A four-year undergraduate route to UK Physician Associate qualification

Emyr Yosef Bakker [1*], Jane Frances Rutt-Howard [1], and Rachel Norris [1]

1 School of Medicine, University of Central Lancashire, Preston, PR1 2HE, UK
* Corresponding author; ebakker@uclan.ac.uk

Emyr Bakker: ebakker@uclan.ac.uk
Jane Rutt-Howard: jrutt-howard@uclan.ac.uk
Rachel Norris: rnorris2@uclan.ac.uk

This is a non-final version of an article published in final form in the Journal of Physician Assistant Education. Link to publication: https://doi.org/10.1097/JPA.0000000000000540 .

A four-year undergraduate route to UK Physician Associate qualification

Introduction

Physician Associates (PAs)—initially called Physician Assistants—were first introduced to the United Kingdom (UK) in 2003 through a pilot scheme involving American Physician Assistants [1,2]. The late 2000s saw the development of four UK PA programmes [3]. The number of UK PA training programmes has since increased significantly, with 37 universities graduating PA students and approximately 2500 PAs working in the UK in 2021 [1]. Conventional PA training in the UK is through a two-year postgraduate course, and this remains by far the predominant model of UK PA training. It has been recognised that PAs represent an opportunity to address 21st century healthcare challenges in the UK through providing continuity of medical care to patients thus complementing medical and wider multidisciplinary teams [4]. This additional role within the UK healthcare system facilitates a team approach and allows medical doctors a more focused workload, time for complex clinical cases and increased opportunities for developmental training.

Despite the potential advantages that PAs provide, and managed voluntary professional registration with the Faculty of Physician Associates in the Royal College of Physicians, the profession is not yet legally regulated which presents workforce challenges [5,6]. A common frustration is the inability of PAs to prescribe; however, with incoming regulation by the General Medical Council—the same regulatory body for medical doctors—it is expected that prescribing rights will soon follow [7]. The situation is similar with regard to ordering ionising radiation. The continuing potential of and interest in Physician Associates has led not only to the explosive growth in traditional programmes [3], but also to more innovative approaches to PA education.

At the University of Central Lancashire (UCLan) we have developed a four-year undergraduate-entry degree that leads to an Integrated Master's in Physician Associate Studies (MPAS), in addition to our longer-running standard two-year postgraduate-entry degree. The undergraduate MPAS programme graduated its first two cohorts in 2021 and 2022, with class sizes increasing year-on-year. This article will outline the educational philosophy in England to context-set the training on MPAS, discuss the ethos and curriculum of the programme, and highlight its potential advantages relative to conventional PA programmes. Reflections on the UCLan experience will be discussed, with the article closing on future opportunities.

United Kingdom vs American Education Systems – Early Specialisation vs Broad Curriculum

To context-set training of Physician Associates in the UK, first the general education system within the United Kingdom will be outlined and compared to the American system. As education is a devolved matter within the United Kingdom [8], meaning that its constituent countries each have their own regulation and processes, the education system of England will be discussed.

A hallmark of English education is early specialisation. At the age of sixteen, students undertake General Certificate of Secondary Education (GCSE) exams in a wide variety of subjects. Recent data from The Office of Qualifications and Examinations Regulation (Ofqual) highlights that the highest proportion of students undertake nine GCSEs [9]. Numerous foreign credential comparisons have equated GCSEs as functionally equivalent to the US High School Diploma that is completed at the age of eighteen [10-12] (though this is without Advanced Placement courses). As such, the subsequent qualification that English students take after GCSEs is already reaching a deeper degree of specialisation relative to American qualifications completed at the same age. GCSEs are listed at Level 2 in the English education framework; Level 3 is considered the English pre-university

qualification level, whilst Level 4-6, therefore, represents three-year undergraduate degrees. Level 7 is considered master's degree level, whilst Level 8 is reserved for doctorates [13].

Following GCSEs, students who intend to progress to university must first complete Level 3 qualifications, most frequently General Certificate of Education Advanced Levels ("A Levels", for short). A Levels take two years to complete, typically between the ages of 16 and 18, and it is common practice for English students to study only three subjects at A Level. This trend for specialisation continues at the undergraduate degree level, where a standard Bachelor's degree is only three years (compared to four for an American Bachelor's degree) and the degree is typically focussed on the subject of choice, as oppose to the major/minor system and general education requirements that predominates American universities. However, there is also the option for undergraduate students on certain courses (e.g. Pharmacy) in the UK to study continuously for four years, in essence studying an extra year to a Bachelor's degree, and graduate with an integrated master's degree (e.g. MPharm) [14].

The early specialisation in English education led to seminal reports stating that in terms of subject-specific proficiency, a US Master's degree was equivalent to a British Bachelor's degree [15]. However, such statements are to be interpreted with a significant degree of caution, as the early specialisation in the English system has the natural corollary that English students will be deficient in subjects that are unrelated to their primary discipline of interest, whilst their American counterparts would be more well-rounded.

That said, the early specialisation system in the UK means that many professional training programmes—such as training to become a medical doctor, a pharmacist, a podiatrist, or a lawyer, for example—are all undergraduate-entry in the United Kingdom and end at either Level 6 or Level 7, rather than being deemed doctorate-level. Comparatively, such professional training is graduate-entry in the US, via what is termed professional doctorates (or Doctor's degree—professional practice [16]). Example English qualifications are shown in Table 1.

As highlighted in Table 1, professional training is typically at the undergraduate-entry level in England. Even where a doctorate is available in a clinical discipline—e.g. the English MD degree—this again requires original research, and is more analogous to a PhD than the MD awarded in the United States, which is more equivalent to the English medical degree (such as MBBS) as it is the degree required for licensure. This trend for undergraduate-entry clinical training led, quite naturally, to the proposal and development of an undergraduate-entry PA qualification, even though the majority of PA training courses are postgraduate-entry only.

Ethos and Curriculum of MPAS

The central aim of MPAS at UCLan is to produce safe, effective healthcare practitioners who can thrive in a multi-professional setting through training in the highest educational and clinical standards. Figure 1 outlines the current curriculum for the MPAS degree, including themes as well as individual modules. As may be evident in Figure 1 and as detailed below, the programme utilises a spiral curriculum [17].

The first year of MPAS involves studying three Level 4 modules: Integrated Science and Clinical Medicine 1 (ISCM1), The Fundamentals of Medical Research (FOMR), and Medical Skills and Quality Care 1 (MSQC1). In ISCM1, which they study alongside UCLan MBBS students, key aspects of medical sciences (anatomy, physiology, developmental biology, biochemistry, genetics, and immunology, among others) are introduced thematically through a body system approach. In MSQC1, again studied alongside MBBS students, MPAS students will learn about clinical and communication skills

together with placements and professionalism. Through MSQC1 students will gain early patient exposure (as early as Semester 1 of Year 1) and complete a two-week introductory placement following their summative end of year examinations. In FOMR, students develop key academic skills (such as academic writing principles and literature searching) alongside a broad understanding of different aspects of medical research, ranging from key principles to research ethics, *in vitro* studies through, clinical trials and clinical practice guidelines. Students are also introduced to critiquing research, in the context of both the evidence-based medicine pyramid [18]and study-level critique through, for example, Critical Appraisal Skills Programme checklists [19]. It is the School's ethos that the early integration of medical and scientific knowledge with clinical skills will foster student development into conscientious clinicians.

The spiral curriculum comes into effect in Year 2, where students study two Level 5 modules: Integrated Science and Clinical Medicine 2 (ISCM2) and Medical Skills and Quality Care 2 (MSQC2), as well as one Level 6 module: Evidence-based Population Health (EBPH). In their second year, students revisit the basic sciences in ISCM2, again thematically, but whilst Year 1 focussed primarily on the healthy body, Year 2 builds on this by including disease and disruption. The same spiral element can be seen in EBPH, where it builds on the fundamentals introduced in FOMR, but takes things forward from the underpinnings of medicine to population-level analyses and a life-course approach. The same building can be seen in MSQC2 from MSQC1, where instead of an isolated two weeks at the end of their first year, students are instead on placement one-day a week throughout the year and increase their clinical skills repertoire.

It should be noted that having a Level 6 module—equivalent of the final year of a bachelor's degree—in the second year of an undergraduate degree is atypical. However, it serves as a bridging module in terms of the difficulty of jumping from Phase I (Years 1+2) into Phase II (Years 3+4). In Phase II, MPAS students study the same content and alongside the more traditional postgraduate-entry Physician Associate students (MSc Physician Associate Practice - MPAP) and all modules are at Level 7. The spiral curriculum facilitates the strengthening of knowledge and skills from Phase I by providing a deeper clinical focus and significant experiential learning, with 50% of their time across Phase II being spent in clinical practice. Year 3 of MPAS is focussed primarily on general medicine, whilst Year 4 is dedicated to specialty areas. Feedback from our clinical placement partners has provided further validity to the undergraduate route, as no negative differences have been reported between undergraduate and postgraduate PA students. Additionally, MPAS students perform at least as well as their postgraduate counterparts on both internal course examinations and the Physician Associate National Exam.

The curriculum shown in Figure 1 and described above is the new version of the curriculum (effective starting in September 2021). In the original programme structure, MPAS students did entirely the same modules as MBBS students in Year 1, with a bespoke module only in Year 2. However, experience taught us that this impacted the ability of the MPAS cohort to form strong bonds and delayed the fuller development of their professional identity. As such, the programme was restructured to provide bespoke MPAS modules in Years 1 and 2; this had the additional benefit of strengthening the research and evidence-based medicine vertical alignment across the four years.

<u>Potential advantages and challenges relative to conventional UK PA programmes</u>
Outside of the obvious training differences that arise post-qualification between medical doctors and PAs, one of the more common differences, anecdotally, is the breadth and depth of basic science education. The fact that MPAS students study the same preclinical medical sciences as MBBS students, which are naturally more geared towards those relevant for patient care, provides an advantage relative to science students who later go on to postgraduate PA training. This early and continuing focus on their professional goals helps fuel their passion and long-term career planning,

as well as providing time for personal/professional development and networking within the PA community.

A common issue that postgraduate PA students encounter is funding their studies. In England, students are eligible for a government loan (Master's Loan) which (as of 24th October 2022) allows students to receive a maximum of £11,836 [20]. However, this only covers the tuition of the first year of the MPAP programme, and thus students are required to independently fund their second year. MPAS overcomes this disadvantage, as for undergraduate student loans there is a continuity of funding for the full length of the programme. Thus, MPAS students can focus for the four years with less financial worry, as repayment does not commence until after graduation. Continuity of funding for a four-year programme to become a PA allows students from disadvantaged and underrepresented backgrounds to more easily access PA training, and it is recognised that there is a need for widening participation in the field of medicine [21]. Further benefits of continuity have been highlighted through MPAS student feedback, with previous students explaining the benefits of organisational continuity and familiarity, particularly regarding assessment and student support.

As well as the natural benefits arising from shared modules with MBBS students in Phase I, MPAS students nonetheless have the opportunity for group formation and identity development through two MPAS-specific modules in Phase I. These modules expose them to documentation underpinning the PA curriculum in the UK, such as the Matrix Specification of Core Clinical Conditions [22], at an early stage. This is something that will continue to be monitored as regulation by the General Medical Council takes place, but it nonetheless allows MPAS students to understand their expected outcomes from the outset. As highlighted earlier, MPAS students also benefit from early patient contact, as early as Semester 1 of Year 1, which is a central ethos in UCLan School of Medicine and fosters their development into conscientious clinicians. Students also are empowered at UCLan to develop student-led peer-mentorship and networking schemes, facilitated through the development of PA Societies at the university.

Conclusion

Ultimately, the PA profession in the UK is still in its infancy. The significant growth of PA programmes has been in response to both interest from prospective students and to address the urgent healthcare needs of the UK. Although UCLan was the first to develop and graduate students from a four-year undergraduate-entry PA course, other institutions are now developing their own undergraduate programmes. It is expected that there will be even more growth of PAs in the UK when their professional regulation by the GMC takes place, with further studies surrounding their impact and efficacy becoming possible with increased PA numbers.

Figure Legends/Table Captions

Table 1: Education levels and examples in the education system of England and approximate US equivalents. Contains some information adapted from gov.uk [13]. Note that the approximate US equivalents are the authors' interpretations based on their understanding of domestic and international education.

Figure 1: MPAS curriculum. In green the scientific theme is shown, whilst the research & evidence-based medicine theme is shown in purple. Finally, the blue theme represents patient care, clinical skills and placements.

References

1. Wang H, English M, Chakma S, Namedre M, Hill E, Nagraj S. The roles of physician associates and advanced nurse practitioners in the National Health Service in the UK: a scoping review and narrative synthesis. *Hum Resour Health*. Sep 15 2022;20(1):69. doi:10.1186/s12960-022-00766-5
2. Aiello M, Roberts KA. Development of the United Kingdom physician associate profession. *Jaapa*. Apr 2017;30(4):1-8. doi:10.1097/01.Jaa.0000513357.68395.12
3. Ritsema TS, Roberts KA, Watkins JS. Explosive Growth in British Physician Associate Education Since 2008. *J Physician Assist Educ*. Mar 2019;30(1):57-60. doi:10.1097/jpa.0000000000000233
4. Ghadiri SJ. Physician associates: an asset for physician training and a 21st-century NHS? *Future Healthc J*. Oct 2020;7(3):e9-e10. doi:10.7861/fhj.teale-7-3
5. The Faculty of Physician Associates. The Faculty of Physician Associates at the Royal College of Physicians. https://www.fparcp.co.uk/
6. Williams LE, Ritsema TS. Satisfaction of doctors with the role of physician associates. *Clin Med (Lond)*. Apr 2014;14(2):113-6. doi:10.7861/clinmedicine.14-2-113
7. General Medical Council. Prescribing. 16th November 2022, https://www.gmc-uk.org/pa-and-aa-regulation-hub/map-regulation/prescribing
8. Clark MM. The future of early reading courses in initial teacher education institutions in England: Who controls the content? Article. *Education Journal*. 2020;(407):16-20.
9. Ofqual. GCSEs in 2021, all entries in all subjects, England only, 16-year-olds. https://www.gov.uk/government/publications/infographic-gcse-results-2021/infographics-for-gcses-2021-accesible
10. UCAS. International qualifications for entry to university or college in 2015. https://www.ucas.com/sites/default/files/2015-international-qualifications.pdf
11. North America Team (University of Warwick). USA. https://warwick.ac.uk/study/international/admissions/entry-requirements/usa
12. Hartpury University and Hartpury College. International Qualification Equivalences. https://www.hartpury.ac.uk/media/4290/international-grade-equivalances.pdf
13. UK Government. What qualification levels mean. https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels
14. Irwin N, Burnett KM, McCarron PA. Association between attendance and overall academic performance on a module within a professional pharmacy degree. *Currents in Pharmacy Teaching and Learning*. 2018/03/01/ 2018;10(3):396-401. doi:https://doi.org/10.1016/j.cptl.2017.11.008
15. The National Committee of Inquiry into Higher Education. Quality and standards [archived from the original on 07 October 2020]. https://web.archive.org/web/20201007203202/http://www.leeds.ac.uk/educol/ncihe/a5_083.htm
16. National Center for Education Statistics (Institute of Education Sciences). Glossary. https://nces.ed.gov/programs/coe/glossary/
17. Johnston HA. The Spiral Curriculum. Research into Practice. 2012:
18. Krleža-Jerić K, Gabelica M, Banzi R, et al. IMPACT Observatory: tracking the evolution of clinical trial data sharing and research integrity. *Biochem Med (Zagreb)*. Oct 15 2016;26(3):308-307. doi:10.11613/bm.2016.035
19. Critical Appraisal Skills Programme. Critical Appraisal Skills Programme. https://casp-uk.net/
20. UK Government. Master's Loan. https://www.gov.uk/masters-loan/what-youll-get
21. Martin AJ, Beska BJ, Wood G, et al. Widening interest, widening participation: factors influencing school students' aspirations to study medicine. *BMC Med Educ*. May 30 2018;18(1):117. doi:10.1186/s12909-018-1221-3

22. Department of Health. Matrix specification of Core Clinical Conditions for the Physician Assistant by category of level of competence. https://www.fparcp.co.uk/webapp/data/media/58eb57fd01018_Matrix_of_core_clinical_conditions.pdf

Table 1: Education levels and examples in the education system of England and approximate US equivalents. Contains some information adapted from gov.uk [13]. Note that the approximate US equivalents are the authors' interpretations based on their understanding of domestic and international education.

Numerical Level (for English Qualifications per gov.uk)	**Qualitative Descriptor (for Qualifications in England)**	**Example Qualifications (in England)**	**Approximate US Equivalent**
1	Secondary Education	GCSE Grades Below C / Grades 3, 2, or 1	US High School Diploma
2	Secondary Education	GCSE Grades C or above/Grades 9, 8, 7, 6, 5, or 4	
3	Pre-University Qualification	A Levels	Advanced Placement Courses / First Year of College/University
4	First Year of University (Undergraduate)	Certificate of Higher Education (CertHE)	Second Year of College/University
5	Second Year of University (Undergraduate)	Diploma of Higher Education (DipHE)	Third Year of College/University
6	Final Year of University (Undergraduate)	BSc (Hons) or BA (Hons) Law Degree (LLB) Podiatry Training	BA degree or BS degree
7	Master's Degree Level	MA—Master of Arts MSc – e.g. Traditional PA Courses Medicine (e.g., MBBS, MBChB, BMBS) Dentistry—BDS Undergraduate Integrated Master's in Physician Associate Studies—MPAS at UCLan Pharmacy—MPharm	MA degree or MS degree US Professional Doctorates (e.g., MD, JD)
8	Doctorate – note that although there are 'professional doctorates' in	PhD or DPhil DBA	US PhD or other Research Doctorate

	England, this is distinct from the US definition, as it is not possible to earn a doctorate solely through instruction in the UK	EdD DProf MD (research and thesis; higher than MBBS) DClinPsy	

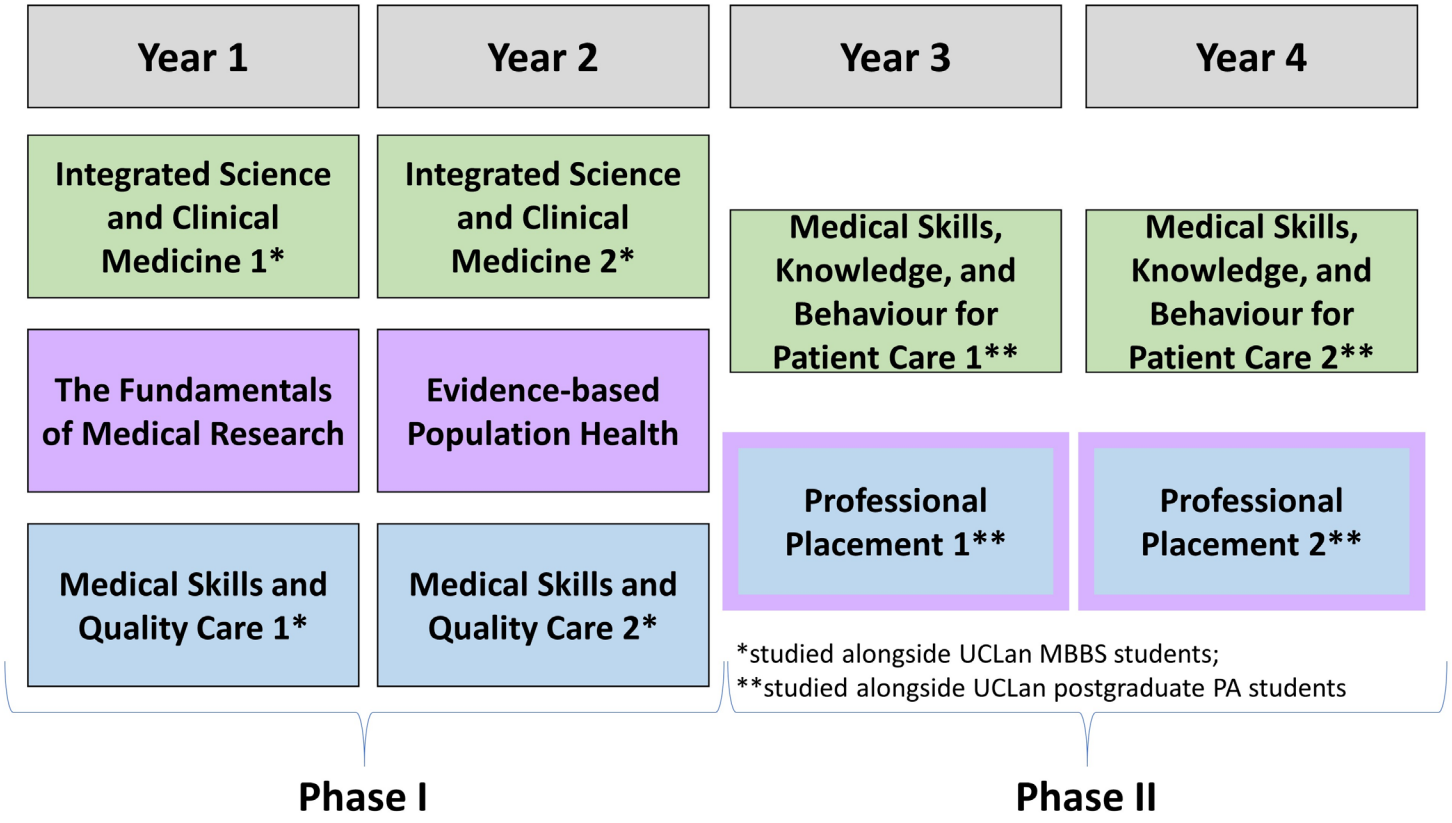

Figure 1: Integrated Master's in Physician Associate Studies curriculum. In green, the scientific theme is shown while the research and evidence-based medicine theme is shown in purple. Finally, the blue theme represents patient care, clinical skills, and placements.