Institution: Kingston University		
Unit of Assessment: 3 – Allied Health Professions, Dentistry, Nursing and Pharmacy		
Title of case study: Addressing the UK doctor shortage: Evidencing the clinical safety and effectiveness of physician associates leads to increased numbers in the NHS to address UK doctor shortages		
Period when the underpinning research was undertaken: 2010 – 2019		
Details of staff conducting the underpinning research from the submitting unit:		
Names:	**Roles:**	**Periods employed by submitting HEI:**
Vari M Drennan MBE	Professor of Health Care & Policy Research	2007 – present
Mary Halter	Associate Professor	July 2005 – present
Period when the claimed impact occurred: 2014 – 2020		
Is this case study continued from a case study submitted in 2014? N		

1. Summary of the impact

Research conducted at Kingston University (KU) since 2014 has helped address the shortage of doctors in the National Health Service (NHS) in the UK through the following points of impact: (1) Training of physician associates (PAs); (2) Informing and shaping NHS policy and implementation.

The number of student PAs in two-year postgraduate-level courses grew from 24 in 2014, to 1,740 in 2020; and the number of NHS-employed qualified PAs grew from 100 in 2014, to 1,600 in 2019. Furthermore, 35 UK universities have benefited from an additional 3,080 students, representing GBP63 million in fees. Finally, NHS organisations report reduced spending on locum doctors, reduced incidence of unsafe over-time work safety, and improved better patient experience.

2. Underpinning research

Shortages of doctors have been a cyclical problem for the NHS and have become increasingly severe following the enforcement of the Working Time Directive for doctors in training. PAs (known as physician assistants in the UK before 2014) have been introduced to undertake some of the work of doctors whilst avoiding the depletion of other essential groups. PAs are trained at the postgraduate level to work under the supervision of a doctor. Only a handful of mostly US-trained PAs were working in the UK in 2009. Professor Drennan led a research team composed of researchers from three other Universities (University of Surrey, Royal Holloway University of London, and St. George's University of London), including Dr Halter. The team secured National Institute of Health Research (NIHR) funding (GBP449,294.85, 2010 to 2013) to investigate patient safety, acceptability to patients and other professionals, and efficiency and cost effectiveness of employing PAs in general practice in England **[R1]**. The study research questions were informed by an earlier investigation led in 2008 by Professor Drennan on the views of PA-employing general practitioners (GPs) **[R2]**.

The NIHR study included a Cochrane-type systematic review (led by Dr Halter) and comparative case studies (led by Professor Drennan) conducted on six GPs employing PAs and six not employing PAs in England. The case study methodology was published and cited by the NIHR as a good example of organisational case study research. It included a prospective study comparing PA and GP consultations. In total, 2086 anonymised patient records were analysed for clinical safety outcomes and processes of care. Prior to publication of the report, a scientific summary of the findings was circulated to advisors in the Department of Health and individuals involved in workforce planning.

The final report, published in 2014, **[R1]** stated that "PAs were found to be acceptable, effective and efficient in complementing the work of GPs. PAs can provide a flexible addition to the primary care workforce. They offer another labour pool to consider in health professional workforce and education planning at local, regional and national levels. However, in order to maximise the contribution of PAs in primary care settings, consideration needs to be given to the appropriate level of regulation and the potential for authority to prescribe medicines."

The study findings were the first internationally to present robust evidence of clinical safety, effectiveness, and costs of utilising PAs in primary care. The findings were reported to British GPs, in an open access paper in their Royal College's journal **[R3]**. This paper was among the top 10 papers downloaded from the British Journal of General Practitioners in the year of publication (3,007 downloads in 2015 and 16,400 downloads since publication). The findings were also reported to a wider public and international audience through publications in platforms such as PloS One, Health Expectations, and Social Science & Medicine **[R4, R5, R6]**.

The study findings suggest that further investigation should be conducted on PAs in hospital settings, the deployment of PAs, clinical safety, and effectiveness and efficiency. In 2015, Professor Drennan (principal investigator) and Dr Halter secured funding (NIHR 14/19/26, GBP483,779.00, 2015 – 2018) to investigate these questions in acute hospitals. The findings have been published in journals (2016 – 2020).

3. References to the research

R1 – **Drennan V**, **Halter M**, Brearley S, Carneiro W, Gabe J, Gage H, et al. Investigating the contribution of physician assistants to primary care in England: A mixed methods studs. Health Serv Deliv Res 2014; 2(16) DOI: 10.3310/hsdr02160

- Published in a peer-reviewed NIHR journal, based on a research proposal, with funding which had been secured through a rigorous NIHR scrutiny process.

R2 – **Drennan V**, Levenson R, **Halter M**, Tye C. Physician assistants in English general practice: a qualitative study of employers' viewpoints. J Health Serv Res Policy. 2011; 16(2):75-80. DOI: 10.1258/jhsrp.2010.010061

R3 – **Drennan VM**, **Halter M**, Joly L, Gage H, Grant RL, Gabe J, Brearley S, et al. Physician associates and GPs in primary care: a comparison Br J Gen Pract. 2015; 65(634):e344-e350. DOI: 10.3399/bjgp15X684877 REF2ID: 03-212-1860

R4 – de Lusignan S, McGovern AP, Tahir MA, Hassan S, Jones S, **Halter M**, Joly L, **Drennan VM**. Physician Associate and General Practitioner Consultations: A Comparative Observational Video Study. PLoS One. 2016; 11(8):e0160902. DOI: 10.1371/journal.pone.0160902

R5 – **Halter M**, **Drennan VM**, Joly LM, Gabe J, Gage H, de Lusignan S. Patients' experiences of consultations with physician associates in primary care in England: A qualitative study. Health Expect. 2017; 20(5):1011-1019. DOI: 10.1111/hex.12542

R6 – **Drennan VM**, Gabe J, **Halter M**, de Lusignan S, Levenson R. Physician associates in primary health care in England: A challenge to professional boundaries? Soc Sci Med. 2017; 181:9-16. DOI: 10.1016/j.socscimed.2017.03.045 REF2ID: 03-063-1859

4. Details of the impact

The implementation of Professor Drennan's and Dr Halter's programme of research has directly resulted in the following points of impact:

- Government policy/funding decisions have changed to increase the supply of UK-qualified PAs, thereby addressing shortages of doctors.
- Student PA numbers grew, providing additional fees to UK universities.
- Government strategies changed to include PAs in state regulatory legislation for the assurance of patient safety.
- NHS employers of PAs, in ameliorating shortages of doctors, have reduced locum doctor costs, met patient demand for appointments, and reduced incidence of unsafe overtime work performed by junior doctors.

Policy and funding decisions

The NIHR research findings **[R1]** reported for the first time the clinical safety, efficiency, acceptability and cost effectiveness of PAs in primary care. They were cited in the government's 2014 GP workforce review **[S1]**, underpinning the recommendation that more PAs should be available for GPs to employ; thereby addressing the shortage of doctors. The same report was also cited as underpinning the decision by Health Education England (HEE, an arm's length body of the Department of Health [DH] with responsibilities such as NHS workforce planning and education for England) to support higher numbers of PAs in training **[S2]**. This funding decision was announced by the Secretary of State for Health on 21 August 2014, and subsequently reported in the national news, and expanded in a 2015 speech as follows: '*I have already announced pilots for new physicians' associates, but today I can announce those pilots are planned to ensure 1,000 physicians' associates will be available to work in general practice by September 2020*' **[S3]**. As a result, PAs were included in the 2015 DH and NHS England GP Workforce Plan to address the shortage of GPs. PAs and their respective funding have been an integral part of all subsequent national policy documents addressing doctor shortages. These include the NHS Five Year Forward Plan (2015) and the GP Five Year Forward Plan (2015). In 2019, PAs were included in the NHS England Long Term Plan, with funding support for training (NHS Interim People's Plan 2019). In addition, the new 2019 NHS contract for General Practice allocated salary reimbursement funding from NHS England to GPs who employed PAs. Welsh policy makers who introduced PA funding have cited the research publications **[R1, R3]** in NHS Wales Board papers and minutes **[S4]**.

Increasing the supply of UK-qualified PAs

From 2015 to 2019, DH's annually published mandate to Health Education England included the target of achieving 1000 PAs available for employment in general practice by 2020 **[S5]**, with HEE predicting 2850 student PAs qualified by 2020 **[S6]**. The HEE Director of Innovation and Transformation writes that '*The NIHR funded research on physician associates (PAs) in primary and secondary care, led by Drennan, has supported HEE in a range of outputs linked to national workforce development and investment…The government is now supporting General Practitioners to employ physician associates in England, by reimbursing 70% of their salary, (the new GP contract published in January 2019) as well as encouraging specialist NHS services such as for mental health to employ physician associates (NHS Long Term Plan published January 2019).*' **[S7]**

According to the Health Education England annual reports (2014-2020) and a survey of Universities **[S8]**, PA students have significantly increased from 83 enrolling in 2014 to 650 enrolling in autumn 2019 (accumulated total 3032, 2015-2020). Since 2016, 35 universities have offered two-year post-graduate PA courses in the UK, compared to 4 in 2015 **[S8]**. The annual fees for the two-year master's level course are approximately GBP10,200, which equates to an increased income for universities of GBP63million. The government has fully funded some of these students for both fees and maintenance at a student cost of GBP31,310 over two years; and has funded clinical placements for all (GBP4,200 per student, with a total of GBP10.7million as of 2019) **[S9]**.

Government decision to introduce regulatory legislation for PAs
The research has also informed the subsequent UK policy decision to legislate for state regulation of the PA profession. The House of Commons Health Select Committee Report on the Primary Care Workforce (2016) quoted the research findings **[R1, R3]** in their recommendation to the government to legislate to include PAs in regulatory processes **[S10]**. The DH accepted the recommendation and held a national public consultation on the matter. Research conducted at Kingston University **[R1, R3]** was cited in this public consultation **[S11]**. In 2018, the government announced the intention to legislate for state regulation of the PA profession, with the General Medical Council as the regulator. The purpose of state regulation is to assure clinical safety and conformance with PA qualification requirements.

Tackling the shortage of doctors to the benefit of NHS organisations.
The 2019 NIHR research investigation on the contribution of PAs employed in six acute hospitals reported managers' testimony that PA employment in medical/surgical teams reduced expenditure on locum doctors and supported good patient outcomes. One manager's testimony said states that '*The locums profile has changed since employing PAs… I know it's definitely reduced here significantly*' **[S12]**. Stephen Hammond MP, Minister of State for Health, stated in a press release accompanying this research that '*[It] highlights the invaluable role Physician Associates play in the NHS, supporting doctors to deliver safe, high-quality care to patients. Our decision to regulate Physician Associates is a recognition of this enormous contribution*'. A second study in an additional eight acute hospitals employing 26 PAs in medical/surgical teams found that the presence of PAs reduced the number of occasions when junior doctors worked unsafely beyond their contracted hours **[S13]**.

5. Sources to corroborate the impact

S1 – Centre for Workforce Intelligence. In-depth review of the general practitioner workforce

S2 – Health Education England. Investing in people for health and healthcare: the 'workforce plan for England - proposed education and training commissions for 2015/16'
S3 – A New Deal for General Practice. 19 June 2015

S4 – Mid Wales Healthcare Collaborative Board Dyddiad y Cyfarfod: 21 September 2015

S5 – DH mandates to HEE 2016-2019 with targets to increase student and qualified PAs

S6 – HEE Annual reports on PA numbers and Universities 2016 (p 17) and 2019 (p 13)

S7 – Testimonial from the Health Education England Director

S8 – Ritsema TS, Roberts KA, Watkins JS. Explosive Growth in British Physician Associate Education. J Physician Assist Educ. 2019; 30(1):57-60. DOI: 10.1097/JPA.0000000000000233

S9 – House of Commons. Physician Associates: Training: Written question – 57396, 2016

S10 – House of Commons Health Select Committee, Primary care Fourth Report of Session 2015–16 HC 408. Section 98. Published on 21 April 2016.

S11 – Department of Health 2017 consultation response to The Regulation of Medical Associate Professionals in the UK (p 20)

S12 – 'What is the contribution of physician associates in hospital care in England? A mixed methods, multiple case study.' DOI: 10.1136/bmjopen-2018-027012

S13 – '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.' DOI: 10.1177/2054270420969572