital Birmingham, UK

Professor Helen Snooks Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

Professor Ken Stein Professor of Public Health, University of Exeter Medical School, UK

Professor Jim Thornton Professor of Obstetrics and Gynaecology, Faculty of Medicine and Health Sciences, University of Nottingham, UK

Professor Martin Underwood Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, UK

Please visit the website for a list of editors: www.journalslibrary.nihr.ac.uk/about/editors

Editorial contact: journals.library@nihr.ac.uk