

**Exploring the Preparedness for Practice and Continuing Professional  
Development (CPD) Requirements of Physician Associates:  
A Mixed Methods Approach**

A thesis submitted in partial fulfilment for the requirements for the award of  
Doctor of Philosophy at Edge Hill University

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May 2023

## **Declaration**

I declare that this thesis is entirely my own work. The content of this thesis has not been submitted, in full, or in part, for any other degree or qualification, at any other educational institution.

# **Abstract for PhD Thesis: Exploring the Preparedness for Practice and Continuing Professional Development (CPD) Requirements of Physician Associates: A Mixed Methods Approach by Alykhan Alyan Kassam**

## **Background**

The number of institutions offering a postgraduate qualification in Physician Associate (PA) Studies is increasing in the United Kingdom (UK), particularly in the Northwest of England. This is to ensure that PAs can work as healthcare professionals, tackling workforce demands in the NHS. This PhD project addresses the lack of knowledge regarding the preparedness for practice and CPD requirement of PAs.

## **Aims**

- 1) To understand how the training and early employment experience of PAs contribute to their preparedness for practice using the Competence Framework (Department of Health (DOH) 2012), a document which outlines the skills and behaviours which PAs are expected to exhibit upon qualifying, as a guide.
- 2) To understand how the educational and development needs of PAs can inform curriculum design during formal university training, as well as post-qualification CPD requirements.

## **Methodology**

A mixed methods approach was undertaken to ascertain the competence and preparedness of PAs, in addition to their CPD requirements. Electronic questionnaires (n=40) were completed by PAs and interviews (n=10) were conducted with PAs and clinical supervisors (n=3) using a virtual platform of their choosing. A fully virtual approach to collecting data was due to the safety precautions required in response to the COVID-19 pandemic. Descriptive

statistics were generated from the quantitative data. NVivo software was used to analyse the qualitative data thematically.

## **Findings**

Generally, most PAs (n=34, 85%) felt at least quite well prepared to work as a PA by their pre-qualification PA programme. In total, 100% of PAs (n=40) felt at least quite well prepared to perform a physical cardiovascular, respiratory or abdominal examination. The percentage of PAs reported feeling not well prepared to perform a physical paediatric examination was 25.6% (n=11). Furthermore, 42.5% of PAs (n=17) felt well supported to meet their CPD needs and 45% of PAs (n=18) felt that their overall CPD needs as a PA were being met. The findings from the PA interviews included many PAs being unable to articulate their learning or development needs due to lack of speciality knowledge and many PAs calling for protected time for training and CPD.

## **Conclusion**

The findings suggest that current PA curricula prepare and equip students with the skills and behaviour required for clinical practice. However, PAs need structured CPD to aid their development and this includes protected CPD time, greater access to conferences and more teaching opportunities, tailored to their specialty. There also needs to be increased teaching on CPD and paediatrics as part of the PA curriculum.

## **Original Contribution to Knowledge**

Research which has been carried out on PAs in the UK has been limited but has found that PAs are able to work successfully in healthcare teams. However, the preparedness for practice and CPD requirements of PAs is not exactly known. This PhD project has addressed this gap, thus making an original contribution to knowledge.

## **Key Words**

Physician associate; preparedness for practice; CPD; COVID-19; regulation

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## **Acknowledgements**

I would like to begin by expressing my sincere gratitude and profound thanks to my supervisory team for their continued support, encouragement, and words of wisdom. Dr Simon Watmough, my Director of Studies; Dr Jayne Garner, and Dr Emma Pearson – I cannot thank you enough. The completion of this thesis would not have been possible without you. Even during the unprecedented COVID-19 pandemic, you continued to prioritise my development as a researcher, for which I will always be truly grateful.

I would like to thank colleagues within Edge Hill University Medical School and the Faculty of Health, Social Care and Medicine for their support. I would like to acknowledge my fellow Graduate Teaching Assistants in the Faculty, and across the University, for being a fantastic, and much needed support network throughout this PhD journey. Particular thanks are noted to Dr Sarah Lyon and Ed Horowicz for their highly valued advice and support which was always welcomed. I would also like to note the support of the Northwest Physician Associate Forum Committee for kindly giving up their time to review documents and to provide feedback – thank you.

To each Physician Associate that participated in this project – thank you for your contribution. Even during the most challenging of times, you were all able to participate in this project and share your experiences so openly.

Finally, I would like to thank my family for their continued support and belief in me.

## **Dedication**

This thesis is dedicated to all the Healthcare Heroes who worked tirelessly during the COVID-19 pandemic – thank you for all that you do, always.

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## **Abbreviations**

<b>A&amp;E</b>	Accident and Emergency
<b>ANP</b>	Advanced Nurse Practitioner
<b>BMA</b>	British Medical Association
<b>CBD</b>	Case-based Discussion
<b>CCF</b>	Competence and Curriculum Framework
<b>COVID-19</b>	Coronavirus Disease
<b>CPD</b>	Continuing Professional Development
<b>DOH</b>	Department of Health
<b>FPA</b>	Faculty of Physician Associates
<b>GMC</b>	General Medical Council
<b>GP</b>	General Practitioner
<b>HEE</b>	Health Education England
<b>MDT</b>	Multidisciplinary Team
<b>Mini-CEXs</b>	Mini Clinical Evaluation Exercises
<b>MSc</b>	Master of Science
<b>OSCE</b>	Objective Structured Clinical Examination
<b>PA</b>	Physician Associate
<b>PAMVR</b>	Physician Associate Managed Voluntary Register
<b>PgDip</b>	Postgraduate Diploma
<b>PPE</b>	Personal Protective Equipment
<b>RCP</b>	Royal College of Physicians
<b>Teams</b>	Microsoft Teams

## **Chapter One – Introduction**

### **Background to the Physician Associate Role**

The physician assistant role in the United States (US) was developed in the 1960s with an aim to meet the needs of underserved populations (Ross et al. 2012). Since 2013, the term physician associate (PA) has been used in the UK as opposed to physician assistant because in the UK, the term physician assistant refers to unqualified healthcare assistants in hospitals who perform directed tasks, such as phlebotomy (Drennan et al. 2015).

PAs are healthcare professionals who work in a variety of healthcare settings under the supervision of a trained doctor (Department of Health (DOH) 2012). The first PAs to work in the UK were brought over from the US in 2003 and were employed within primary care in the West Midlands. Their success led to the ultimate decision of establishing PA training programmes in the form of postgraduate medical education (Ross et al. 2012). From around 35 PA trainees qualifying in 2014, (Parle and Ennis 2015) project a staggering approximation of between 400 and 450 PA graduates in the UK in 2018. This is in stark contrast to the US where over 4,500 physician assistants graduate every year from over 150 institutions (Ross et al. 2012).

PAs were introduced in the UK to ensure that the increasing demands in the NHS could be met by a suitably qualified healthcare professional who could work within a multidisciplinary team (British Medical Association (BMA) 2018). PAs support doctors in the diagnosis and management of patients and may

work within GP surgeries or hospitals (NHS Health Careers 2018). NHS England (2016) describes PAs as an integral part of the workforce. This is attributed, alongside the rising demands of the NHS, as the reason why Health Education England (HEE) decided to invest in the training of 1000 PAs to support general practice by 2020 (BMA 2018). This significant investment of public money requires in-depth research and a solid understanding to establish whether the money invested will be of benefit to the healthcare sector and specifically to the healthcare teams within which PAs will be working.

PA numbers remained low in the UK until 2018 and PAs were virtually non-existent in the Northwest of England until Health Education England (HEE) decided to develop the PA workforce. PAs have been described as generalists who have the ability to take on different roles in challenging times for the NHS (Roberts 2018). Appendix 1 outlines the tasks and procedures undertaken by PAs (Ritsema 2017). An annual census conducted by the Faculty of Physician Associates (FPA) revealed that there were 450 PAs working in the UK in 2017 (Ritsema 2017); this figure had increased significantly to 1788 PAs in 2020, of which only 269 PAs were working in either the Northwest or Mersey regions of the UK. (RCP 2021). From the census data, Ritsema (2017) identified general practice (n=57, 26%) as the most common generalist speciality within which PAs are working. A total of (n=194, 89%) respondents in the census were either moderately or very satisfied when asked how they felt about their work.

Currently, there are 2,850 qualified PAs in the UK (Straughton et al. 2022). Whilst PAs are an unregulated profession at present, the role is due to become regulated by the General Medical Council (GMC), however, it was recently

announced that regulation will not happen until summer 2023 at the earliest (RCP 2022).

### **Training of Physician Associates in the UK**

In the UK, PAs must hold an undergraduate level degree in a life science or health science field prior to enrolling on a PA training programme. The PA training itself is at postgraduate level and takes place over two years.

Graduates may be awarded a Postgraduate Diploma (PgDip, 120 credits) or a Master's degree (MSc, 180 credits). The PA training consists of a prescribed number of clinical placement hours which must be fulfilled and spread across several medical specialities.

The PA curriculum structure is based on the medical model of education where students are taught theory and undertake practice in several areas as well as utilising various methods of assessment such as assignments, Objective Structured Clinical Examinations (OSCEs) and presentations (Nassar and Bethel 2009) throughout the programme. Whilst on placement, which may be in a primary or secondary care setting, PA students are assigned mentors and clinical supervisors who review their progress and provide feedback to them, as well as to university staff regarding their assessment of the students' skills and competence.

Following their formal training, PA students are required to take a national examination which is formed of a written component (200 single best answer, multiple choice questions) and a practical component (14 station OSCE). This



examination must be passed to practice as a PA in the UK. A written exam which tests general medical knowledge also needs to be passed every six years to gain recertification and to continue practicing as a PA (Ross et al. 2012).

PAs are required to undertake 50 hours of CPD per year to update their professional competence and practice. PAs are expected to maintain a generalist capability, although they must engage in specialist CPD should they be working within a specialist field. Adequate CPD must be undertaken during every five-year period of practice. The direction and focus of the CPD will usually be determined by PAs themselves and will be assessed during appraisals with supervisors or managers (RCP 2018c).

### **Future of Physician Associates in the UK**

Doctors have expressed their concerns regarding the lack of PA regulation, the lack of clinical governance and supervision, and the lack of clarity amongst doctors, patients and the public about PAs and their roles (BMA 2016). From the views gathered, it is apparent that much work around PAs and their roles needs to be done to achieve future clarity and to ensure that maximum value and impact is obtained by using PAs in different healthcare settings.

Ross et al. (2012) claim that nurse practitioners lack the broader medical perspective that is required to work flexibly within healthcare in comparison to PAs. While (2015) counterargues this by stating that nurses could be a potential solution to meet the demands of the NHS, as opposed to PAs. While (2015) acknowledges that nurses in the UK are regulated and can prescribe once they

obtain the relevant qualification. This contrasts with PAs who cannot prescribe and at the time of writing, are not regulated. The role of pharmacists is also expanding with many pharmacists now working in general practice to reduce the workload of salaried general practitioners (GPs) (While 2015). Taking the potential benefits of the expanding roles of nurses and pharmacists into account, this adds considerable pressure on the PA workforce in ensuring that their role is not limited by comparison, thus ensuring that the potential impact of PAs is not devalued in the future. Support from the NHS to develop a workforce which includes PAs as suggested by Ross et al. (2012) is needed to combat the multifaceted NHS crisis.

The argument of PAs offering a potential solution to the demands faced by the NHS, particularly in general practice, has been put forward by Drennan et al. (2015). This is not least due to the shortage of GPs and the rising population in the UK. HEE have sponsored the creation of posts in the Northwest of England for PA students graduating in early 2018. All PA clinical placements in the Northwest are sourced for the students and supported by HEE and their partner universities.

The training of PAs in the UK is much shorter than that of GPs and PAs also attract a lower salary than GPs, so would be deemed cost-effective. However, several issues are still at play, particularly the limitations of the role of a PA not least due to their inability to prescribe (Ghadiri 2020). If prescribing rights were given to PAs, this would increase the value they can add to healthcare teams (Ross and Parle 2008). Despite this contentious issue, there is already some evidence suggesting that PAs contribute greatly to the primary and secondary

care workforce (de Lusignan et al. 2016, Halter et al. 2017, Drennan et al. 2019).

The FPA have run an annual census since 2014 which provides insight that is vital for workforce planning and research in relation to PAs nationally. Key highlights from the 2020 FPA census (RCP 2021) which was completed by 742 PAs (a response rate of 41%) include:

- A total of (n=416, 56%) respondents had healthcare experience across 38 different roles prior to becoming a PA
- Altogether, (n=482, 65%) of respondents were working in secondary care, with an NHS trust as their main employer
- Collectively, (n=467, 63%) of respondents reported not having protected time as part of their contracts; from those that had protected time, over 90% of respondents used this time for CPD.

The statistics above from the census suggest that PAs who have protected time do use this time to engage in CPD. However, as the majority of respondents do not have protected time, this could mean that they are having to engage in CPD outside of work time or, depending on their circumstances, may not be engaging in much CPD at all.

## **The Competence and Curriculum Framework**

The Competence and Curriculum Framework (CCF) for the Physician Assistant is a document produced by the DOH (2012) which outlines the skills and behaviours which PAs are expected to exhibit when they qualify, as well as guidelines for theoretical and clinical learning. The CCF (DOH 2012:2) defines a PA as:

*“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”.*

Competence is defined within a professional context by (DOH 2012:33) as:

*“the broad ability with which a professional person is able to practise to the required standards in a predetermined range of clinical fields and across a range of situations”.*

The CCF provides guidelines for theoretical and clinical learning (combined minimum total of 3150 hours) of which a minimum of 1600 hours should be assigned to clinical experience (see Table 1, below).

**Table 1:** Summary of current minimum clinical experience hours for PAs, adapted from Ross and Parle (2008)

<b>Speciality</b>	<b>Minimum Hours</b>
Community medicine	280 hours
General hospital medicine	350 hours
Accident and emergency	160 hours
Mental health	70 hours
Obstetrics and gynaecology	70 hours
Paediatrics (acute)	70 hours
<p>In addition to the 1000 hours of specified clinical experience outlined, PAs are also required to undertake 600 hours of additional clinical skills experience. Up to 200 hours of the additional clinical skills experience may consist of learning in clinical skills centres. Therefore, the total number of minimum clinical experience hours is 1600 hours.</p>	

The framework provides higher education institutions with a degree of autonomy and flexibility when designing their own PA curriculum for the provision which they will offer (Ross and Parle 2008). A key benefit of this is that institutions may wish to focus on local patient needs, and the placements which they offer may be aligned to local patient needs also, which brings a greater sense of reality to PA students whilst on their training. An extract of the Competence Framework can be found in Appendix 2 of this thesis.

The CCF (DOH 2012) also contains a matrix of core clinical conditions which is divided into 4 categories: 1A, 1B, 2A and 2B. These categories represent the level of knowledge required for each condition. 1A conditions are those for which a PA can take a significant role in diagnosis and management. 1B conditions are those for which a PA can identify the condition and make a possible diagnosis but can take measures to avoid deterioration and refer appropriately. 2A conditions are those which PAs can manage once the condition has been diagnosed. 2B conditions are those where PAs can undertake day-to-day management of the patient once diagnosis and management of care has been decided. Further details and examples of the above conditions, as well as how they apply to PAs is included in Appendices 3 and 4.

### **Preparedness for Practice and Competence to Undertake Key Skills**

There has been some research carried out previously into preparedness for practice in the healthcare professions. A study in Canada has shown that occupational therapy students and recent graduates were comfortable with their knowledge-based skills but were lacking in technical intervention skills.

Participants in this particular study reported a duration of between six months to two years in feeling clinically competent (Hodgetts et al. 2007). UK based research into the preparedness for practice of physiotherapy graduates found that they felt unprepared for employment (Jones et al. 2010). Radiographers and their work-based supervisors had differing perceptions of the preparedness of radiographers. Despite reporting that graduates were well prepared for their role, areas for curriculum development were also identified (Mackay et al. 2008)

thus strengthening the need for research into preparedness for practice as a means for enhancing curriculum, ensuring graduates are better prepared for practice, and increasing patient safety. A higher education institution would not automatically know which competencies graduates may struggle with, unless research is conducted on which parts of the curriculum are good for preparing graduates and which parts could be improved.

There is a wealth of literature relating to preparedness for practice in medical education, particularly in the UK. The GMC's reforms since 1993 have been due to evidence that doctors were not being prepared for practice (GMC 1993, Calman and Donaldson 1991). Moreover, the GMC itself has been forthcoming in commissioning work into preparedness for practice. In 2008, the GMC commissioned a collaboration between The Universities of Newcastle, Warwick and Glasgow, and The Northern Deanery. Findings suggested that preparedness for practice could be improved by more experiential learning and structured teaching sessions on prescribing (Illing et al. 2008). This research contributed to the GMC's medical education recommendations (GMC 2009). Several medical schools have also been evaluating preparedness for practice. There is some consensus on this in medical education, particularly that preparedness for practice has been improving in recent years (Bleakley and Brennan 2011, Morrow et al. 2012, Goldacre et al. 2014). Whilst this research has shown there to be some differences in preparedness between graduates from different medical schools (Cave et al. 2007, Goldacre et al. 2010) other studies have shown similarities in the skills which graduates feel prepared for (Illing 2013). For example, Tallentire et al. (2011) found that graduates felt well prepared for consultation skills but less prepared for acute care and prescribing.

Watmough et al. (2012) compared self-perceived competencies between traditional and reformed curriculum graduates from the University of Liverpool, six years after graduation. Questionnaires were used to collect data; participants provided their answer on a 5-point Likert scale to self-assess their preparedness in undertaking different skills. SPSS software was used to analyse the data and statistical tests were carried out to identify significant differences. A limitation of this study was that no other perspectives (other than the graduates themselves) were taken into consideration and no independent assessment of graduates' skills was carried out. Findings suggested that graduates who followed a traditional medical curriculum perceived themselves to be better prepared for competencies relating to knowledge, whereas the graduates who followed the reformed medical curriculum perceived themselves to be better prepared for the practical aspects of working as a doctor. The research concluded that curriculum reform influences graduates' self-perception of competencies and preparedness for practice, six years after graduation.

Another study which investigated the self-perceived competence of graduates was carried out by Watmough and Kennedy (2014). Questionnaires were distributed to FY1 doctors at 10 hospital trusts in the Northwest of England. Like the above study, participants were asked to rate their preparedness and competence to undertake the skills required by the General Medical Council (GMC) on a 5-point Likert scale. A limitation of this study is that graduates were rating their perceived competence only; no other measurement of their skills ability took place. It was also unclear if the respondents were basing their



perceptions of competence on their undergraduate medical training or on the teaching and supervision they were receiving as FY1 doctors.

Monrouxe et al. (2014) conducted research which was commissioned by the GMC, investigating the preparedness of UK medical graduates. The purpose of the research was to better understand issues relating to preparedness for practice within medical education and to inform any regulatory changes, should they be required. The researchers found that transition interventions, such as shadowing and induction, are useful in supporting how prepared students are, but only if they are used effectively. They also found that trainees felt more confident with greater experience, however, trainees felt unprepared when faced with challenging circumstances such as lack of staffing or new colleagues, in situations where they had previously felt confident.

Research into preparedness for practice in medical education has been shown to be useful and has led to recommendations being made by the GMC to develop curricula. In the context of this PhD project, there is a clear justification for preparedness for practice research in PAs, not least because they are a relatively new profession in the UK. Findings from the PhD project will have significant value, as demonstrated by preparedness for practice research in other healthcare professions and will be able to inform curriculum development and CPD requirements of PAs.

## **Project Design**

The PhD project used a mixed methods approach, and the Northwest of England was used as a case study. A case study is an in-depth and intensive investigation about a person or a group of people which aims to generalise findings across wider groups (Heale and Twycross 2018). The Northwest was particularly chosen as a case study due to the rapid expansion of PA training in the region, attributed to the significant investment in PA training made by HEE. Further to this, as PAs are a new profession in the UK, but particularly so in the Northwest, it was anticipated that a greater understanding will be developed as to how prepared newly qualified PAs are for practice, as well as their competence in performing key skills and the impact (if any) they are having within existing healthcare teams which PAs have not worked in before.

Whilst this PhD project has used the Northwest as a case study, the findings from the project are applicable across the country as the development and growth of PAs are nationwide. In a wider context, the Northwest could also be used as a case study in future research to investigate developments of any new profession. Therefore, the outcomes of the project can not only be used to inform PA curriculum, regulation and CPD requirements across the Northwest, but nationally also.

This project had two distinct stages for data collection and three stages for data analysis. The methods used were questionnaires and interviews. The methodology chapter of this thesis provides further detail regarding the research design.

## **Project Population**

There are two participant types in the PhD project – PAs and clinical supervisors. All participants were employed within NHS trusts in the Northwest of England. PAs were invited to complete an electronic questionnaire in Stage 1 of the data collection process, whereas both PAs and clinical supervisors were invited to attend virtual interviews in the second stage of data collection. The methods employed in this PhD project was required to be adapted considerably due to the COVID-19 pandemic. Further details regarding the changes which were made are explored in greater depth later in the thesis.

## **Research Question**

How prepared are Physician Associates to undertake the skills outlined in the Competence Framework and what are their CPD requirements?

## **Aims**

- 1) To understand how the training and early employment experience of PAs contribute to their preparedness for practice using the Competence Framework (a document which outlines the skills and behaviours which PAs are expected to exhibit upon qualifying) as a guide.
- 2) To investigate how the educational and development needs of PAs can inform curriculum design during formal university training, as well as post-qualification CPD requirements.

## Objectives

- 1) To identify the level of preparedness PAs are rated to undertake the skills outlined in the Competence Framework, by self-assessment and through the judgement of clinical supervisors.
  
- 2) To establish the factors which affect the preparedness and competence of PAs to undertake the skills outlined in the Competence Framework, in relation to their training and early employment experience.
  
- 3) To determine the CPD requirements of PAs, through self-declaration and from the judgement of clinical supervisors.

By identifying “what” the preparedness level of PAs is (objective 1), this project progressed to understand “why” the preparedness and competence level of PAs is perceived as such (objective 2). Finally, objective 3 examined the CPD requirements “when” the outcomes of objectives 1 and 2 are taken into consideration. Hence, the three objectives outlined were carefully constructed to allow the research question, which investigated “how” prepared PAs are, to be answered in great depth. The objectives also aided the research design of this research project.

It is intended that the findings of this research will inform changes to the PA curriculum (at Edge Hill University and nationally), and will inform CPD requirements for PAs as the profession moves towards regulation.

## **Hypothesis**

Current PA curricula prepare and equip students with the skills and behaviour required for clinical practice. Post-qualification, PAs would like structured CPD to aid their development.

## **Conceptual Framework: Communities of Practice**

A conceptual framework is a network of interlinked concepts which provide a comprehensive understanding of phenomena and provides an interpretive approach to knowledge (Jabareen 2009). There is a well-recognised need for the greater use of theory to address research translational gaps. Instead of providing a theoretical explanation, conceptual frameworks provide understanding (Jabareen 2009), which is of great significance in research, in which data produced needs to be analysed and understood well to allow conclusions to be determined. In this project, the theory of communities of practice was used as a conceptual framework, and is discussed in greater depth below.

The theory of communities of practice, as supported by Wenger (2004) is important for new healthcare professional graduates, especially those of a new profession who are seeking to establish their own identity and work with others. This theory has been used as a conceptual framework in research across the fields of healthcare and education and seeks to understand how a group of people with a shared interest can enhance their knowledge through continual interaction and dialogue (Mortier 2018). Andrew et al. (2008) describe the

theory of communities of practice as a valuable practice-based framework which can be used to enhance collaborative learning within the workplace. Similarly, Scarso et al. (2009) identify communities of practice as useful for providing insights into good practices or mistakes to be avoided.

Wenger (2011) outlines three characteristics that can be used to define a community of practice:

- The domain: the group of people must have a shared domain of interest or shared competence that can distinguish them from others. The group can share knowledge and learn from each other, despite the lack of appreciation or recognition of skills and expertise by those outside the group.
- The community: this entails that those who work together help each other and share information. It is not simply the job title that makes a community of practice, it is the relationships and collaborations with the group that contribute to the establishment of a community of practice.
- The practice: the group of people within the community of practice are practitioners who develop a shared way of working including sharing resources, tools, being able to problem-solve together and share stories that become a shared repertoire for their practice.

There has been considerable interest in the development and evaluation of complex interventions to improve health. Such interventions can only have a significant impact on healthcare if they are shown to be effective when tested, are capable of being widely implemented and can be normalised into routine

practice (Murray et al. 2010). To date, a problematic gap remains in existence between research and implementation. In the context of this PhD project, the data will be transposed onto the domains outlined by Wenger (2011) to determine how PAs as a community of practice, and, as a relatively new profession within the wider NHS workforce, depend on each other for the sharing of skills, knowledge, and ideas.

### **The Author's Position**

The author of this thesis is employed by Edge Hill University as a Lecturer in Medical Education and was previously a Graduate Teaching Assistant. Edge Hill University offers an MSc in Physician Associate Studies course, with the first cohort of students having graduated in 2021.

The author is also a registered healthcare professional (a GPhC registered pharmacist) and qualified shortly after commencing this PhD project. During the COVID-19 pandemic, the author continued to contribute to teaching within Edge Hill University Medical School whilst continuing with this project and balancing clinical commitments. The author has always taken great interest in PAs as a new professional in the NHS workforce and is committed to CPD across the fields of healthcare and education. Interestingly, the author is not a prescriber, although this is something which he is keen to pursue in the future. Chapter Eight of this thesis expands on the author's position in greater depth and explores the impact of this throughout the PhD project.

## **Thesis Overview**

Chapter Two will examine the literature base on PAs in the US and the UK; there will also be commentary on research investigating preparedness for practice. Chapter Three will outline the methodology and methods for this PhD project and will include a discussion on the use of mixed methods in medical education. Further detail around data collection, data analysis and ethical considerations also feature in this chapter. This is followed by Chapter Four which presents the data from the PA questionnaire and Chapter Five which provides a discussion of the data from the questionnaire. Chapter Six details the PA interviews and provides a discussion on the qualitative data produced from the interviews. Chapter Seven is focused on the clinical supervisor interviews which took place, while Chapter Eight explores the concept of a 'PhD in a Pandemic' and outlines the impact and subsequent adaptations to the project resulting from the COVID-19 pandemic. Finally, Chapter Nine concludes the thesis and provides suggestions for further research.

## **Chapter One Summary**

There is undoubtedly a need for PAs to work in the UK as healthcare professionals, particularly given the demands faced by the NHS such as the shortage of doctors (Roberts 2018). Whilst there is quite some time to go for PAs in terms of regulation (RCP 2022) and being given prescribing rights, PAs are still able to utilise their knowledge and skill-set to adapt to different healthcare teams (White and Round 2013).



The expansion of PA training in the UK and especially in the Northwest of England is attributed to HEE's £8 million investment in the training and employment of PAs since 2016 (HEE 2016). This contributes to considerable interest by different stakeholders in assessing the impact (if any) PAs are having within their healthcare teams, and the NHS in the Northwest. Whilst we are aware that PAs can certainly contribute to healthcare which can have a positive impact on public health (Ross and Parle 2008), there is a lack of knowledge regarding the quality and appropriateness of the training of PAs and their competence in performing key skills. This PhD project intended to address these gaps in knowledge. Findings from the project will have the potential to inform PA curriculum, regulation and CPD requirements. The following chapter will explore the current literature base around PAs.

## **Chapter Two – Literature Review**

The previous chapter examined the role of the PA and the context of PAs within the UK. This chapter will outline the literature review that was undertaken for this thesis and will summarise the literature base around PAs.

### **Aim of the Literature Review**

The aim of the literature review was to highlight current trends in existing literature around PAs and to identify any gaps in knowledge as well as to provide a rationale for this PhD project.

### **Scoping Review Method**

A scoping review was determined the most appropriate method to review existing literature as it is broad in scope and is useful in identifying and analysing gaps in knowledge as well as providing clarification of key concepts within a given topic. Scoping reviews are also useful in helping to shape research questions, particularly in areas where the existing evidence base may be limited (Munn et al. 2018). Other review methods, such as a systematic review was ruled out as this method is more appropriate when researching the appropriateness or effectiveness of a particular treatment or practice (Munn et al. 2018).

The Joanna Briggs Institute (JBI) approach was used to structure the review and the scoping review was conducted in accordance with the JBI methodology

for scoping reviews (Peters et al. 2020). A subject librarian at Edge Hill University also provided advice on the review method and search strategy.

### **Types of Sources**

The scoping review considered all types of studies including descriptive observational studies and individual case reports. Text, opinion papers and conference proceedings were also considered for inclusion in the scoping review.

### **Review Question**

What is the extent and nature of the existing literature on PAs (including their role, scope of practice, training, and implementation) across various healthcare settings in the USA and the UK?

### **Search Strategy**

The search strategy aimed to locate both published and unpublished sources. Google Scholar, Web of Science and PubMed were used to search for literature as they are accessible and produced results which were relevant to PAs and medical education, and which provided a good starting point to inform the scoping review. Grey literature sources included HEE reports, conference proceedings, publications from the FPA and government reports.

Broad inclusion and exclusion criteria were developed (see Table 2, below) intentionally, knowing this would generate a greater number of results to be assessed for inclusion within the scoping review. Search results were limited to those within ten years of the initial search date (2018) to limit the number of returned results. An updated search took place in 2022 to identify more recent publications within the literature base.

**Table 2:** Inclusion and exclusion criteria

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
English used	Foreign language used
Published between 2008-2018	Published before 2008

Table 3 (below) outlines the searches which were performed on the different search engines and databases, in addition to the number of returns for each search.

**Table 3:** Searches performed and the number of returns

Search Number	Search Term	Google Scholar Returns	Web of Science Returns	PubMed Returns
1	"Physician Associate UK"	37,100	268	137
2	"Physician Assistant UK"	30,000	16	165
3	"Physician Assistant" AND "US" OR "USA" OR "America"	175,000	170,812	1089

Searches 1 and 2 were performed to map out the current landscape of PA research in the UK. As this returned minimal results of relevance as expected, a third search was performed to gauge an understanding of physician assistants in the US.

### **Data Extraction**

Data was extracted by the thesis author with the support of the supervisory team who advised and supported the thesis author throughout the process which aided the overall quality assurance of the literature review. Publications were screened based on the title and abstract. Publications which did not meet the inclusion criteria were excluded, as were duplicate publications.

## Summary of Sources

A summary of information relating to the sources which were included in the scoping review is included below:

- **Study designs** – several study designs were included systematics reviews; questionnaires; interviews; focus groups, and service evaluations.
- **Source type(s)**
  - **Peer reviewed articles** – n=30
  - **Grey literature** – n=6
- **Countries** – results from two countries were included (US and the UK)
- **Total sources included** – n=36

The data is presented below under identifiable sub-headings based on clustered topics per country. This is to distinguish that physician assistants in the US are different to PAs in the UK. Presenting the data in this way also allows patterns, trends, and gaps in the literature to be identified from the extracted data.

### Physician Assistants in the United States

Physician Assistants were first introduced in the United States (US) in the 1960s to tackle the shortages faced in primary care medicine (Cawley et al. 2012). The profession has grown considerably and there are over 150 PA training programmes in the US (Ostler et al. 2012). At the time of publication,

(Browning 2018) reported an estimated 101,200 PAs working in the US, with this number expected to grow by an additional 53,500 by 2025.

In the US, PAs work in a variety of healthcare settings which cover a range of medical fields including family practice, surgery and psychiatry (Ostler et al. 2012). PAs must be licensed in the state where they work to qualify for practice and must work under the supervision of a doctor. Prior to obtaining a license, all PAs must complete an accredited educational programme and pass an examination which is delivered by the National Commission on Certification of Physician Assistants.

Research by He et al. (2009), which examined national trends in the US PA workforce from 1980 to 2007, found that 64% of the 29,120 PA workforce in 1980 were males. However, that changed significantly over time. In 2007, the approximate PA workforce was 97,721 of which more than 66% were female. In 2007, the highest PA to population rate was 85 PAs per 100,000 people (New Hampshire), an increase from the estimated 40 PAs per 100,000 people (Nevada) in 1980. Interestingly, in 1980, almost 70% of PAs were younger than 35 years in age, compared to just 38% in 2007. The number of PAs with four or more years in college increased from less than 21% in 1980, to more than 65% in 2007. These changes to the PA workforce trends in the US have been attributed to changes in educational factors, federal legislation and state regulation (He et al. 2009).

Bourne et al. (2012) investigated the factors associated with the gender gap within the PA profession in the US. The American Academy of Physician

Assistants, cited in Bourne et al. (2012), found that by 2008, 64% of PAs were women. This was a major shift in what began as a male dominated profession (He et al. 2009). Findings suggested that the gender gap within the PA profession was multifactorial. It was concluded that some factors which influenced the decision to become a PA were common in both males and females. However, whilst female participants noted that the profession allowed them to have children and raise them, male participants noted that the profession gave them freedom to pursue other interests. In total, 32% of participants were unaware that a gender gap existed in the PA profession in the US. Whilst most participants wanted to become a PA because they were encouraged by someone else, all participants agreed that the relatively short length of time taken to complete the PA programme of studies in the US was the main motivating factor in them becoming a PA.

### **Primary and Secondary Care (United States)**

Research into PAs in the US has suggested that they have many benefits, particularly in primary care. PAs who were more likely to work in primary care tended to be female, older and Hispanic (Coplan et al. 2013). A literature review performed by Hooker and Everett (2012) revealed that PAs made a successful contribution to the primary care workforce; they were found to be cost effective and complemented primary care doctors well. Moreover, the quality of prescribing by PAs has been generally comparable to the care delivered by physicians (Jiao et al. 2018). Hence, employing PAs has proved to be a logical solution in providing primary care for diverse populations in the US.



A systematic review performed by Halter et al. (2013), which searched databases from 1950 to 2010 to study the contribution of PAs in primary care, resulted in 46 publications from the US (a total of 49 publications met the researchers' criteria from 2167 publications). The researchers found that approximately half of PAs in the US work in primary care and are well supported; there was also a willingness for PAs to be employed by doctors. However, the research concluded that the evidence of PA contribution to primary care in the US was generally mixed and limited. The increasing number of PAs who continue to be employed in primary care overwhelmingly suggests they provide some value, although further research is needed with a specific focus on the effectiveness of PA contributions to primary care.

In contrast, a systematic review (16 articles from 1995 to 2017) by Halter et al. (2018) which examined the contribution of PAs to secondary care proved to be more valuable and insightful. The researchers found that PAs reduced waiting and process times in emergency medicine as well as in trauma and orthopaedics. The addition of PAs to teams also resulted in lower charges, equivalent readmission rates and good acceptability to staff and patients alike. The outcomes of care provided by PAs and doctors in internal medicine were found to be equivalent. Although the researchers concluded that PAs have generally had a positive impact on secondary care in the US, it is interesting to note that all the studies which featured in the systematic review were observational studies which limits the validity of the findings.

## **Emergency Medicine (United States)**

Hooker et al. (2011) reviewed literature from 1970 through to 2009 and identified 35 articles and reports which examined the impact of the PA role in emergency medicine. The researchers found that the use of PAs in emergency departments in the US was increasing and this was attributed to the need for more staff and for cost-effectiveness. PAs were particularly found to be useful in wound management and in providing emergency staffing in rural health.

Gershengorn et al. (2016) performed a retrospective study investigating the impact of adding a PA to a critical care outreach team to determine whether the clinical and process outcomes were affected. There were two groups; one where a PA was added to the critical care team and another group which had no change in staffing. The researchers found no difference in hospital mortality or hospital length of stay between the two groups. However, there was a 19.2% reduction in the time taken to transfer patients to the intensive care unit (ICU) in the hospital which had a PA working within the critical care team (a similar finding to Halter et al. 2018). It was therefore noted that adding a PA to the critical care team resulted in a reduction in the time taken to transfer patients to the ICU.

## **PA Curriculum (United States)**

Research into the PA curriculum in the US by Huckabee and Matkin (2012) found that for students to gain greater cultural competency, enhanced curricular instruction needed to take place. This involved increasing clinical experiences with diverse cultures and exploring cultural assessment methods. The

implementation of simulation-based learning within the PA curriculum was investigated by Donkers et al. (2015). In this study, 39 students completed surveys before and after simulation labs. Findings suggested that students' confidence had grown significantly by the end of the course when compared with their confidence at the start of the course, due to simulation-based learning. Students also reported the simulation training as being realistic, comprehensive and a positive contributor to their overall PA training.

Prazak et al. (2014) evaluated the knowledge and perception of competence of PA students in palliative symptom management. 139 students completed a self-assessment in competence. Findings indicated a minimal improvement in the knowledge of PAs following a year of clinical training. Therefore, it was suggested that PA students experienced a lack of exposure to palliative medicine education during their clinical training, hence the need for a more focused curriculum. Meverden et al. (2018) performed a prospective validation study to develop a PA clinical rotation evaluation instrument and found that PA students must be adequately prepared to have a successful experience on their rotations. Rotation evaluation scores correlated with preparedness for the rotation, which mirrors the trend in medical schools. Limitations of this study include most of the respondents being female and that all students completed rotations through only two programs, thus making it difficult to generalise the findings.

Further research into PA curriculum was conducted by Bennett (2018) who investigated the use of anatomic body painting (ABP) as a teaching tool in PA education. The author found that the use of ABP resulted in participants feeling

less uncomfortable, physically and/or psychologically than cadaveric dissection. Hence, the use of ABP is encouraged as an affordable teaching tool in PA curriculum which can be used to aid the understanding of clinical concepts. It is important to note that the study only included a small sample and focused on just one course within a single institution. Therefore, as with other research focussing on PA curriculum, further research is required before wider generalisations can be made.

### **PAs, Nurse Practitioners and Physicians (United States)**

Dill et al. (2013) proposed that PAs and nurse practitioners could be useful in tackling the increased demand in patient care and the physician shortage due to their shorter training time as well as their flexibility in shifting specialities. Whilst Dill et al. (2013) themselves acknowledge that their study had several limitations including under and over representation of demographics, as well as a limited sample size, their findings make for interesting reading. In total, 25.9% of respondents from a patient survey indicated no preference in the type of primary care provider they saw. Interestingly, 59.6% of respondents expressed a desire to be seen by a PA or nurse practitioner today, rather than wait to see a physician tomorrow when asked scenario-based questions. Hence, it can be determined that in some instances, patients would prefer to be seen by a PA or nurse practitioner, rather than a physician.

Intrator et al. (2015) examined trends in nurse practitioner and PA practice in nursing homes between 2000 and 2010. Within this timeframe, the percentage of nursing homes using any nurse practitioners or PAs increased from 20.4% to

30.5%, suggesting that more nurse practitioners and PAs worked in nursing homes due to the shortage of physicians working in nursing homes. However, the impact of nurse practitioners and PAs in nursing homes was restricted by the scope-of-practice regulations. This mirrors research on PAs in the UK, where the role of PAs is considered somewhat limited due to lack of regulation and PAs being unable to prescribe (Gill et al. 2014, Newton et al. 2017, Williams and Ritsema 2014). The next section of this chapter explores the literature base on physician associates in the United Kingdom.

### **Physician Associates in the United Kingdom**

There are a limited number of studies which have been published on PAs working in the UK. This is not surprising considering that PAs are still a relatively new profession in the UK; currently, there are only 2,850 qualified PAs in UK (Straughton et al. 2022).

### **Contribution of PAs in Primary Care (United Kingdom)**

Ross and Parle (2008) provided a UK perspective on PAs, suggesting that PAs can strengthen the health service by making positive contributions such as providing continuity of care to patients and helping to relieve workforce pressures in the NHS. In another study, sixteen PAs completed a self-reporting survey to establish the contribution which they made to primary care (Drennan et al. 2012). It was found that PAs undertook a range of activities such as reviewing test results and telephone triage. The most common activity was seeing patients who had booked surgery appointments either for the same day

or by urgent request. However, the landscape of PAs in the UK at the time of both publications was rather different than it is today. Ross and Parle's (2008) paper mainly focuses on the West Midlands, where a significant number of PAs were employed at the time of publication. Previously, PAs were mainly working in primary care and researchers called for further research to be carried out which investigated the contribution of PAs in secondary care (Drennan et al. 2014). However, with increased demands on the NHS and an increase in qualified PAs seeking employment, it is more common for PAs in the present day to work in either primary or secondary care settings.

Further research carried out by Drennan et al. (2014) reinvestigated the contribution of PAs to primary care in England, using a mixed methods approach. They found that the cost of a GP consultation was £34.36 compared to £28.14 for a PA consultation. High levels of satisfaction with GPs and PAs alike were reported by patients. Despite patients being willing to consult a PA in the future, they expressed a desire in having a choice in the type of healthcare professional they consulted. The researchers concluded that PAs were acceptable and efficient in working with GPs. However, whilst providing flexibility in the primary care workforce, the role of PAs was found to be limited not least due to lack of regulation as a healthcare profession and lack of authority to prescribe medicines, which is in line with findings from other studies on PAs in the UK.

**Table 4:** Summary of the benefits and limitations of the PA role within the UK based on existing literature at the time of publication (Ross et al. 2012)

<b>PA Benefits</b>	<b>PA Limitations</b>
Cost effective	Currently unregulated
Increased continuity of care for patients	Inability to prescribe
Adaptable to different multidisciplinary teams	
Complimentary addition to the medical workforce	

### **Contribution of PAs in Secondary Care (United Kingdom)**

A mixed methods approach (survey and semi-structured interviews) was used to explore PAs working in a paediatric intensive care unit by White and Round (2013). Staff who were interviewed found that PAs were well integrated within the department and little evidence was found of frictions such as competition for training opportunities and PAs not helping with nursing duties, which were noted in the survey at the start of the study. This study demonstrated that PAs can add value to healthcare teams, however, it is to be noted that some problems or frictions may arise when PAs are introduced into these teams. Further research into the training and early employment experiences of PAs is needed, as this proposed PhD project seeks to address, to gain a better understanding of the preparedness for practice and competence of PAs when introduced to new healthcare teams.

Further research into PAs working in paediatric teams revealed that 90% of paediatric team members found PAs to be beneficial to the team, and 100% of team members reported that PAs interacted well with patients and worked well within a multidisciplinary team (Newton et al. 2017). It was noted that the most significant disadvantage to the role of PAs was that they were unable to prescribe. It was concluded that PAs worked well within the paediatric team and were valued for providing continuity of care, thus demonstrating the usefulness of PAs within the healthcare workforce.

A small study, focusing on PAs working within psychiatry in the Birmingham and Solihull Mental Health NHS Foundation Trust found PAs to be helpful in relieving the pressures of other members of the medical team. PAs were also deemed effective in improving provision of service and in providing continuity of care for patients. However, this study also highlighted the inability of PAs to prescribe (Gill et al. 2014). These findings are echoed by Williams and Ritsema (2014) albeit in a different care setting – whilst the doctors they surveyed reported positive feedback about PAs from patients, in line with other research findings, the doctors felt that PAs were limited in their role due to legal implications and called for statutory regulation of PAs for their role to become most effective within the NHS. Moreover, Drennan et al. (2017) argue that the lack of prescribing ability limits PAs in terms of their efficiency. For example, a PA would be costlier to an organisation than a nursing practitioner who could prescribe. Indeed, knowledge of this perception could affect the confidence of some PAs, particularly if they were viewed as expensive but duty-limited by their clinical supervisors and NHS managers.



Drennan et al. (2019) used mixed methods in their study which assessed the contribution of PAs in hospital care in England. Six acute care hospitals across three regions in England in 2016-2017 were used as the setting for the research. They found that whilst PAs provided a flexible addition to the secondary care workforce, their full potential cannot be realised without PAs being regulated or being able to prescribe medicines and order ionising radiation. Despite this study being published in 2019, the data was collected a few years earlier and the findings align to earlier research published on PAs in the UK. The changing healthcare landscape brought about by COVID-19 may have influenced the findings of this study if it was conducted in the present day.

### **PAs in the NHS Workforce: Perceptions and Satisfaction (United Kingdom)**

An observational study (Drennan et al. 2015) funded by the National Institute for Health Research (NIHR), compared the cost and outcomes of same-day requested consultations by PAs with the cost and outcomes of same-day requested consultations by GPs in England using 2086 patient records across 12 GP practices. There were no significant differences in the rate of re-consultation, diagnostic tests ordered, prescriptions issued or patient satisfaction. It was noted that a PA consultation is less costly to the NHS. Thus, it can be determined that PAs are a cost-effective and suitable addition to the general practice workforce. Another study, involving only four PAs, found them to be a complimentary addition to the general practice workforce (de Lusignan et al. 2016). Interestingly, from the consultations that were assessed in this study, GP consultations were rated higher in competence than the PA

consultations. Despite this finding, patients have deemed PAs as an appropriate substitute for GPs (Halter et al. 2017), further highlighting the potential impact of PAs. Once again, whilst this research is insightful, there are several limitations to consider: the research was only conducted with PAs working in Southern England; responses were only received from 30 participants; some participants had only one consultation with a PA. Not only do the limitations of the research involving PAs in the UK restrict the generalisations which can be made, they strengthen the argument for further research which is needed to add value and meaning to earlier findings.

There was a 65% return rate for the surveys distributed to PAs by Ritsema and Roberts (2016). Their research found that PAs in the UK were satisfied with the relationships they had with doctors but were less satisfied with the extent to which they could utilise their skill-set. Despite the relatively moderate return rate, the research specifically focused on PA satisfaction and did not look at their preparedness for practice or competence in performing their duties.

Drennan et al. (2017) explored the boundaries and relationships of PAs when introduced as a new healthcare professional in the UK. Their data was drawn from a previous study in 2015 which looked at the contribution of PAs in general practice. The data from the 2017 study was collected from interviews with NHS managers, policy documents, and interviews with GPs, nurses and general practice staff. The researchers found that some PAs had been recruited in general practice, but only as a means of necessity after failing to recruit any doctors or nurse practitioners. Also, initial boundaries and PA capabilities were established by GP partners, although, PAs themselves were able to describe

their personal competence. This led to the formation of a partnering relationship between GP partners and PAs, who together, built up trust in the competence of PAs over time. In turn, this allowed PAs to widen the initial boundaries set by GPs as well as gain exposure and develop competences with new patient types and new clinical duties.

A study on PAs in the UK by Hoggins et al. (2018) used focus groups and semi-structured interviews to explore the experiences and perceptions of PAs (8 PAs) and primary care staff (6 members of staff) involved in primary care educational placements. Whilst the researchers found that staff and students alike were positive about their overall expectations, it was noted that staff were not familiar with the PA programme. Students were anxious about having to learn a large amount of content within a short timeframe and reported uncertainty in regard to future career aspirations. A major limitation of this study, which is noted by the researchers themselves, is that the sample used in the study is very small. Also, all of the students are from one medical school in the UK (Brighton and Sussex Medical School), hence it is difficult to generalise findings to other PAs and to other geographical locations.

Ghadiri (2020) outlined the benefits and limitations of the PA role and noted that a thorough understanding of these will be insightful for the future development of the profession. Limitations included the acceptance of the PA role and their capability by physicians and other healthcare professionals and PAs not being able to prescribe. However, Ghadiri (2020) highlighted that the challenges of the COVID-19 pandemic, a time where many retired clinicians were called upon

to return to clinician practice, provided considerable justification for the necessity and value of the PA role within the NHS.

Halter et al. (2020) compared PAs and FY2 doctors in undertaking emergency medicine consultations across three emergency departments in England using a mixed methods approach. The researchers found that PAs assessed patients in a similar way to FY2 doctors and provided continuity in the team. Also, whilst patients who took part in the study were complimentary about the care which they had received from a PA, they had a poor understanding of the PA role. This study emphasises the value of PAs to healthcare teams, but also raises concern about the understanding of their role within the healthcare workforce.

Strawson et al. (2021) shared their experiences of working with PAs within UK hospice teams by conducting a service evaluation. Whilst the researchers found that the PA acts as a complementary role alongside doctors, there are several limitations to the role including: not being able to prescribe; not being able to complete after death paperwork and not being able to partake in the medical on-call rota independently. Despite the limitations, it was concluded that the PA role has potential within the hospice community team, however, further research and exploration into the role within this setting was required to gain a better understanding.

## **PA Curriculum and Education Research (United Kingdom)**

Burnett et al. (2019) investigated the career aspirations and expectations of student PAs in the UK. An online questionnaire was devised and distributed to student PAs at three HEIs in the Northwest of England. PAs called for an improved understanding about the profession; opportunities for career development and flexibility in their clinical work. The researchers recommended that adequate support for the post-qualification PA workforce needs to be established and evaluated. They also commented that consideration should be given to post-qualification PAs in regard to their career development and opportunities to engage in research and leadership. The survey was distributed in July 2017 and it is likely that the views of student PAs may have changed since that time. Certainly, the perception of PAs and healthcare workers has changed in the UK as a result of their role during the COVID-19 pandemic.

Howie (2017) suggested that further research on PAs could be conducted by exploring the development of a common curriculum and portfolio to aid the development of PAs entering primary care for the first time. Howie (2017) concluded that CPD is paramount for all healthcare professionals including PAs. Also, the requirement to recertify every six years provides a basis to build upon knowledge in a structured, educationalist approach, whilst maintaining high standards of patient care. It was noted that supervisors can apply learning strategies which have been used in other clinical professions to aid the CPD and knowledge of PAs.

Kumar et al.'s (2018) research primarily focused on the use of Multiple Mini-interviews (MMIs) as a predictor of performance of communication skills in the objective structured clinical examination (OSCE). Using the first cohort of the MSc Physician Associate programme at Anglia Ruskin University, the researchers found a positive correlation between the communication skills scores in the MMI and during the OSCEs from trimester 2 and trimester 3. This suggests that MMI is a valid indicator of the future performance of PA trainees' communication skills in OSCEs. As the research involved only one cohort from a single institution, findings cannot be generalised. Although, this study does suggest a growing interest in research focusing on PAs.

Guest et al. (2022) explored how pharmacology is taught amongst the various PA courses in the UK. They acknowledge that there are no publications related to pharmacological education within PA courses in the UK and devised a survey which was distributed to 34 universities via email. The researchers found that almost half of PA courses do not have a separate pharmacology module and pharmacology teaching is usually delivered by different members of the multidisciplinary team. It was concluded that if PAs were able to prescribe, this would increase their job satisfaction, enhance their scope of practice and help to reduce the burden on the healthcare workforce in the UK.

## **Miscellaneous Grey Literature (United Kingdom)**

A report published by NHS England (2017) focused on the expanding role of PAs in the UK healthcare system and provided insights into the education, training, and potential impact of PAs on patient care. The report highlighted the value of PAs in addressing workforce challenges and improving access to healthcare services. A report which was commissioned by HEE (2016a) which explored the implementation and impact of PAs in primary care settings in the UK noted the effectiveness of PAs in primary care and highlighted their potential contribution to the changing healthcare workforce.

A position statement by the FPA (2020) emphasised that the success of the PA role in healthcare relies on maintaining high standards of professionalism and CPD. As this is a position statement, it is largely descriptive in nature. Similarly, the Professional Standards Authority published a report in 2019 which evaluated the impact and effectiveness of the PA Managed Voluntary Register. This report is also quite descriptive, and while it highlights the benefits of being part of a professional register, the report notes the role of the register in ensuring the competence and professionalism of PAs but does not expand further on this.

## Chapter Two Summary

A literature search to portray the PA movement in Europe (Merkle et al. 2011) found that at the time of publication, there were only three European countries (the UK, Germany and the Netherlands) in which PAs were trained and worked in. The literature search found only 28 relevant, published articles on PAs in Europe, suggesting that the limited number of publications causes difficulty in assessing the value that a new healthcare profession could have on the healthcare system in each country. Most of the UK articles which were found in the literature search were descriptive in nature and focused on the experiences of doctors working with a new healthcare professional in the UK.

Health Education England (HEE) intended to have 1000 PAs employed by 2020 (HEE 2016). Straughton et al. (2022) report that there are currently 2,850 qualified PAs in the UK. The current literature also suggests a growing interest in the education and impact of PAs in the UK. Although, as expected, most of the literature focuses on physician assistants in the US. The published research of PAs in the UK whilst not only limited in number of publications, is also limited by the scope of PAs in practice – the research is mainly centred around PAs working within primary care.

Whilst research into PAs working in the UK is somewhat limited, the findings suggest identifiable trends; PAs have been found to be an effective addition to the healthcare workforce, with research suggesting that patients consider PAs as an appropriate substitute for GPs (Halter et al. 2013). However, the research is very clear that the role of PAs is limited due to lack of regulation and the



inability to prescribe (Gill et al. 2014, Newton et al. 2017, Williams and Ritsema 2014).

Recent literature on PAs in the UK has only strengthened the findings and conclusions drawn from previous published literature. This includes identifying PAs as a much needed and crucial part of the NHS workforce, but also highlighting the limitations and challenges of the role, namely, not being currently regulated, not being able to prescribe and order ionising radiation, and a general lack of understanding about the PA profession. The existing literature base has mainly involved small scale studies and most of this research has been conducted in the Midlands or in the South of England where PAs were first established in the UK. It is also apparent that there has not been any research conducted in the UK which focuses primarily on the preparedness for practice, competence and CPD requirements of PAs, which this PhD project aimed to address. This is crucial to know in informing future curriculum design and future healthcare workforce planning.

Although the number of PAs currently working in the UK is limited both in number and location, with this rapidly expanding, there is a greater opportunity for rich data to be generated from research investigating the preparedness for practice and competence of PAs as NHS healthcare professionals. Medicine and other healthcare professions have recently been forthcoming on how to prepare graduates for practice and there is evidence this has improved preparedness for practice (GMC 2009). Therefore, this establishes a need for research into preparedness for practice of PAs. There is certainly a lack of research published on PAs in the Northwest of England and on their

preparedness for practice, creating an identifiable gap where an original contribution to knowledge can be made. Research needs to be undertaken to determine if the potential benefits of PAs will be applicable to the Northwest region, particularly given the significant public investment in this.

The next chapter outlines the methodology and methods of the PhD project, which allowed the research question to be answered critically and for an original contribution to research to be made.

## **Chapter Three – Methodology**

This chapter will provide an overview of mixed methods research and will include specific examples of how mixed methods have been used in clinical education research. Furthermore, this chapter will explore the methods used in this project, namely, questionnaires and interviews. In particular, it will discuss the rationale for selecting these methods, as well as the distribution of the questionnaires and arrangement of the interviews. Moreover, this chapter will describe the process by which the qualitative and quantitative data produced have been analysed.

### **Methodology Overview**

Quantitative research is used to produce numeric data which can be useful in determining relationships between variables and outcomes (Rutberg and Bouikidis 2018). This differs from qualitative research which is usually employed when a problem or concept is not well understood. By asking a series of questions, a narrative can be produced to allow the researcher to explore and address the problem or concept (Rutberg and Bouikidis 2018). This PhD project uses a mixed methods approach and quantitative and qualitative methods were combined within a single study (Johnson and Onwuegbuzie 2004).

Questionnaires, which were electronically distributed to PAs generated predominantly quantitative data. The quantitative data obtained from the questionnaires was useful in drawing comparisons between types of participants. Once analysed, the quantitative and qualitative data from the questionnaires informed the themes and questions which were explored in

greater depth during interviews, which generated qualitative data only. The interviews explored the views of PAs and clinical supervisors in relation to preparedness for practice and CPD requirements.

An advantage of using a mixed methods approach in research is that it allows data to be analysed through multiple lenses as opposed to restricting the researcher when answering research questions (Johnson and Onwuegbuzie 2004). Hence, the use of interviews in this project allowed the researcher to probe deeper, using their analysis of the quantitative data from the questionnaires to guide the questioning and discussion. Findings can be corroborated and substantiated using mixed methods research, with the consideration that the data produced from mixed methods is quality data as opposed to simply an increased quantity of data, thus increasing the overall validity of findings.

### **Mixed Methods Research**

Johnson and Onwuegbuzie (2004:17) define mixed methods research as:

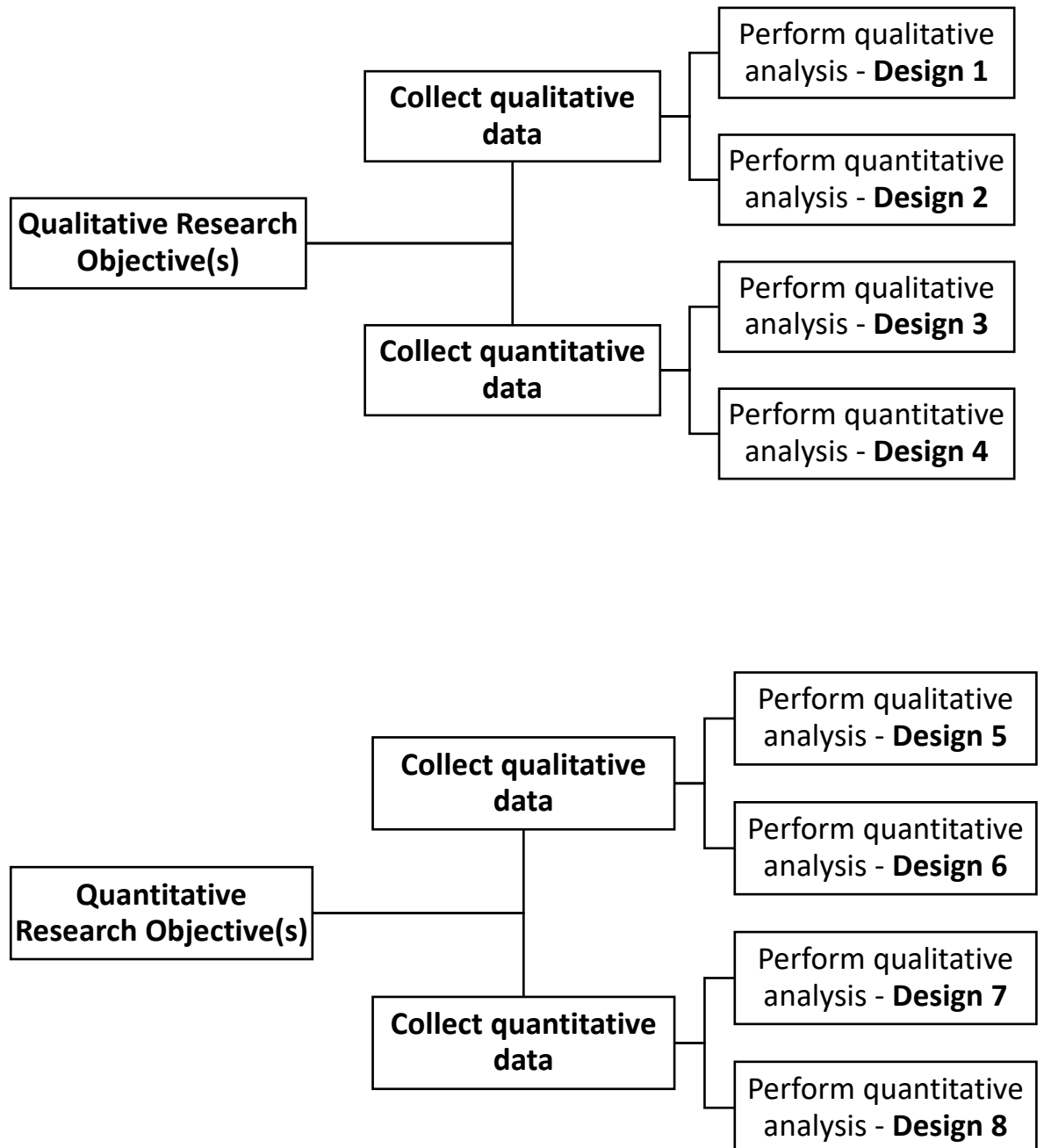
*“the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study”.*

The PubMed database returned zero articles when “mixed methods” was searched for in 2000. However, by 2010, 103 articles were returned, clearly signalling the growing popularity in the use of mixed methods (Guest 2013).

Johnson and Onwuegbuzie (2004) present a compelling case for mixed methods research as a third paradigm, with qualitative and quantitative research classed as the first two paradigms. They argue that mixed methods research is not merely a replacement of the qualitative or quantitative approach, rather it is an amalgamation of the strengths of both approaches which can be applied in a single study or across multiple studies. Mixed methods research as a third methodological paradigm is also acknowledged by Doyle et al. (2009), who suggest that mixed methods has much to offer in the fields of health and social science research. It has a relevance within healthcare, where the problems encountered by healthcare professionals are complex in nature and require quantitative and qualitative interpretation of data to determine a conclusion, once analysed. If qualitative and quantitative are viewed as two separate components, then this poses a barrier in mixed methods research which could hinder analysis when data is integrated (Bazeley 2009).

Johnson and Onwuegbuzie (2004) have outlined 8 monomethod designs (designs 1 and 8) and 6 mixed methods designs (designs 2 to 7) which are shown in Figure 1 (below). In designs 2 to 7, the mixing of qualitative and quantitative occurs across the stages of the research.

**Figure 1:** Outline of Johnson and Onwuegbuzie's (2004) monomethod and mixed methods designs

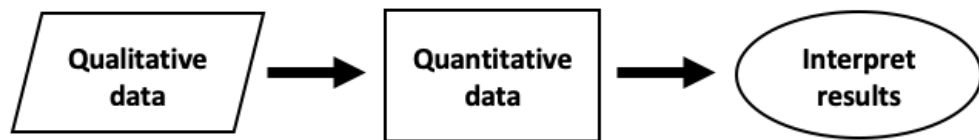


Sequential and concurrent designs as outlined in Figure 2 (below) are further examples of mixed methods designs. In a sequential design, data is collected in a sequence to allow the results of one method to influence the data produced

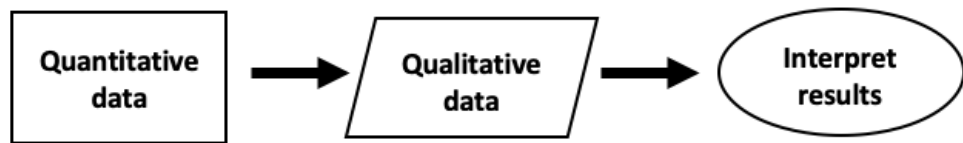
during the second method. For instance, in an exploratory sequential design, the qualitative data is collected prior to the collection of quantitative data. An example of an exploratory sequential design used in research is an interview which produces qualitative data, and informs the design of a questionnaire, which produces quantitative data. Similarly, in an explanatory sequential design, the quantitative data collection occurs prior to the qualitative data collection. In this case, it is likely that the qualitative data collection will provide an explanation or context for the quantitative data produced earlier (Creswell and Plano Clark 2011). In concurrent designs, quantitative and qualitative approaches are embedded in one another, with one approach dominating. With this design, rather than the qualitative informing the quantitative or vice versa, a greater emphasis is placed on interpreting data from the concurrent approaches (Creswell and Plano Clark 2011).

**Figure 2:** Mixed methods designs – Johns Hopkins Bloomberg School of Public Health (n.d.), adapted from Creswell and Plano Clark (2011)

## Sequential Designs

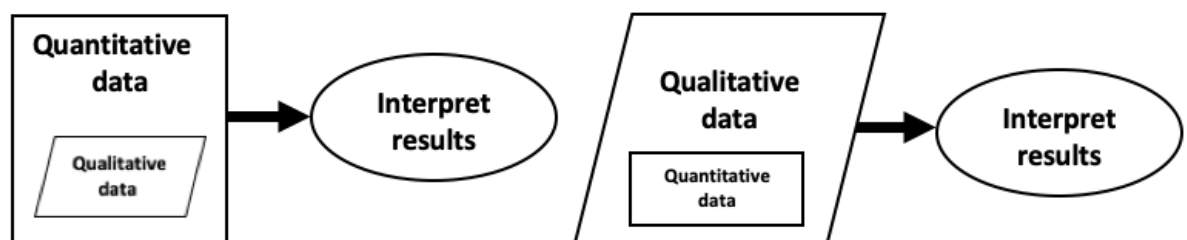


Exploratory Sequential Design



Exploratory Sequential Design

## Concurrent Designs



Whilst there are several strengths of using mixed methods research such as providing stronger evidence, answering a range of research questions and adding useful insights which may not be discovered when only considering the use of a single method (Johnson and Onwuegbuzie 2004), there are also some limitations to consider. It can be difficult for a single researcher to undertake qualitative and quantitative research by themselves. Mixed methods research is described as expensive, time consuming and sometimes confusing, particularly when interpreting conflicting results (Johnson and Onwuegbuzie 2004).



The mixed methods approach in this PhD project allowed quantitative and qualitative data to be produced and analysed, thus enabling the proposed research question to be answered comprehensively. The data produced from the questionnaires in Stage 1 of the data collection process helped to inform the questions devised for the interviews in Stage 2 (Doyle et al. 2016), during which key topics which emerged from the questionnaire were explored in greater depth to obtain a deeper understanding (Creswell 2014). The use of quantitative results to inform qualitative methods is an example of explanatory sequential mixed methods design, which allows the researcher to probe further (by asking what and why or who and how) and is helpful in providing reasoning for the quantitative results (Plano Clark 2017). The integration of qualitative and quantitative components within mixed methods research gives rise to the researcher being able to gain a richer insight which results in more valid and substantiated research findings.

### **Mixed Methods used in Medical Education**

The use of qualitative research (Britten 2005) and mixed methods is now well established within medical education research, which includes research relating to the education and training of PAs. In particular, mixed methods research is considered necessary to improve the teaching and learning across the health professions. Mixed methods research should be approached with a qualitative and quantitative mindset as opposed to a qualitative versus quantitative mindset (Lavelle et al. 2013).

Indeed, one must acknowledge that mixed methods research combines different claims to knowledge, enquiry strategies and methods. When considering multiple dimensions, one is instantly drawn to obtaining multiple perspectives to corroborate a finding. However, what would be the case for conflicting viewpoints? The use of mixed methods allows multiple perspectives with conflicting viewpoints to be presented. Interestingly, findings to support a certain perspective may be corroborated using a different method. For example, findings from a questionnaire may present a certain viewpoint, but these findings may need corroboration or further analysis which can be achieved through a different type of method such as a focus group or interview. This can result in a deeper level of analysis and justification for the initial findings established in the questionnaire (Lavelle et al. 2013). In relation to medical education research specifically, there is capacity for more 'mixing', both in analysis and interpretations, as well as in stating findings (Maudsley 2011).

Schifferdecker and Reed's (2009) paper provides useful guidelines for undertaking mixed methods research in medical education. They describe mixed methods research as the collection, analysis and integration of quantitative and qualitative data in a single study. The integration aspect of mixed methods research allows triangulation of data to take place, thus making research findings more meaningful and substantiated. The concept of triangulation is discussed in greater depth later in this chapter.

Atkinson and Pugsley (2005) reviewed several studies which detailed the daily life of medical students and qualified medical practitioners. They noted the increasing use of qualitative methods in medical education research and

acknowledged that qualitative research is focused on interpretation during the data analysis stage. Atkinson and Pugsley (2005) argue that the use of ethnography in medical education research is useful in understanding social settings and social phenomena. Data is obtained through observing participants which, when analysed, leads to cultural learning. It is intended that the researcher learns about the world by engaging within it. Whilst ethnography is a powerful tool used to contribute to knowledge, this study has used a researcher-driver method such as an interview, as this method was preferred by the principal researcher.

Watmough et al. (2006) investigated whether an integrated Problem-Based Learning (PBL) curriculum with specific communication skills produced Pre-Registration House Officers (PRHOs) with improved communication skills. A mixed methods approach was used consisting of questionnaires (which included a 5-point Likert scale for participants to rate their answers), focus groups and interviews. A 5-point Likert scale was also used in research by Roos et al. (2014) who used mixed methods (questionnaire and interviews) to evaluate a medical teaching education program. The Likert scale was used to measure level of reaction, multiple-choice questions were used to measure learning, and semi-structured interviews (which were guided by four questions) were used to assess behaviour. The researchers concluded that their multimethodological approach, which featured qualitative and quantitative aspects, may be used as a model to evaluate effectiveness of similar interventions in other settings.

Mixed methods were also used by Guse et al. (2016) to investigate the effects of mentoring speed dating (MSD) as an innovative matching tool in undergraduate medical education, in Germany. This study used two methods of data collection, a survey and focus groups. A 6-point Likert scale was featured in the survey to allow participants to rate different items and the questions in the survey were reviewed several times prior to the distribution of the survey so that the questions used were clear and understandable. SPSS software was used to statistically analyse the quantitative data from the survey. Prompting questions, which were open-ended in nature, were established to be helpful in guiding the discussion during the focus groups, which were between 60 and 90 minutes in duration. The transcripts of the focus group were read and then codes were assigned to words or concepts. These were then sorted into categories, thus creating clear, defined themes.

Questionnaires and focus groups were used in research by Lestari et al. (2016) to understand students' readiness for interprofessional learning in an Asian context. Like some of the studies mentioned above, the questionnaire included a rating scale and statistical analysis was performed on the quantitative data produced. This was then followed by four focus groups which allowed researchers to enhance their understanding of the responses given in the questionnaire, particularly to the questions which required a rating, which is in line with the sequential, explanatory design of mixed methods outlined by Creswell (2014). A discussion guide was used by the facilitator to steer the direction of the conversation in the focus groups and a thematic analysis was performed on the qualitative data produced. Similar methods were used by Premkumar et al. (2018) to investigate the self-directed learning readiness of

Indian medical students. In this study, a readiness scale was distributed to cohorts at different stages in their medical training and a series of focus groups were held subsequently. In this case, interviews were also held with instructors to note their perceptions of self-direction. Once the focus groups and interviews were transcribed, the qualitative data was thematically analysed.

SPSS software was also used to analyse quantitative data produced from questionnaires in O'Donoghue et al.'s (2018) mixed methods study on the confidence and assessed clinical skills of undergraduate medical students. Focus groups were subsequently held, to identify key themes in paediatric skills. Themes to be explored deeper in the focus group were included in a focus group guide and were informed by responses obtained from the questionnaires. Following transcription of the focus groups, a framework analysis technique was used to establish emerging themes per skill. The total number of focus groups to be held was dependant on whether thematic saturation had been reached following each round of framework analysis taking place after each focus group. The use of mixed methods in this study allowed for data to be triangulated and for recommendations to be made, such as the inclusion of formative assessment opportunities within the curriculum.

## **Patient & Public Involvement (PPI)**

Patient and public involvement (PPI) in research allows patients and the public to contribute to the development of research. This can be achieved through consultation about the research design used or through participation in the study itself (Price et al. 2022). The GRIPP2 (Guidance for Reporting Involvement of Patients and the Public 2) short-form checklist (Brett et al. 2017) is used to report how PPI was used in this PhD project.

### **1. Aim**

The aim was to obtain consensus on the items to be included in the questionnaire to enhance the quality, functionality, and usability of the questionnaire. To collaboratively involve other healthcare professionals as research partners at all stages in the development of GRIPP2.

### **2. Methods**

The Northwest Physician Associate Forum Committee were approached by the principal researcher and the supervisory team to assist in all stages of the development of the questionnaire. The Committee included a mix of trainee and qualified PAs (10 members) and acted as a steering group throughout the early stages of the project as operations were ceased during the pandemic). The Committee was involved in refining the research questions and in using the CCF to determine which competencies should be included in the final questionnaire. The Committee also provided valuable feedback and insight into how the questionnaire should be distributed and how to set up potential focus groups (however, the focus groups did not end up taking place due to the

pandemic). They reviewed the final questionnaire and suggested changing the order of questions from a lay perspective to ensure that the questionnaire was likely to return a higher rate.

### **3. Study results**

The Northwest Physician Associate Forum Committee added considerable value to the PhD project and contributed in several ways, including:

- Reviewing the research question and providing feedback
- Reviewing items for the questionnaire and providing a lay perspective on which competencies should be included
- Suggesting the most effective questionnaire layout
- Providing advice on how to set up focus groups with PAs from different settings in the Northwest

### **4. Discussion and conclusions**

PPI was highly effective in this PhD project and was crucial in shaping many aspects of the project. A key factor in the success of the Committee's contribution was that the composition of the committee included qualified PAs who would be completing the final questionnaire so the comments provided regarding how many competencies should be asked and how long it will take to complete the questionnaire was useful and likely contributed to the return rate. This was particularly useful as including too many competencies in the questionnaire would have likely resulted in fewer participants completing the questionnaire. Similarly, the Committee provided feedback on competencies which would have been performed by all PAs in all settings and would not have provided as much insight as other competencies which could have been asked.

However, there were some limitations regarding PPI. Firstly, the Committee only met at specific times in the year during the evening and due to clinical commitments, attendance of members varied. Also, due to the pandemic, the Committee was understandably not in operation during the pandemic, so it was not appropriate to reach out to the Committee during that time. If a similar project was to run in the future, it would be helpful to schedule meetings in advance and perhaps for these to be separate to the full Committee meetings to ensure a higher level of engagement.

## **5. Reflections and critical perspective**

The PPI in this PhD project was embedded as far as possible in the early stages of the project and was invaluable in reaching consensus on the research question and in shaping the questionnaire. The aim of active collaboration to co-produce new knowledge worked well and the contributions of the Committee helped to increase the validity of the overall findings. Whilst the pandemic impacted further contribution from the Committee, this was not a factor that could have been managed. As suggested in the above section, scheduling in specific times to review documentation and meet would have been a better use of time and will be taken into consideration for future studies.

Whilst patients themselves did not directly participate in the research, the PAs who were part of the forum committee were clinicians who were directly involved in the daily care of patients. Therefore, the findings of the research will certainly be useful as to the potential impact that PAs are having on patient



care, which can be demonstrated through declaration of competence and overall preparedness for practice.

## **Data Collection**

The notion of time, effort and expertise required in mixed methods research is important to consider. A well-designed study with clear consideration of the factors which could affect the logistical performance of the research will have far greater potential than a poorly designed, unrealistic data collection method, which would undermine the principal purpose of medical education research (Maudsley, 2011).

A two-stage approach was used to collect the data. Initially, it was anticipated that focus groups would be one of the methods used in the second stage of data collection for this PhD project. Bourne et al. (2012) noted that a qualitative approach in the methodology for their study allowed them to explore factors at a deeper level. Focus groups were initially chosen instead of interviews because they could gather the viewpoints of several individuals in a shorter time frame and because they thought that a group discussion would result in more meaningful understanding and discussion rather than individual interviews. Stake (2006) cited in McKim (2007) recommended a sample of between 4 and 10 participants for an effective focus group. However, due to the restrictions imposed as part of the Government's response to the pandemic, it was no longer possible to hold focus groups and virtual interviews were conducted instead. Therefore, in Stage 1 of data collection, questionnaires were electronically distributed to PAs, and in Stage 2, interviews were held with PAs

and clinical supervisors. Table 5 (below) summarises this information in a tabular format.

**Table 5:** Different stages of data collection

<b>Data Collection</b>	
<b>Stage 1</b>	<b>Stage 2</b>
Questionnaires	Interviews
<ul style="list-style-type: none"> <li>• PAs</li> </ul>	<ul style="list-style-type: none"> <li>• PAs</li> <li>• Clinical supervisors</li> </ul>

Whilst logic suggests that a larger sample size will most likely result in an increased amount of data produced, this research was intended to be evaluative in nature, thus a small sample was sufficient to gain saturation of the key themes from the data produced. This is in line with research by Lavelle et al. (2013) who speak of purposive sampling which is attributed to saturation of ideas and themes or the point at which the researcher is not getting new information. Therefore, the sample was restricted to PAs and clinical supervisors employed within NHS trusts in the Northwest of England. The findings can easily be extrapolated across the country as the sample of PAs from the Northwest will have commenced training from 2016 onwards, at a time when there was an expansion of PA training across the UK which is attributed to HEE's £8 million investment (HEE 2016).

The questionnaires were distributed to two cohorts of PAs, one cohort which started to work in the Northwest in 2018, and the second which commenced

work in the Northwest in 2019. Interviews took place with clinical supervisors who have worked with both cohorts of PAs. This ensured that the data produced was more substantial and insightful. It also allowed for similarities and differences to be determined between cohorts. Further detail about each method is outlined in the next section of this chapter.

### **The Aims, Content and Distribution of the Questionnaire**

The PA questionnaire was intended to determine how competent PAs rated themselves against competencies from the CCF (DOH 2012) and therefore how well prepared they were to work as PAs. The questionnaire was also intended to serve as a guide for topics to be explored in greater depth during the interviews. PAs were asked general questions relating to their preparedness for practice and CPD requirements.

An initial design of the questionnaire was produced (see Appendix 11) which had received positive feedback from academics from Edge Hill University Medical School and from the Northwest Physician Associate Forum Committee. The feedback received from those involved in the development of the questionnaire was overwhelmingly positive. In particular, the NWPAF provided feedback on the wording of questions and selected which skills and competencies they determined would be useful to include in the questionnaire. Overall, the NWPAF acted as a steering group throughout the initial design of the project and not only ensured that the data produced from the questionnaire would be meaningful, but also served to ensure that the questionnaire was accessible to participants in terms of timing and ease of navigation. Following

feedback, the questionnaire was built electronically so that it could be completed through a weblink. It was deemed that this would be most efficient in distributing the questionnaire and would assist in analysing the results.

The questionnaire link, along with the Participant Information Sheet (see Appendix 10) was distributed to the link contact at the five NHS Trusts who were participating in this PhD project for onward distribution to all PAs within their Trust. The five NHS Trusts which were participating were: Salford Royal NHS Foundation Trust; Southport and Ormskirk Hospital NHS Trust; Aintree University Hospital NHS Foundation Trust; East Lancashire Hospitals NHS Trust; and Manchester University NHS Foundation Trust. These Trusts were chosen in conjunction with the supervisory team to ensure varied representation amongst PAs, as well as reflecting where PAs were working across the Northwest at the time.

The PhD project details were also shared on the Northwest Physician Associate Forum Committee Facebook page. All qualified PAs, irrespective of the number of years they had been qualified, were invited to complete the survey. The distribution of questionnaires began in September 2020 and concluded in March 2021. The questionnaires were entirely anonymous and participants were informed that by completing the survey, they would also be providing consent.

The University of Manchester, the University of Liverpool, and the University of Central Lancashire (UCLan) were part of the first Northwest of England PA consortium in 2016. The FPA 2017 census revealed that approximately 170 PA students who were studying in the Northwest were attending one of these three

institutions, therefore, it was expected that most respondents would have graduated from one of these three universities at the time of data collection. Whilst the University of Liverpool no longer offers a PA programme, other universities in the Northwest such as Edge Hill University, the University of Bolton and the University of Chester now offer a PA programme. Hence, the results of this PhD project will also be relevant for these universities too.

### **Arranging the Interviews**

As discussed earlier in this thesis, it was originally intended for focus groups to be held with PAs, however, due to the COVID-19 pandemic, this had to be changed to interviews. As part of the original plan for data collection, clinical supervisors were going to be interviewed to gain an understanding as to the impact they felt PAs had made within their team or wider organisation.

Participants in the interviews were asked about their experiences of working with newly qualified PAs and their perceptions on the preparedness for practice and CPD requirements of newly qualified PAs upon joining existing clinical teams.

Using interviews to collect data allowed the researcher to gain in depth views from a conversation on a theme of mutual interest (Kvale 1996). Interviews were also deemed easier to arrange than focus group as they are between the researcher and one other participant, whereas multiple participants make up a focus group and it can, on occasion, be logistically challenging for this to be arranged. Interviews also provide an opportunity for the researcher to clarify information and probe further to gain a better understanding a topic or theme

(Worthen et al. 1997). This was of considerable relevance to this PhD project in particular, as the questionnaire data were used as a guide to aid the discussion of themes to be explored in greater detail during the interviews. Moreover, interviews are widely used in medical education to assess the competencies of graduates (Britten 1995; Dumelow et al. 2000).

Interviews also allow for great flexibility. Arranging the interviews for this project amidst a pandemic allowed the researcher and participant to communicate in a variety of means including through telecommunication and video conferencing. Geographical location and transport did not pose a barrier and the flexibility of timing allowed for interviews to take place early in the morning, late in the evening and even at weekends. Further, the flexibility of interviews also extended to the conversation itself, whereby the interviewer could rephrase or reframe questions to obtain a response, thus reducing the likelihood of a non-response which one could possibly expect from a questionnaire (Burns 2000).

All interviews were undertaken remotely between September 2020 and February 2021. Participants were invited to interview through recruitment on the Northwest Physician Associate Forum Facebook page and by email invitation to their NHS email, which was distributed by the link contact at each NHS Trust. The decision to carry out interviews remotely was due to the restrictions imposed due to COVID-19, both practically and ethically. The impact of COVID-19 on the research project is examined in greater depth in Chapter Eight.

Participants were informed that interviews would be conducted using a technological platform of their choosing. This included, but was not limited to:

Zoom, MS Teams, Skype and telephone interviews. Giving participants the freedom of selecting their own platform was intentional as it was determined that this would help with recruitment as well as ensure that participants were familiar and comfortable with the use of relevant technology.

Participants chose a variety of platforms for their interview. For many participants, this was the platform they were most familiar with using for work purposes. Participants were encouraged to turn their cameras on to increase interactivity and to increase resemblance with a face-to-face interview; the participants who opted for a video-conferencing all chose to have their cameras on for the duration of the interview. Many participants opted for a telephone interview as they were encountering connection difficulties when using video-conferencing software.

Each participant took part voluntarily in the research project with no remuneration. All participants were provided with an information sheet prior to taking part which outlined the rationale and nature of the research. Prior to the interview commencing, participants were reminded of their right to leave the interview at any time and return only if they were happy to continue. Participants were also informed that their participation would remain strictly anonymous and that audio recordings would be securely deleted once transcription of the interviews had occurred as per the participant information sheets and consent forms.

The interviews were semi-structured and an original interview guide (see Appendix 17) was produced of basic questions which were posed to all participants. In addition, following preliminary analysis of the questionnaire

results, further questions were added to produce a revised interview guide which focused on specific skills and competencies, for example competencies relating to paediatrics (see Appendix 18). The questions were also developed with the supervisory team who have vast experience in conducting similar research which employed mixed methods (Watmough et al. 2006a).

### **The Researcher Position**

As mentioned in Chapter One of this thesis, the principal researcher of this PhD project is an academic pharmacist who qualified as a pharmacist at a similar time as starting this research project. By using mixed methods in this project and by leading the analysis of the data, the researcher notes their own subjectivity in the research process. The researcher acknowledges that their own experiences, personal biases, and perspectives as an academic and as a recently qualified pharmacist may have influenced the overall research process and interpretation of the data. It is important to be aware of these potential influences and to reflect on them to maintain the integrity and validity of the project. It is also crucial to note that reflecting on one's subjectivity in the research process can be seen as a key strength in qualitative research and can also act as a source of inspiration for future research as well as a mechanism to deepen the understanding of human behaviour and beliefs (Bumbuc 2016).

As mentioned above, the subjectivity of the researcher is seen as a strength in qualitative research (Bumbuc 2016). In this PhD project, the researcher's subjectivity allowed them to engage with PA participants in an empathetic manner which helped to foster a deeper understanding of the experiences and



perspectives of the PAs. During the interviews, the researcher was able to build rapport and relate to PAs who were working clinically during the pandemic (as the author of this PhD was also working clinically during this time) and to PAs who were unable to prescribe and saw this as a limitation of their role (as the PhD author is also not a prescriber). The researcher's personal insights and experiences helped to enhance the interpretation of the qualitative data. The researcher's subjectivity allowed them to recognise and connect with the emotions, challenges and aspirations expressed by the participants which helped to enrich the qualitative data collected.

Moreover, the researcher's subjectivity also contributes to the trustworthiness and credibility of findings in qualitative research (Bumbuc 2016). In determining the framework and analysing the data, the researcher was supported by the supervisory team who have extensive experience regarding medical education research. By using the expertise of the supervisory team, this helped to add transparency to the overall process as the researcher was not solely responsible in the analysis of the data. This also acted as a form of quality assurance and helped to enhance the credibility of findings.

Overall, the researcher actively embraced their subjectivity in the research process, and this was invaluable in building a rapport with participants during interviews and in generating insights which may have been overlooked. The researcher's subjectivity helped to enrich the research process and strengthen the validity and applicability of the research findings. Further detail regarding data analysis and triangulation is included later in this chapter.

## **Data Analysis**

All interviews were digitally audio recorded and transcribed prior to analysis, with code names assigned to participants to provide anonymity. The data generated from the interviews built on the data and topics which emerged from Stage 1 of the data collection (questionnaires).

During Triangulation 2.3 (see Table 6 below), themes were identified and explored for each participant type initially, before a more thorough crossover analysis took place, whereby common themes between participant types were established.

Stage 3 data analysis involved triangulating the analysis of the questionnaires with the combined analysis from the interviews (data integration). Key themes were identified which were cross-referenced to each participant type. The integration at discussion level will answer the mixed methods research question through meta-inferences which extend further than identifying trends in qualitative and quantitative components separately and provide an overview of findings (Doyle et al. 2016). This is explored further in the Discussion chapter of this thesis.

The use of software to assist in data analysis in mixed methods research has been praised by Bazeley (2009). It also ensures that the analysis process is conducted more efficiently and in a timely manner as mixed methods research tends to be time-consuming (Johnson and Onwuegbuzie 2004). This PhD

project required the use of SPSS software to assist in the analysis of quantitative data and NVivo software to assist in the analysis of qualitative data.

**Table 6:** Different stages of data analysis

<b>Data Analysis</b>		
<b>Stage 1</b>	<b>Stage 2</b>	<b>Stage 3</b>
Questionnaire analysis	Interview analysis	Overall analysis
<b>Triangulation 1.1</b> PA quant + qual	<b>Thematic analysis 2.1</b> PA interviews	<b>Triangulation 3.1</b> Triangulation of 1.1 and 2.3
	<b>Thematic analysis 2.2</b> Supervisor interviews	
	<b>Triangulation 2.3</b> Triangulation of 2.1 and 2.2	

### **Questionnaire Data Analysis**

The quantitative data from the questionnaire was analysed using SPSS for Windows software to compare responses between participants and to produce descriptive statistics. The qualitative data produced from the free text comments were analysed using the iterative categorisation technique (Neale 2016) to identify patterns in the data which would topic summaries, and to establish whether the same participant made the same point or points repeatedly. This is in line with questionnaire analysis from several studies in the medical education

field as outlined earlier in this chapter (Guse et al. 2016, Lestari et al. 2016, Premkumar et al. 2018).

The topic summaries which were identified during the iterative categorisation process were discussed with the supervisory team who also reviewed the data. This was helpful in contributing towards a revised interview guide which included open-ended questions to be asked during the interviews (Stage 2 of data collection) and aligns with previous literature on mixed methods used in medical education (Roos et al. 2014, O'Donoghue et al. 2018).

The qualitative comments were triangulated with the quantitative data. This is a validated method of data collection for this kind of health education research (Watmough et al. 2006).

### **Interview Data Analysis**

The interviews were transcribed verbatim and the qualitative data produced were entered into NVivo and analysed through the process of thematic analysis. Braun and Clarke (2006:79) define thematic analysis as:

*“a method for identifying, analysing and reporting patterns within data”.*

The aim of thematic analysis is to identify patterns and assign themes to the data produced. These themes can then be used to address the research question collectively. It is important to note that thematic analysis is not merely an organisational exercise. If performed correctly, the researcher can identify

underlying ideas and concepts. A key advantage of thematic analysis compared to other methods is that it provides flexibility by means of theoretical freedom. It does not require a theoretical approach to be applied when it is performed (Braun and Clarke 2006). This results in a more accessible form of analysis, which can be modified to suit the study and can produce rich and insightful analysis of the data produced. In addition, thematic analysis is also useful in analysing the perspectives of different participant types, thus making it particularly relevant to this PhD project which had two participant types (PAs and clinical supervisors).

In this PhD project, two thematic analyses were performed. The first thematically analysed the data obtained from PAs during the interviews and the second thematic analysis analysed the data obtained from clinical supervisors during individual interviews. Once both thematic analyses were performed, triangulation of these took place to provide an overall analysis of the data collected. This triangulation highlighted key themes in common and those which differed between the two participant types. Validity in the analysis of data prior to triangulation was ensured by the emergence of same or similar themes in the thematic analysis process between participant types. Table 7 (below) outlines the stages of the interview data analysis.

**Table 7:** Different stages of interview data analysis

<b>Stages of Interview Data Analysis</b>
Questions designed based on data analysis from questionnaire data in relation to preparedness for practice and CPD requirements of PAs
Interviews arranged
Interviews undertaken and audio recorded
Notes made by AK following each interview, providing a short overview of key points
Preliminary themes identified for the purpose of data analysis based on the research question and aims as well as analysis from the questionnaire data
All audio recordings transcribed verbatim by AK
Written notes made alongside transcription of audio recordings to confirm pre-identified themes and to establish any potential new themes
All transcripts read through to regain familiarity with the data
A coding framework was established from the identified themes in relation to the research question and aims (based on the communities of practice theory)
These codes/themes were assigned categories and sub-categories and were put in a framework which was applied to all transcripts
Any data which could not be assigned to a sub-category was placed within a miscellaneous category
The framework was validated by the PhD supervisory team
All transcripts were revisited to ensure that all data was correctly assigned to a sub-category
Analysis was written based on the final themes established in the relevant chapters of the thesis
All analysis and written chapters were validated by the PhD supervisory team

A framework approach was used, whereby the themes of the research were predetermined prior to data collection (Gale et al. 2013). These predetermined themes emerged from the analysis of qualitative data which were produced in the questionnaires. A series of meetings were held with the supervisory team to review the themes and to discuss which questions would be asked during the interviews. These discussions helped to shape the final interview guide and ensured that the interviews allowed the researcher to explore the preparedness for practice of PAs, in addition to their post-qualification CPD requirements.

Each interview was transcribed verbatim by the thesis author, "AK". For the purpose of transcription, and to ensure anonymity, each participant was assigned a random number. Each transcript included either AK or the participant number next to the line of speech to indicate who had commenced speaking. The transcripts were read multiple times to increase familiarisation as well as to determine any emerging sub-themes. The framework was applied to the transcripts and data was placed within smaller sub-themes to create subsets within the original themes to make it more manageable to fully analyse the data. These sub-themes were mapped out against the themes from the initial framework. In some instances, there was some overlap between the points raised by participants and the sub-theme it would fall under. In this case, it was decided that the data would be included in multiple subsets to allow for greater analysis.

The number of interviews conducted ensured a saturation of themes (Lavelle et al. 2013). Whilst this was not the initial aim, this was useful and provided great confidence and reassurance when placing data within subsets as each subset

included a robust amount of data which could be analysed in great depth. Further, the mix of participants being from either a primary or secondary care setting contributed to the transferability of the interview results. There was a 'Miscellaneous' theme, however, the data set for this theme was limited as most of the data was assigned to another theme. The supervisory team have vast experience in mixed methods research and in the analysis of qualitative data – the team reviewed the transcripts and themes independently which enhanced the robustness of the analysis stage of this PhD project.

### **Significance of Triangulation**

Triangulation is a model in which both qualitative and quantitative data are collected, and the data is then integrated to provide an overview of the research question in the final analysis (Schifferdecker and Reed 2009). Whilst it may be argued that the process of triangulation could simply result in contradictions between the qualitative and quantitative findings, these contraindications could allow opportunities for further research or for further exploration of the analysed area (Schifferdecker and Reed 2009). Considering that mixed methods research can be time-consuming (Johnson and Onwuegbuzie 2004) contradictions which are identified during the triangulation could be outlined as topics for future research.

The data transformation model outlined by Doyle et al. (2009) was used to triangulate data in this PhD project. This model allows for the simultaneous collection of qualitative and quantitative data which is then transformed by qualifying the quantitative results or by quantifying the qualitative data. During



Stage 1 of data collection (questionnaire), qualitative and quantitative data were produced simultaneously. Once the quantitative data had been analysed using SPSS software, the data was transformed to produce qualitative statements (descriptive statistics) which was useful in the triangulation process. These descriptive statistics, along with the free-text comments informed a revised interview guide for Stage 2 of the data collection process.

Triangulation was beneficial in the analysis of the data produced from this PhD project as it increased validity in the findings (Doyle et al. 2009). Triangulation of data across different methods and participant types ensured that the final data set to be analysed had already been consolidated, compared and correlated, which is in line with research by Johnson and Onwuegbuzie (2004).

The concept of triangulation has also been explored by Mertens and Hesse-Biber (2012). They speak about mixing qualitative and quantitative data to provide a more complete understanding of what is being researched. It is here that the true value of triangulation can be determined. Triangulation is not simply a means to distinguish findings according to their methodology. Instead, triangulation of data (within a method or across methods) leads to the discovery of causal relationships, which may not have been determined if triangulation had not taken place, thus signifying the necessity of triangulation in mixed methods research. The notion of triangulation in relation to the data produced in this PhD project is explored in greater depth in the Discussion chapter of this thesis.

## **Ethical Considerations**

Ethical implications must be considered when planning a study, particularly when conducting research relating to healthcare professionals. The following issues in relation to this PhD project were considered and actioned upon as appropriate: informed consent; confidentiality and storage; data management and storage.

The research project was granted ethical approval from the Faculty of Health and Social Care Research Ethics Committee (FREC) in June 2019. In line with Edge Hill University's ethical guidelines, as well as NHS ethical guidelines, the project then sought Health Research Authority (HRA) approval. To abide by ethical guidelines, data collection only commenced once HRA approval had been granted and local requirements were met at trust level from each individual trust involved in the research project.

All participants who took part in the PhD project were required to sign a consent form prior to taking part. Where possible, electronic consent forms were sent via email to participants to increase recruitment rates. Alongside the consent forms, participants also received an information sheet which contained details about the PhD project.

Participants completing questionnaires and taking part in interviews were reminded about their right to withdraw consent at any time until the point at which analysis of the questionnaires or interviews begun. This date was communicated to participants on the information sheet.

The following data needed to be managed and stored securely, in line with the General Data Protection Regulation (GDPR) (Data Protection Act 2018):

- Electronic questionnaires
- Electronic paper consent forms
- Audio recordings
- Transcripts of interviews
- Handwritten notes

All notes and other paper containing data or confidential information relating to participants were kept securely in a filing cabinet in the principal researcher's office. Audio recordings were transcribed at the earliest opportunity and were then securely destroyed. The transcribed audio recordings and data from the electronic questionnaires were anonymised and stored securely on a password protected computer. The password for access to the files was only known to the principal researcher.

As part of the requirements for the registration of this project, a research data management plan was produced and was discussed during the registration viva. This plan was regularly reviewed during the frequent supervisory meetings which took place.

Ethical approval from the Faculty of Health and Social Care Research Ethics Committee (FREC) was granted in June 2019 (Appendix 6). Following the receipt of FREC Approval, advice provided by an HRA Approvals Specialist

confirmed that HRA Approval would be required due to NHS staff being involved in the PhD project. This required updating the Data Management Plan (see Appendix 8). An IRAS form was submitted for HRA Approval in February 2020.

HRA Approval was granted in July 2020 (see Appendix 7), following a minor update of documentation to reflect the changes required to the project resulting from the COVID-19 pandemic. Data collection followed once local approvals were sought from the different trusts involved in the project.

## **Limitations**

There are limitations to each of the methods used in this PhD project. These will be explored in further detail in Chapter Nine of this thesis. However, there are also some general limitations to mixed methods research. Mixed methods research can be expensive, time consuming and confusing, particularly when interpreting conflicting results (Johnson and Onwuegbuzie 2004). It is noted that the thesis author did not experience these general limitations throughout the completion of this PhD project.

Despite the limitations, mixed methods research provides an opportunity for researchers to probe further using a different methodology to generate new data or to explain data already generated (Plano Clark 2017). Moreover, mixed methods research provides a deeper level of analysis and justification for initial findings (Lavelle et al. 2013). This provides a stronger evidence base for

answering a range of research questions which may not be possible when using a single method only.

### **Chapter Three Summary**

Two research methods were employed to collect data in this PhD project, questionnaires and interviews. Questionnaires are a set of questions which participants are asked to complete and may be paper based or completed electronically. Once created, questionnaires can be distributed to large groups of participants relatively easily. Interviews are generally conducted on a one-to-one basis, therefore require a greater amount of time than focus groups, although this is dependent on the number of interviews conducted (Adams and Cox 2008).

Stage 1 of this PhD project involved the electronic distribution of a questionnaire to PAs. This allowed rich data to be produced which was useful in informing the questions and themes to be explored further in Stage 2 of the data collection process. The questionnaire required participants to rank their competence against a number of skills and competencies from the Competence Framework (DOH 2012) using a Likert (ratings) scale. The questionnaire also included a small free text section for qualitative comments.

Stage 2 of the PhD project involved interviews with PAs and with clinical supervisors. The use of interviews allowed for key themes which emerged from Stage 1 to be explored in greater depth. This added validity to the findings from

Stage 1, and also provided a rationale as to why participants chose to answer a question in a certain way.

Analysing the qualitative data thematically was in line with other research in the medical education field such as that of Lestari et al. (2016), Lukasse et al. (2017) and Premkumar et al. (2018). Interestingly, several research studies on PAs in the UK which are featured in the Literature Review chapter of this thesis (Chapter Two) have used a mixed methods approach in their research design.

Prominent writers on curriculum evaluation such as Fitzpatrick et al. (2010) stress the importance of using mixed methods for programme evaluation. The use of mixed methods and the process of triangulation in this PhD project allowed for rich data to be produced and analysed to a point unimaginable if restricted to a single method. Research within the field of medical education should seek to improve the teaching and learning of students and through this the potential impact they will have within healthcare systems once suitably qualified. This can be achieved by discussing the 'mixing' of findings, rather than commenting on qualitative and quantitative aspects of the research as two separate entities (Maudsley 2011).

Overall, this chapter has examined the concept of mixed methods research and its significance within the field of medical education. Further, this chapter has explored the use of questionnaires and interviews in relation to this PhD project. The subsequent chapters of this thesis will now focus on the results produced from data collection.

## **Chapter Four – PA Questionnaire Data**

This chapter will present key questionnaire data which was completed by PAs. Appendix 19 of this thesis includes all the relevant graphs for each question which was posed to participants. This chapter presents relevant data with figures and narrative summary for each set of questions. An exploration of these results follows in Chapter Five of this thesis.

### **Questionnaire Results**

A total of 40 questionnaires were returned. Whilst the exact number of PAs who were working at each Trust is unknown, there were a total of 269 PAs working across the Northwest and Mersey regions during the timeframe in which the questionnaire was distributed (RCP 2021). Based on this figure, the approximate response rate for this questionnaire was 14.9%.

### **Contextual Information**

Questions 1-5 asked participants to provide contextual information about themselves. Question 1 asked participants to specify if they were male, female or non-binary. There was also an option for participants who preferred not to say. Altogether, 62.5% of PAs (n=25) who completed the questionnaire were female. Question 2 asked participants about their current place of work. In total, 60% of PAs (n=24) reported working in a teaching hospital and 17.5% of PAs (n=7) reported working in a primary healthcare setting. In relation to where participants had completed their PA studies, 40% of PAs (n=16) had completed

their PA studies at The University of Manchester, compared with 30% at the University of Liverpool (n=12) and 15% at the University of Central Lancashire, UCLan (n=6). In total, 15% of PAs (n=6) had completed their PA studies at an institution other than those listed above. Question 4 asked participants about which year they graduated from their PA studies; 42.5% of respondents (n=17) had graduated in 2018. Only one respondent had graduated prior to 2018. Question 5 asked participants about their age range. Altogether, 55% of participants (n=22) who completed the questionnaire were between the ages of 25 and 29. Only one participant was 24 years or younger, and only one participant was aged between 46 and 55. Visual representations of the above narrative summary can be found at the start of Appendix 19.

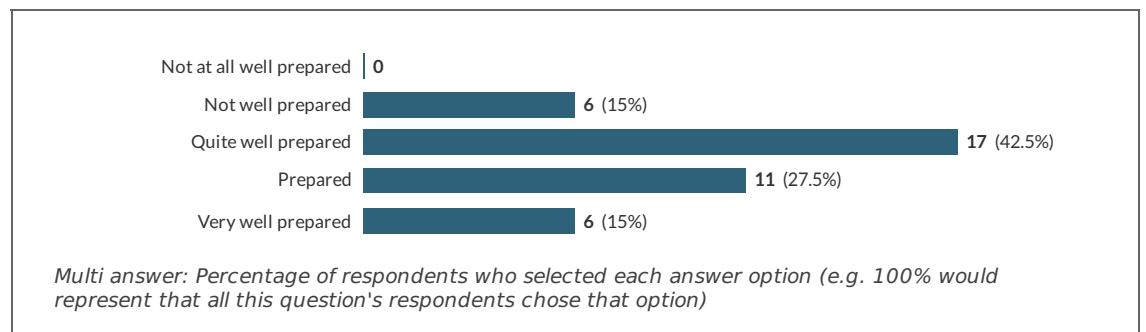


## Preparedness for Practice

Question 6 asked participants to rate themselves on a Likert scale as to how well-prepared they felt to work as a PA by their pre-qualification PA programme. In this case, this refers to their formal university course (including university teaching and placements).

**Figure 8:** Bar chart to show the how well-prepared respondents felt to work as a PA by their pre-qualification PA programme

6.1 In general, how well-prepared do you feel that you have been to work as a PA by your pre-qualification PA programme?



In total, 85% of respondents (n=22) felt at least quite well prepared (either quite well prepared, prepared or very well prepared). Altogether, 15% of respondents (n=6) felt not well prepared.

## **Competencies**

Questions 7 to 10 asked participants to rate themselves on a five-point Likert scale on how prepared they felt to carry out competencies which are outlined in the CCF (DOH 2012). The competencies that were selected for inclusion in the questionnaire were done so in conjunction with the Northwest Physician Associate Forum Committee to ensure a wide spread of competencies.

### **Question 7**

From the competencies asked in Question 7 (see figures 9-16 in Appendix 19), 89.8% of PAs (n=36) felt at least quite well prepared or better to recognise and work within the limits of their professional competence and scope of practice and within the scope of their supervising clinician. In total, 12.8% of PAs (n=5) felt that they were not well prepared to demonstrate effective communication and engagement with children, young people and families.

### **Question 8**

From the competencies asked in Question 8 (see figures 17-24 in Appendix 19), 25.6% of PAs (n=10) felt that they were not well prepared to recognise when to take appropriate action in safeguarding and promoting the welfare of the child. In total, 100% of respondents (n=40) felt at least quite well prepared or better to perform a physical cardiovascular, respiratory or abdominal examination.

### **Question 9**

From the competencies asked in Question 9 (see figures 25-32 in Appendix 19), 97.4% of PAs (n=38) felt at least quite well prepared or better to recognise when a clinical situation is beyond their competence and seek appropriate support and 10.3% of PAs (n=4) felt that they were not well prepared to prioritise workload using time and resources effectively.

### **Question 10**

From the competencies asked in Question 10 (see figures 33-39 in Appendix 19), 100% of PAs (n=40) felt at least quite well prepared or better to practice in a manner which is grounded in the underlying principles of the NHS as a patient centred service. In total, 21% of PAs (n=8) felt either not well prepared or not at all well prepared in addressing issues and demonstrating techniques involved in studying the effect of diseases on communities and individuals.

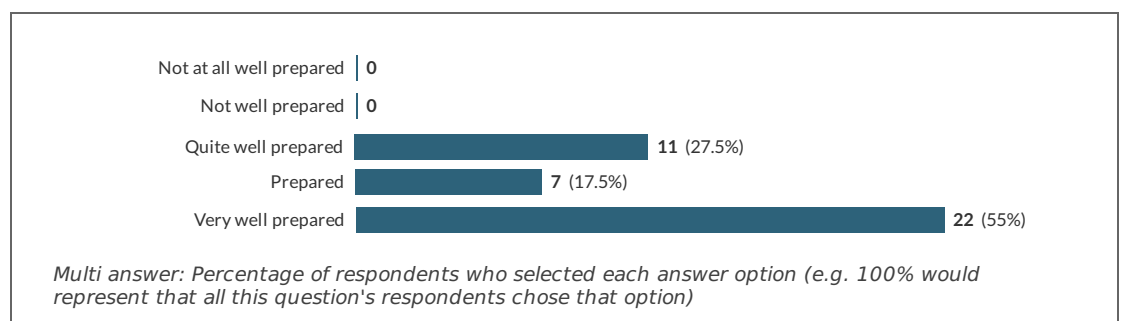
## Key Clinical Skills

Question 11 asked participants to rate themselves using the same Likert scale in relation to how prepared they were to carry out key clinical skills which PAs are regularly expected to undertake. Participants were asked about the following key clinical skills:

- Performing venepuncture
- Obtaining and interpreting ECGs
- Performing cannulation
- Obtaining arterial blood gas
- Placing urinary catheters
- Performing lumbar puncture
- Inserting nasogastric tubes

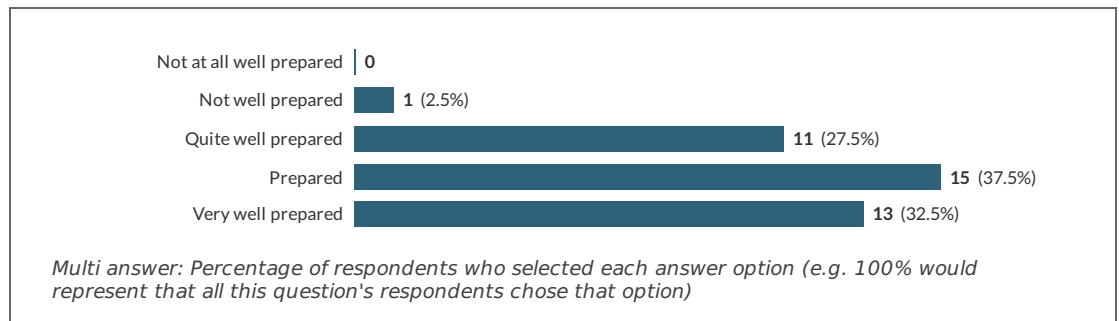
**Figure 40:** Bar chart to show how prepared respondents felt to perform venepuncture

### 11.1 Perform venepuncture



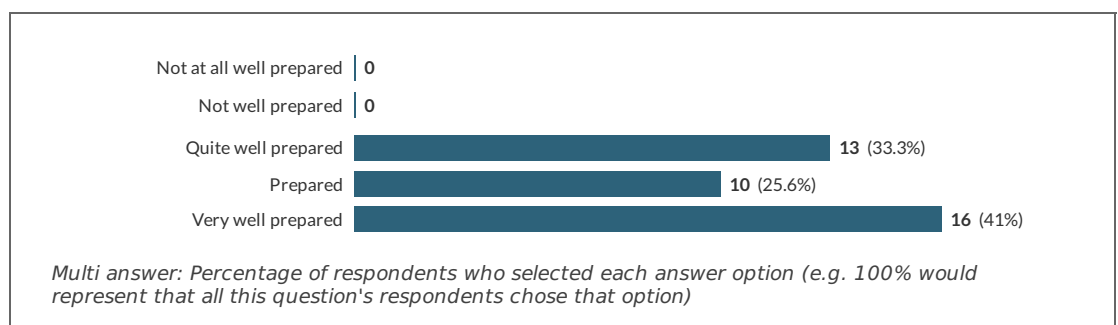
**Figure 41:** Bar chart to show how prepared respondents felt to obtain and interpret ECGs

11.2 Obtain and interpret ECGs



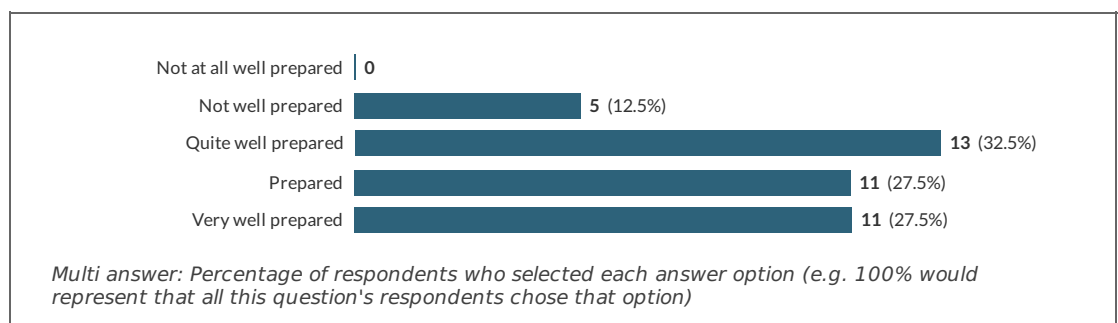
**Figure 42:** Bar chart to show how prepared respondents felt to perform cannulation

11.3 Perform cannulation



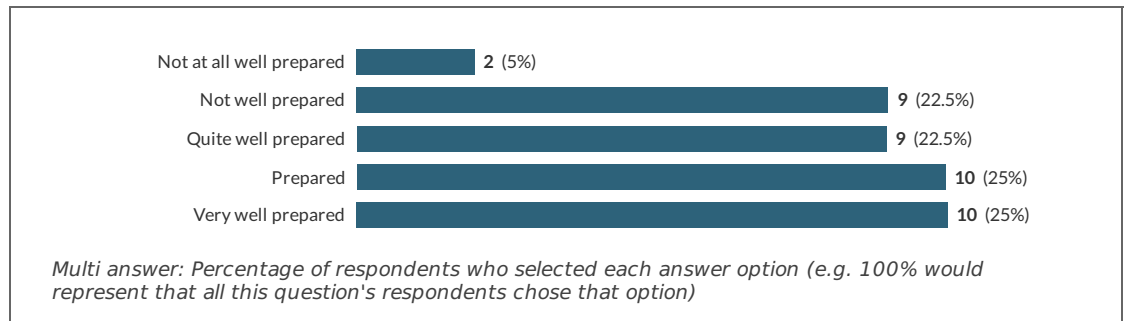
**Figure 43:** Bar chart to show how prepared respondents felt to obtain arterial blood gas

11.4 Obtain arterial blood gas



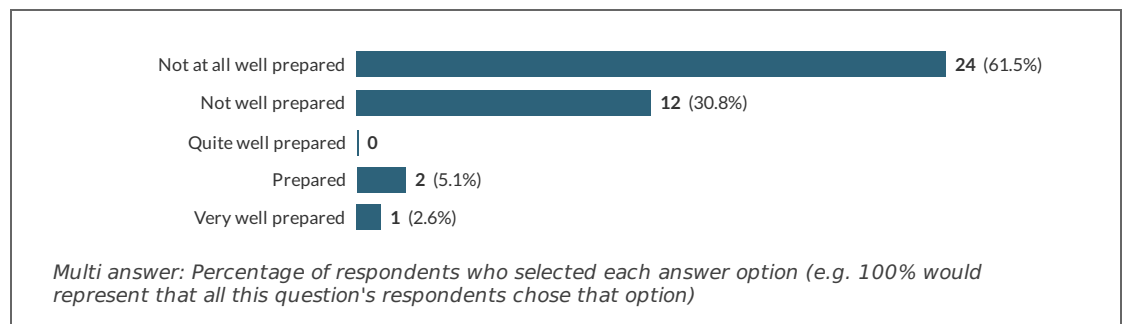
**Figure 44:** Bar chart to show how prepared respondents felt to place urinary catheters

11.5 Place urinary catheters



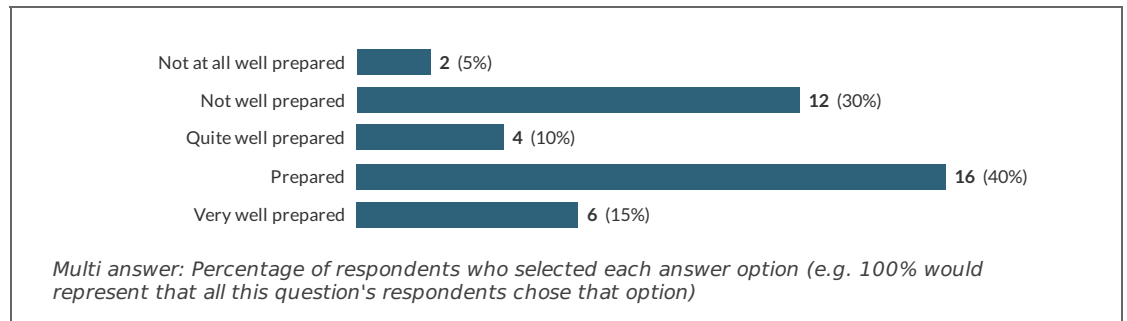
**Figure 45:** Bar chart to show how prepared respondents felt to perform lumbar puncture

11.6 Perform lumbar puncture



**Figure 46:** Bar chart to show how prepared respondents felt to insert nasogastric tubes

11.7 Insert nasogastric tubes



100% of respondents (n=40) reported feeling at least quite well prepared to perform venepuncture and to perform cannulation. In total, 92.3% of respondents (n=37) reported not feeling prepared to perform lumbar puncture, suggesting that the rationale for this statistic needed to be explored further during the interviews.

### University and placement

Question 12 (see Figure 47, Appendix 19) asked participants what best prepared them to meet the competencies from three options – university, placement, both university and placement. Altogether, 60% of respondents (n=24) reported that both university and placement equally prepared them to meet the competencies. Only 5% of respondents (n=2) felt that only university best prepared them to meet the competencies.

## Pre-qualification teaching

The following question was asked: Please let us know if you have any comments about how your university teaching could have better prepared you for clinical practice in relation to the competencies? In particular, are there any areas which you feel you needed more teaching on pre-qualification?

Altogether, 52.5% of participants (n=21) provided a response to this question.

In total, 27.5% of participants (n=11) called for more teaching to be delivered on the PA course offered by the university:

- *We did not get many hours of teaching time*
- *More medical teaching - core conditions; clinical skills; note taking*
- *I feel more teaching on interpreting investigations would have been beneficial along with some management plans of conditions*
- *It would have been beneficial to have had more teaching in the specialties such as paediatrics, O&G and mental health as I felt that I had less knowledge during these placements*



A few PAs made comments specifically related to pharmacology:

- *Pharmacology is an area that could have been better delivered during pre-qualification teaching*
- *Focus on pharmacology and medicine more within the course. Had to learn a lot of the management and treatment of diseases from guidelines or placement. Not covered well on course*

In total, 12.5% of participants (n=5) called for a greater variety of teaching methods to be employed as part of their PA programme at university, with several requests for a shift from traditional didactic teaching:

- *More clinical scenarios at university would have been better; more situational based teaching; further OSCE practice*
- *Other approaches to learning other than didactic and PBL*
- *More group work and sessions where we could discuss cases etc*

A few PAs remained complimentary about the university teaching and placement experience:

- *Excellent teaching and varied placement really helped me*
- *Actually, had lectures for clinical skills, examinations and how to communicate in difficult situations*

Rather interestingly, but not surprising due to the results from the quantitative data which revealed that 25.6% of PAs (n=10) did not feel well prepared to perform a physical paediatric examination, paediatrics made an appearance in several comments from PAs:

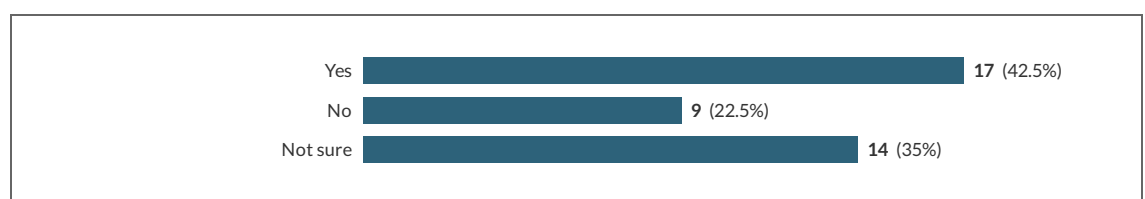
- *It would have been beneficial to have had more teaching in the specialties such as paed, O&G and mental health as I felt that I had less knowledge during these placements*
- *I also feel more teaching on paediatric examination and third-party consultations would have aided post qualification practice*
- *Probably could have done with more opportunity to do things on the paediatric placement as it was only 3 weeks it was limited & there were lots of things I wasn't allowed to do*

## CPD Support

For Question 14, participants were asked the following question: Do you feel well supported to meet your CPD needs? Only 42.5% of respondents (n=17) answered 'Yes'.

**Figure 48:** Bar chart to indicate whether or not respondents felt supported to meet their CPD needs

14 Do you feel well supported to meet your CPD needs?



Participants were then asked to expand on their answer using a free-text response.

Altogether, 65% of participants (n=26) provided a free-text response.

In total, 25% of PAs (n=10) outlined the positive support they receive in relation to being able to meet their CPD needs. This support was in the form of protected time for CPD, a study budget and frequent teaching to maintain their CPD. These comments were insightful and were used as prompts for discussion during the interviews. Indicative comments included:

- *I have regular PA teaching and departmental teaching which contributes to my CPD but I have also been given advice by colleagues about where to look for other CPD opportunities*
- *An internal teaching programme was set up to obtain and meet the internal CPD requirements and we are given 10 days paid leave additional to holiday to use for CPD events*
- *My workplace is very supported in providing and allowing to do CPD activities; given days off for personal development*
- *We have LOTS of CPD opportunities where I work! I feel very supported to do this and have done over my annual minimum already.*
- *Support from other PAs and RCP is good.*

There were just as many comments from PAs who highlighted the lack of support available for them to meet their CPD needs. Many of the negative comments emphasised the lack of protected time for CPD, lack of structure for CPD and not enough learning opportunities:

- *Lack of local CPD, particularly in the setting of primary care. We have PAs going practicing in specialities without speciality-specific training*
- *For external points I often find it difficult to get signed off for taking study leave because I don't see my supervisor often/ doesn't reply to emails*
- *Not enough learning opportunities/ progression available within the department for PA and also not enough encouragement for PA to be away from the ward to seek other learning opportunities*
- *I am not supported regarding my CPD. I am proactive and find out how maintain my CPD using documents by myself and speaking to other physician associates.*

In total, two respondents commented that their university course had not prepared them for post-qualification CPD:

- *Difficult to identify what are relevant CPDs in first few months*
- *Most of my knowledge about CPD has come from my own research. My university did not go through any CPD with me*
- *Pre-qualification, there was effort made to successfully pass the PA Programme with little consideration on CPD as we were no qualified yet.*

## **CPD needs which have been met well**

For Question 15, participants were asked to list 3 CPD needs which they have met well. This was a required question; however, many participants responded with 'n/a' or provided a blank response and failed to provide a response at all. In cases where participants did respond, many of them provided less than 3 CPD needs which they have met well.

Responses were centred around common themes, namely: communication; teaching; specific skills or knowledge; and other CPD needs.

Many PAs commented that they were presented with several opportunities to enhance their communication skills:

- *Speaking to relatives of patients*
- *Reflective practice*
- *Consultation skills*
- *History taking*
- *Understanding data interpretation*

CPD needs in relation to teaching was also mentioned frequently. PAs felt that they were given adequate study time to attend teaching:

- *Self-directed study; study-time; maintaining general knowledge*
- *Access to external courses (basic surgical skills)*
- *Attend departmental training; ongoing teaching on a monthly basis; teaching sessions in the evening*
- *Complete external training through what RCP offer*

PAs also commented on specific skills or knowledge which they had developed in relation to meeting their CPD needs, some of which had not been covered in great detail in the PA course at university. These included:

- *Improvement on clinical skills; cannula insertion; catheter insertion;*
- *Developing knowledge of lung cancer; developing knowledge of imaging*
- *Interest in diabetes was allowed to further develop*
- *Interest in investigation interpretation was helped to be developed further*
- *Improvements in management of acute and emergency conditions*
- *I have been able to develop my knowledge of lung cancer and thoracic imaging – things that were not covered in great detail during my course*

Other CPD needs which were described as being well met included:

- *Networking with fellow PAs; conferences; training with junior doctors*
- *National awareness of the PA role*
- *Colleague feedback*
- *Carried out an audit*

### **CPD needs that have not been met at all**

For Question 16, participants were asked to list 3 CPD needs which they have not met at all. This was a required question and 55% of participants (n=22) provided a written response with the rest of the participants responding with either 'n/a' or a blank response.

Four main themes emerged from the responses to this question: operational challenges; external opportunities; practical skills and leadership. Most comments overwhelmingly related to operational challenges.

In relation to operational challenges, PAs mentioned the difficulty in accessing their clinical supervisor and being unable to access funding or teaching.

Indicative comments included:

- *There's a lot of red tape in place due to the wording of policies making it difficult for PAs to gain new skills. The policies are worded to cover "registered professionals" as PAs are not yet registered this is difficult*

- *It can be difficult to access the money available through the expense process; no one to sign off on paperwork*
- *Outside of 6-month meeting hardly see my supervisor in a capacity to ask questions/discuss things*
- *Having one-to-one time with clinical supervisor for teaching purposes*
- *Access to in-house teaching; having protected learning time*
- *Unable to carry out research.*

Many comments related to the lack of external opportunities available to PAs. Once again, funding was an issue and many PAs commented that their CPD needs are not well met due to a lack of PA specific teaching and events.

Indicative comments included:

- *Online courses; external conferences; funding to attend conferences; my CPD courses are self-funded; accessing PA specific teaching; PA specific events.*

With regard to practical skills, PAs commented about the difficulty in being able to keep up their generalist skills. Prescribing was also mentioned frequently by PAs. Indicative comments included:

- *Upkeep of practical skills we don't do every day; learning extended clinical skills; practical procedures; unable to keep up generalist skills*
- *Non-medical prescribing rights; prescribing training.*



A surprising theme which emerged from the responses to this question was leadership. PAs commented that there was a lack of leadership opportunities and no identifiable career pathway. Indicative comments included:

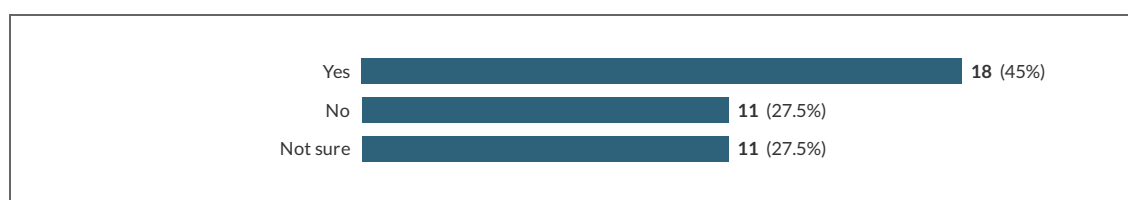
- *Provide mentorship for junior PAs; leadership opportunities; no formal career progression/specialist teaching.*

### Overall CPD needs

For Question 17, participants were asked if their overall CPD needs as a PA are being met.

**Figure 49:** Bar chart to indicate whether or not respondents felt that their overall CPD needs as a PA are being met

**17** Overall, do you think your CPD needs as a PA are being met?



Overall, 45% of respondents (n=18) felt that their CPD needs are being met.

## CPD Requirements

Question 18 was a free-text response question in which participants were asked to provide any other comments about post-qualification CPD requirements for PAs. In total, 42.5% of participants (n=17) provided a response to this question, with 3 of these participants commenting 'N/A'. Once categorised into themes, the responses for this question were used to provide prompts and topics for discussion and exploration in the PA interviews.

Responses for this question have been categorised into one of the following themes: COVID-19; understanding of CPD; regulation and prescribing. In relation to COVID-19, indicative comments included:

- *It has been a difficult start regarding CPD due to COVID and most things being on hold*
- *Ultimately due to COVID and the lack of statutory regulation for PAs have been major hurdles to my CPD*
- *The team have been brilliant during the pandemic, and I have been well supported throughout. All of my CPD needs have been met!*

The understanding of CPD was also mentioned by PAs including a call for greater teaching on CPD as part of the PA curriculum. Indicative comments for this theme included:

- *We aren't told in our course about what fits under which section and criteria so this should be taught at the end of the training too.*

- *Whilst the trust is aware of the CPD requirements for PAs I am not entirely sure that the unit I work on has an understanding. I plan on meeting my supervisor soon to gauge this.*
- *Perhaps a tutorial or video to best help people's understanding of the system and processes involved.*
- *More teaching on CPD while a student would be helpful to create a portfolio*

Finally, a few comments were made in regard to regulation and prescribing:

- *PAs need to be regulated so I welcome the GMC regulation*
- *Without a medication prescribing rights, it's frustrating and difficult to work in a busy clinical setting. I believe the most important and valuable skill a PA could have is the prescribing right*
- *We need more information about prescribing and regulation*

## Summary of Questionnaire Results

Table 8 (below) presents a summary of selected quantitative data relating to CPD from the questionnaire:

**Table 8:** Summary of selected quantitative questionnaire data relating to CPD

Item	n=number of respondents, percentage (%)
Percentage of respondents who felt at least quite well prepared to work as a PA by their pre-qualification PA programme	(n=34, 85%)
Percentage of respondents who reported that university and placement equally prepared them to meet the competencies in the CCF (DOH 2012)	(n=24, 60%)
Percentage of respondents who felt well supported to meet their CPD needs	(n=17, 42.5%)
Percentage of respondents who were not sure if they felt well supported to meet their CPD needs	(n=14, 35%)
Percentage of respondents who felt that their overall CPD needs as a PA are being met	(n=18, 45%)

As outlined in the summary table above, an overwhelming majority of PAs (n=34, 85%) felt at least quite well prepared to work as a PA by their pre-qualification PA programme, suggesting that PA curricula and the provision offered by HEIs is adequate in preparing PAs to work upon qualification.

Interestingly, only 25.6% of respondents (n=10) reported feeling not well prepared to recognise when to take appropriate action in safeguarding and promoting the welfare of the child. This suggests that there needs to be more CPD and support offered around safeguarding and working with children.

This suggestion is further strengthened by the statistic that 20.5% of respondents (n=8) were either not well prepared or not at all well prepared to demonstrate effective multi-agency working through awareness of roles and responsibilities within other services. Again, this suggests that PAs need to have a greater awareness of other services that exist and how to make referrals and work with these agencies. This is of heightened importance when working with children and vulnerable patient groups as well as when dealing with matters related to safeguarding.

A further highlight from this data once again is related to working with young people as 25.6% of respondents (n=10) reported not feeling well prepared to perform a paediatric examination. It is necessary to ensure therefore, that PAs during their training are given sufficient knowledge and opportunities to examine children and young people. This may help to increase their confidence and ensure that they feel well prepared when examining and making a differential diagnosis for this group of patients upon qualification.

In relation to CPD, some mixed messages emerged. Less than half of respondents felt well supported to meet their CPD needs and 35% of respondents (n=14) were not sure if they felt well supported to meet their CPD needs. Again, less than half of respondents (n=18, 45%) felt that their overall

CPD needs as a PA are being met. These findings raise concerns regarding the support offered by clinical supervisors and whether adequate training and learning opportunities are provided to PAs once qualified to meet their CPD needs.

It is possible that the timing of the distribution of the questionnaires may have influenced the data, particularly around responses relating to COVID-19 as well as participants being asked to look back and judge themselves on when they started working as a PA. Nevertheless, the qualitative data produced from the free-text response questions in the questionnaire is interesting and aligns to the quantitative data. For example, 25.6% of respondents (n=10) reported not feeling well prepared to recognise when to take appropriate action in safeguarding and promoting the welfare of the child – the qualitative data revealed that more teaching time and placements were needed to be dedicated to paediatrics.

Furthermore, 35% of PAs (n=14) were not sure if they felt well supported to meet their CPD needs. The qualitative comments suggested that many PAs had a poor understanding of CPD and called for increased teaching on CPD as part of the university curriculum.

The qualitative data also called for more protected time and learning opportunities at a local and national level. PAs commented on the lack of external opportunities available and the difficulty in accessing PA specific events including teaching and conferences, as well as difficulty in obtaining funding to attend such events.

There were some positive comments around the development of key clinical skills and in some cases, PAs praised the support of their clinical supervisors and colleagues for helping them to identify and achieve their CPD needs.

#### **Chapter Four Summary**

This chapter has presented the data, both quantitative and qualitative, which was generated from the questionnaire. The next chapter will explore and discuss the results of the questionnaire in greater depth.

## **Chapter Five – Exploration of Questionnaire Results**

The previous chapter presented the results from the PA questionnaire. This chapter begins by listing some of contextual information from the questionnaire, before listing some of the key findings from the questionnaire and providing some further exploration and discussion of the results.

### **Contextual Information**

Descriptive questions regarding characteristics and background at the start of the questionnaire suggest that from the sample of 40 PAs, most PAs (n=25, 62.5%) are female and the majority (n=24, 60%) also work in a teaching hospital. This suggests that the sample of PAs in this project was a representative mix of respondents which is reflective of the PA demographic nationally. In the most recent FPA census, which was completed by 790 PAs, 77% of respondents (n=608) were female and 65% of respondents (n=514) were working in secondary care (RCP 2022). As expected, based on a sample of PAs working in the Northwest of England, most respondents (n=34, 85%) had completed their PA studies at a HEI in the Northwest of England, with The University of Manchester and the University of Liverpool being the highest attended institutions (combined total of 28 out of 40 respondents); both of these institutions were part of the first PA consortium in 2016.

Participants would have completed the questionnaire between September 2020 and March 2021. From the 8 participants that had graduated in 2020, they



would have graduated and entered the workforce during the pandemic and their responses may have been influenced by this.

Overall, 85% of PAs (n=34) felt at least quite well prepared to work as a PA by their pre-qualification PA programme and 15% of PAs (n=6) felt not well prepared. This question related to the formal university teaching as well as the placements which respondents would have attended as PA students. For those who did not feel well prepared, this could be attributed to poor university teaching, poor placement experiences, lack of time to practice clinical skills or a lack of preparedness to enter the workforce at a time of heightened stress for the NHS.

## **Key Findings**

Key findings from the PA questionnaire relating to CPD include:

- 89.8% of respondents (n=36) were at least quite well prepared or better to critically evaluate their own practice to identify learning or developmental needs and identify and utilise learning opportunities
- 45% of respondents (n=18) felt that their overall CPD needs as a PA are being met
- 42.5% of respondents (n=17) felt well supported to meet their CPD needs
- 35% of respondents (n=14) were not sure if they felt well supported to meet their CPD needs

## Competencies

In terms of feeling prepared to carry out competencies which are outlined in the CCF (DOH 2012), PAs were asked to rate their level of preparedness across 31 competencies. PAs responded feeling at least quite well prepared for the following 4 competencies:

- Consistently behave with integrity and sensitivity (n=40, 100%)
- Demonstrate the ability to develop and maintain clinician-patient relationships which will foster informed patient choice and negotiated care decisions (n=40, 100%)
- Perform a physical cardiovascular, respiratory or abdominal examination (n=40, 100%)
- Practice in a manner which is grounded in the underlying principles of the NHS as a patient centred service (n=40, 100%)

From the 31 competencies, a small percentage of PAs responded feeling not well prepared or not at all well prepared for 27 of the competencies (it is to be noted that the minority figures for some competencies does not indicate that PAs as a whole felt not well prepared or not at all well prepared). From the 27 competencies identified, only 4 competencies had a rating of higher than 20% for feeling not well prepared or not at all well prepared and these were:

- Recognise when to take appropriate action in safeguarding and promoting the welfare of the child (n=10, 25.6%)
- Perform a physical paediatric examination (n=10, 25.6%)

- Address issues and demonstrate techniques involved in studying the effect of diseases on communities and individuals (n=8, 21%)
- Demonstrate effective multi-agency working through awareness of role and responsibilities within other services (n=8, 20.5%)

Interestingly, most of these relate to children and young people as well as working with other agencies which is common in the care of children and young people as multiple services may be involved in the care of a child or young person. It could be the case that most participants are not working on a children's ward, hence feeling unprepared. However, it may also be the case that university teaching did not place a great emphasis on child health and working with other agencies. Moreover, although PAs will have seen children and young people in general practice, they would likely have had short paediatric placements. This is something which can be remedied by dedicating specific sessions on child health and increasing the use of case-based education and simulation to prepare PA students should they be faced with situations regarding children and multi-agency working when working in practice.

The findings indicate that PA feel prepared in performing a physical cardiovascular, respiratory or abdominal examination, however, it is important that they are provided with learning opportunities to practice this on a child as well as on an adult to develop their competence.

## Clinical Skills

From the 7 key clinical skills which participants were asked to rate themselves in relation to preparedness to carry out these skills, 100% of respondents (n=40) felt at least quite well prepared to perform venepuncture and cannulation. Both are common skills which a PA is required to undertake. The 2020 FPA census revealed that performing venepuncture was the most common miscellaneous activity undertaken with 82% of PAs reporting that they performed venepuncture and 53% of PAs reporting that they performed cannulation (RCP 2021).

PAs rated themselves as feeling not well prepared or not at all well prepared to carry out the following skills:

- Obtain and interpret ECGs (n=1, 2.5%)
- Obtain arterial blood gas (n=5, 12.5%)
- Place urinary catheters (n=11, 27.5%)
- Perform lumbar puncture (n=25, 61.5%)
- Insert nasogastric tubes (n=14, 35%)

Performing a lumbar puncture and inserting a nasogastric tube are arguably two of the most difficult skills which a PA would be required to undertake. The 2020 FPA census revealed that only 37% of PAs inserted nasogastric tubes and only 15% of PAs performed lumbar puncture (RCP 2021) suggesting that these are not common tasks which PAs undertake. Whilst it is acknowledged that PA students may not have several opportunities within placements to perform some

of the key clinical skills listed above, such as performing a lumbar puncture, it is important that any missed placement opportunities are provided by HEIs through additional skills or simulation sessions. These may make PAs feel more prepared to perform such skills when they enter practice. It may also be an opportunity for academic staff to highlight opportunities throughout the programme (either on placement or a part of formal university teaching) where PA students will be able to practice different skills. Overall, the PAs who participated in the questionnaire felt well prepared for most of the key clinical skills which suggests that the curriculum at the time relating to skills education was effective.

### **Informing the Interviews**

The questionnaire data was useful in informing the interviews in the next stage of data collection as key topics which were identified were included in the revised interview schedule (see Appendix 18). These topics related to paediatric teaching as this was a notable finding from the questionnaire data in which 25.6% of PAs (n=10) felt not well prepared or not at all well prepared to perform a physical paediatric examination. Qualitative comments from the questionnaire also mentioned the lack of paediatric teaching whilst PAs were completing their training.

The revised interview guide included some questions on what support PAs would like and when they first learnt about post-qualification CPD requirements and the free-text comments regarding these were varied. Furthermore, due to the COVID-19 pandemic, the revised interview schedule also included some

questions and prompts about the pandemic and the impact this had on PAs and on their CPD.

## **Chapter Five Summary**

This chapter has explored the results generated from the PA questionnaires. The data from the questionnaire indicated that 85% of respondents (n=34) felt at least quite well prepared or better to work as a PA by their pre-qualification PA programme. Resultantly, significant changes to programmes would not be required ahead of GMC regulation as the data suggests that the PA courses satisfactorily prepared PA students to work as qualified PAs. Potential limitations of the questionnaire are explored in Chapter Nine of this thesis which also includes a more in-depth discussion on how the PA questionnaire data supports the hypothesis. The next chapter will summarise the PA interviews.

## **Chapter Six – PA Interviews**

This chapter will summarise the results of the interviews (n=10) which took place with PAs. All interviews were undertaken remotely and the PAs who participated in an interview were from a mix of primary and secondary care settings and had completed their PA training at different universities. This chapter will outline how the interviews were arranged, the process for analysing the results, followed by a discussion of the results. The chapter will conclude by examining how the results align with the hypothesis of this thesis.

### **Purpose**

The primary purpose of conducting interviews with PAs was to ascertain specific views relating to preparedness for practice and to determine what PAs felt their CPD requirements were. A secondary aim was to further develop the understanding of preliminary results from the questionnaire in Stage 1 of the project. Preliminary qualitative results, generated from the free-text comments in the questionnaire were analysed and some concepts were chosen to be included as an addendum to the interview guide and were asked to participants. Further detail around interview methodology, including the integration of interviews and questionnaires, is discussed in Chapter Three. The participant profile of the PAs who were interviewed is outlined in Table 9 below.

**Table 9:** Participant profile of PAs who were interviewed

<b>Participant</b>	<b>Setting</b>	<b>Specialty</b>	<b>Interview Platform</b>
001	Secondary Care	Neonates	Telephone
002	Primary Care	General Practice	MS Teams
003	Secondary Care	Infectious Diseases	Telephone
004	Secondary Care	Respiratory	Telephone
005	Secondary Care	Trauma & Orthopaedics	Zoom
006	Secondary Care	Care of Elderly (Geriatrics)	Telephone
007	Secondary Care	Psychiatry	Telephone
008	Primary Care	General Practice	MS Teams
009	Primary Care	General Practice	Telephone
010	Secondary Care	Surgery	Zoom

Participants chose a variety of platforms for their interview. For many participants, this was the platform they were most familiar with using for work purposes. Participants were encouraged to turn their cameras on to increase interactivity and to increase resemblance with a face-to-face interview; the participants who opted for video-conferencing all chose to have their cameras on for the duration of the interview. Many participants opted for a telephone interview as they were encountering connection difficulties when using video-conferencing software.



Each participant took part voluntarily in the research project. All participants were provided with an information sheet prior to taking part which outlined the rationale and nature of the research. Prior to the interview commencing, participants were reminded of their right to leave the interview at any time and return only if they were happy to continue. Participants were also informed that their participation would remain strictly anonymous and that audio recordings would be securely deleted once transcription of the interviews had occurred as per the participant information sheets and consent forms.

Of the 10 participants who were interviewed, none chose to leave the interview part way or before the interview had commenced. There was a mix of males and females, as well as a mix of PAs from primary and secondary care settings who worked in different specialties. All of the participants worked across the Northwest of England.

### **Data Analysis**

Each interview was transcribed verbatim by the principal researcher, "AK". For the purpose of transcription, and to ensure anonymity, each participant was assigned a random number. Each transcript included either AK or the participant number next to the line of speech to indicate who had commenced speaking. The transcripts were read multiple times to increase familiarisation as well as to determine any emerging themes.

Once themes had been identified, a coding framework was established from the identified themes in relation to the research question and aims (based on the communities of practice theory). These codes/themes were assigned categories (themes) and sub-categories (sub-themes) and were put in a framework which was applied to all transcripts. Any data which could not be assigned to a sub-theme was placed within a 'Miscellaneous' sub-theme. The use of themes and sub-themes made it more manageable to fully analyse the data.

The supervisory team brought their invaluable experience of medical education research (Watmough et al. 2016; Garner et al. 2010; Pearson et al. 2018) to the data analysis stage of this project and the involvement of the team was crucial in ensuring consistency in the verification of themes. The supervisory team validated the coding framework of themes and sub-themes and validated the analysis of all transcripts and written chapters of the thesis to ensure consistency in the analysis of data from different sources. Table 7 in Chapter Three outlines the different stages of the interview data analysis process. The data from the clinical supervisor interviews (see Chapter Seven) was analysed in the same way as the data from the PA interviews as detailed above.

## Results

The results of the PA interviews are outlined and discussed below. The results are presented according to each of the five prominent themes from the analysis of the data and the predetermined aims of the project, with data from each subset included within the overall theme discussion. The five prominent themes are:

- 1) Preparedness for Practice
- 2) The Physician Associate Role
- 3) Post-Qualification Training and CPD
- 4) GMC Regulation
- 5) Miscellaneous

Sub-themes were also identified and are highlighted in each section, where appropriate, as well as in Table 10 (below).

**Table 10:** Themes and sub-themes from PA interview data

<b>Theme 1 – Preparedness for Practice</b>					
General Preparedness	Key Skills (Clinical)	Key Skills (General)	Competence and Matrix Requirements	Prior Life Experience	University verses Placement
<b>Theme 2 – The Physician Associate Role</b>					
Positive Experiences	PA Identity	Challenges	COVID-19	Expectations	
<b>Theme 3 – Post-Qualification Training and CPD</b>					
Impact of COVID-19	Academic	Leadership	Further Training and CPD	Understanding of CPD Requirements	
<b>Theme 4 – GMC Regulation</b>					
Prescribing	PA Identity	Role of FPA and RCP			
<b>Theme 5 – Miscellaneous</b>					
No sub-themes identified					

## **Theme 1 – Preparedness for Practice**

In relation to preparedness for practice, responses were mixed with the majority of participants feeling quite well prepared, and a few PAs feeling less well prepared. This mirrors the findings from the PA questionnaire in which 85% of PAs felt at least quite well prepared, compared to 15% of PAs who felt not well prepared. In instances where PAs felt less well prepared, this was attributed to them having limited knowledge about the PA role within the setting they were working in. For those working in specialties in which they did not have much exposure on whilst at university, this did prove challenging at first, although many participants cited the induction which they received as being a key contributor to them feeling prepared in their role as a qualified PA. Many PAs also praised their local induction for providing an opportunity for them to refresh their key clinical skills. It is interesting to note that some of the PAs who were interviewed as part of the PhD project started their role during, or just before the COVID-19 pandemic, which may have had an impact on their perception of being prepared for practice, particularly as the pandemic brought about new guidance and operationalisation across healthcare settings, which were not only new for PAs, but for all members of the healthcare workforce.

Some participants were clearly able to articulate which key clinical skills they felt confident in performing and these tended to be the skills which PAs were performing more regularly such as cannulas and venepuncture. This is significant as these are both key practical skills which PAs are expected to perform. This also strengthens findings from the PA questionnaire in which 100% of participants rated themselves as feeling at least quite well prepared to

perform venepuncture and cannulation. PAs also noted that their confidence in performing certain skills was due to being able to practice these skills as part of their placements on the PA course. In contrast, clinical skills which were PAs had less confidence in performing were taking an arterial blood gas and inserting nasogastric tubes and performing lumbar punctures. Again, these skills were those which PAs were less likely to do and had limited exposure or opportunities to practice whilst being a PA student. These findings also correspond to quantitative data from the PA questionnaires in which 35% of PAs rated themselves as feeling not well prepared or not at all well prepared to insert nasogastric tubes and 61.5% of PAs rated themselves as feeling not well prepared or not at all well prepared to perform a lumbar puncture.

With regard to general skills, many PAs expressed that they had developed communication and teamwork skills from their previous employment and educational experiences, prior to joining the PA course at their chosen institution, although they did comment that the PA course allowed them to enhance these skills, in some instances.

### **General Preparedness**

When asked about their general preparedness to work as a qualified PA, most participants felt quite prepared:

*And I think I felt very prepared to the extent where I was able to identify what was and wasn't a red flag and what I needed to escalate (P002)*

*I think my first day, I felt quite prepared and went into it thinking I knew what to expect, and feeling sort of like I had the right skills and could do the clinical skills side of it, like taking blood and putting cannulas into patients, things like that (P003)*

However, some participants felt less well prepared where there was a limited knowledge about the PA role within the setting:

*So, I think overall on the first day, probably not prepared as I should've been. Erm... I didn't really have that much insight into what the role was, erm...or was going to be, and what my specific duties were. And so, yeah, I think the Trust did as well as they could because it was a new role (P005)*

A few participants praised their induction as being a key contributor to them feeling prepared in their role as a qualified PA:

*... so, I had like a three-week period of where it was induction. Two weeks I didn't do any clinical work, and then in third week I did, I wasn't considered as part of the rota so anything I did was extra, that was quite nice as I could discuss cases, but it was a case of me picking the case that I was comfortable with (P009)*

Similarly, those who had worked at their place of employment prior (either as a student on placement or otherwise) reported that this had helped them to feel prepared:

*I had been at the practice where I got the job for three months before...I had my preparing for professional practice placement there, and that's when they offered me the job, so we kind of scoped out what it would look like if I was working there...(P008)*

A few participants did not feel well prepared for placement. This was usually due to working in a specialised area or having limited exposure and understanding of a particular area:

*I umm, I didn't feel very prepared. Erm, I...[pauses] I suppose I had the added thing of working within such a specialised area. So, I really didn't feel like I knew what I was doing. I'd done some pre-reading going in obviously, but I really didn't know going in what I would expect. And, I also didn't get much paediatric teaching on my course either, so it felt like a big unknown to me. (P001)*

### **Key Skills (Clinical)**

Participants were asked about their confidence in performing key clinical skills (this was an open-ended question and participants were not expected to restrict their response to a particular area or type of skill). As expected, PAs felt more confident in undertaking skills they were more frequently required to perform:

*So, what I would say is this year, so what I feel confident doing is kind of triaging, I can do cannulas, yeah, I'd probably say that's two areas I'm strongest in because they're ones that I'm inclined to do more than anything else (P009)*



*...there's not really a great deal of skills that we do in primary care, really, procedure...not procedurally, anyway, apart from examination skills, which I think I felt fairly confident with, so, yeah, that was helpful (P008)*

Participants reported some hesitation in performing skills which they had not routinely done whilst at university or whilst on placement as part of their PA course:

*...But there's things like perhaps, doing an ABG (arterial blood gas) or doing a catheter, I hadn't done so for a very long time because my hospital placement, especially, general medicine hospital placement was a long time ago. So, those kinds of things you're not doing regularly and I'd feel less confident to do (P001)*

Many students attributed their confidence in being able to perform key clinical skills to their placements as part of the PA course:

*So, I felt on the clinical side of things, I was able to go and practice. On the wards, as well, you know, the doctors and consultants, they would show what we can't do... so, we've had a lot of practice doing those things (P007)*

Induction was also mentioned frequently by PAs as being a good chance for them to refresh their key clinical skills:

*I think a lot of clinical skills, like cannulas and venepuncture, and things like that, I was quite confident with, and the Trust I worked at anyway, gave all that*

*training prior to me starting anyway at induction, so that was a nice refresher, anyway (P005)*

### **Key Skills (General)**

PAs reported developing a host of general skills such as communication and teamwork skills. However, a few PAs had developed such skills from their previous employment and educational experiences, prior to joining the PA course at their chosen institution. A typical comment included:

*You see, I'm quite lucky because I've had a few jobs, before going into doing physician associate studies. So I feel like I developed good communication skills, good team working skills prior to the course...(P001)*

Developing these general skills also had an impact on the confidence of PAs, as illustrated by the following participant:

*Yeah, I definitely think communication skills have improved and I feel less on edge ringing another department and speaking to them about patients...I think there's a level of confidence that you gain from being with patients every single day (P003)*

The development of communication skills and confidence also allowed participants to display autonomy and leadership within the workplace:

*... I think learning to delegate and realising that you don't have to be the most junior person on the team. and take all the crap jobs, you can sort of sit at a sort of mid-grade position and say, well, actually, let's delegate this fairly and be that person to lead (P003)*

There were mixed responses when participants were asked to consider where they developed their general skills such as communication and teamwork skills:

*I mean, yes, definitely we have communication skills in university, which I think, often at times, went into much more detail than what we have in a placement, because in placement, we weren't involved in complex discussion, where we would be in the communication skills practice sessions that we had at uni. So, I think perhaps university prepares you more for that particular aspect (P004)*

The mixed response indicates that universities need to ensure that general skills are taught in terms of their theory, but that it is also signposted to students where they will practice these skills, whether that be in a classroom setting, whilst out on placement, or both.

### **Competence and Matrix Requirements**

Participants were asked to discuss their competence in regard to performing skills and procedures in the CCF matrix (DOH 2012). A few participants reported feeling generally confident to perform most of the requirements set out in the matrix:

*So, in terms of everything what's in the Matrix what a PA should and should not be able to do, I felt competent doing them all, to be honest (P002)*

Some participants were very clear on which skills and procedures they either found difficult or had limited exposure of:

*And at the time, probably one of the weakest ones would be fundoscopy, so looking into people's eyes with the scope and looking down ears because that's not something you get to do unless you're in places like general practice (P002)*

One participant commented that they still feel confident in undertaking procedures which they do not perform regularly:

*It's not something that I do quite often, but I still feel quite confident in doing a lumbar puncture, erm... but no, I still feel quite confident doing those type of procedures (P005)*

### **Prior Life Experience**

Many of the PAs who were interviewed appreciated the diverse backgrounds of their cohorts. Each PA had an interesting and unusual background prior to them commencing a PA course. Several participants valued their previous life experiences and education:

*I think there's just an element of you just need to have a social, emotional intelligence really about these things [laughs] in healthcare, and yeah, I'm not*

*sure I was taught that on the programme, I think, yeah, but probably skills I gained throughout, you know, I think my PGCE and previous life experiences, really (P008)*

One participant found that those from their peer group who had come from a health background had a slight advantage over those who had enrolled onto the PA programme from a non-health background:

*Erm, I think definitely to start off with...I think people who had been nurses, or who had done things like physiotherapy, I think it definitely gave them a benefit starting because I think it gave them less of a shock, in terms of just trying to adjust (P006)*

### **University versus Placement**

PAs who were interviewed engaged in a lively conversation about the value and benefits of formal university teaching and placements. They were asked to comment if either university or placement best prepared them for their first day as a qualified PA.

In regard to university experience, typical comments included:

*I suppose our university training geared us up for a more generalised role (P001)*

*And I don't feel like my university prepared me to take my exam [national] and in that, I didn't feel ready to practice (P001)*

In regard to placement experience, typical comments included:

*Definitely placement, and the sort of exposure to so much across the board on placement...and they were really good at us being hands-on as placement students, so, yeah, it was definitely more placement than theory that was helpful (P003).*

## **Theme 2 – The Physician Associate Role**

PAs generally shared positive experiences of working as a newly qualified PA and enjoyed the challenge and variety that the PA role entails. Participants acknowledged the challenges of entering a relatively “new” profession in the UK but felt supported. Participants felt they had a responsibility to champion the profession and be an ambassador for PAs, particularly as the profession continues to grow and becomes more established.

PA identity was a common discussion point in all of the PA interviews, with a mixed response in relation to how PAs were perceived by other members of the healthcare team. Many positive experiences were attributed to members of the healthcare team who had worked with PAs before and this was cited as a key contributor to PAs being well-integrated and well-utilised within teams.

However, a few PAs commented that there was a lack of understanding of their role by both patients and other members of the healthcare team with PAs commonly perceived as being junior doctors. Whilst PAs did not report any negative implications arising from this perception, they did comment that what they could or could not do caused confusion, particularly as they were not able to prescribe and had to decline certain tasks which were out of their scope of practice. This suggests that there needs to be a greater awareness of the PA role within the healthcare workforce to ensure that PAs can support teams effectively.

## Positive Experiences

Many participants reported positive experiences of working as a newly qualified PA. This was mainly attributed to previous study and employment experiences which helped them to settle into the PA role.

*So, I think I've worked in hospitals for about 10 years and used to work rotas and out of hours and on-calls. And I think primary care is good because I've got set days per week that I work and I like to manage patients and take, you know, a good chunk of responsibility, and that's not necessarily the case in hospitals. For example, if you attach to a consultant team, you're doing jobs after ward rounds...and it allows me to teach (P002)*

Many participants described challenges in entering a relatively “new” profession in the UK, particularly when employers had also had very limited or no experience of working with PAs before. Despite this, participants mostly felt supported in their roles and felt a greater sense of responsibility in championing the impact which PAs can have within healthcare teams.

*I feel like it's being quite a steep learning curve for both myself and the unit, and they've not had physician associates before. So, erm, I feel in some ways I've been sort of a bit of an experiment to see how we can fit in the team. Erm, and I felt a bit of pressure just to be a bit of an ambassador for the PA role as well (P001)*



## PA Identity

A common point of discussion across all interviews was centred around PA identity. Participants reported a mix of experiences in regard to how they are perceived by others, with many positive experiences being attributed to those who had an awareness of, or had worked with PAs previously. Typical comments included:

*I think some people found it challenging, to have to explain the role, because especially if you're in time pressured environments, you know, if you're only getting a certain amount of time to consult a patient, if you go in say "I'm the doctor", everybody knows what that is, and there is no other explanation needed. But if you have to spend a few minutes with every patient explaining, that eats into valuable time (P002)*

*One of the nurse practitioners, her husband is training to be a PA now, so she understood. I think the nurse practitioners, some of them didn't initially understand, but it became quite easy to talk to and ask questions. I think everyone was pretty nice (P009)*

A few participants reported a lack of understanding of their role by patients and other members of the healthcare team:

*One of the main challenges...you know, is recognition of my role, and clarity of my role as well. For a good few months, it wasn't really clear to the other staff*

*members what I can and can't do...but every ward I went to, they were wondering if I was a junior doctor or not (P007)*

## **Challenges**

Interestingly, the most common challenge which was discussed in the interviews centred around the PA role and PA identity. Indicative comments included:

*I think obviously recognition of the role can be a challenge because it's quite a new role at first, you know, there's not much awareness of the PA role and scopes of practice (P002)*

One PA working in general practice reported the demands of the job as a challenge which they face as a PA. This involves managing workload and ensuring that all tasks are complete, whilst maintaining a work/life balance.

*I think it's probably that time management really, and finding that balance with work and how you might...yeah, I think, I think a lot of it is the logistics of the job...but also manage to strike a work life balance, because when I first started out, and still on the odd day now, I'll find myself leaving one, two, three hours late...daily (P008)*

One PA commented that a challenge is not being able to network with other PAs more frequently:

*I think in terms of networking, you know, obviously most of the PAs in my hospital are on the wards...I don't see them too much, erm so, perhaps, you know, I could have more contact with them. But we do have a WhatsApp group...but more contact could be beneficial, I think... (P004)*

## **COVID-19**

All interviews were held at a time where COVID-19 was still highly prevalent in the UK. As a result, discussing COVID-19 during the interviews was a response to the changing situation of the pandemic and was not originally intended to be part of the discussion when the data collection stage of this PhD project was being planned. Participants were very vocal about sharing their experiences of working as front-line workers during the COVID-19 pandemic:

*So, it's had a huge impact...we can't go and have face-to-face sessions and collaborate with colleagues like we would have done, so it's had a huge impact (P002)*

## **Expectations**

Several participants were unsure how to respond when asked if working as a PA was as they had expected it to be. This was due to them being undecided where they would work, how they would be perceived by other members of their team and their own personal expectations:

*...in truth, I didn't actually know what to expect because it was such a new role, so there was obviously no standard set beforehand, so in a way, for me personally, it was almost like I had to set out the role myself erm... with the discussion with obviously my supervisors (P005).*

### **Theme 3 – Post-Qualification Training & CPD**

All participants were engaging in CPD, although this varied considerably in terms of time dedicated towards CPD, as well as the type of activity they were engaging with. It was apparent from the data that PAs would benefit from structured CPD and needed protected time in their rotas, in addition to a comprehensive teaching programme which was tailored to PAs and included teaching which allowed them to maintain their generalist skills and knowledge. Currently, many PAs are joining existing teaching which is designed for junior doctors and can be too specific to a particular speciality, resulting in PAs having to source their own CPD to maintain their generalist knowledge and skills. The PA questionnaire data revealed that 35% of PAs were not sure if they felt well supported to meet their CPD needs and free-text responses suggested that there was a lack of external opportunities available and many PAs had experienced difficulty in accessing PA specific event and obtaining funding. Whilst the evidence suggests that COVID-19 had a significant impact on post-qualification training and CPD with many courses becoming virtual, data from both the questionnaires and interviews overwhelmingly indicate that PAs need opportunities to interact with each other, either a Trust level or nationally, hence the need for regular conferences which would serve as CPD and a networking opportunity. However, for this to be successful, PAs would need access to funding and time to attend such conferences by their employer.

Some PAs had already completed, or were contemplating completing, a further academic qualification to enhance their knowledge and strengthen their skill set. It was highlighted by one PA that a formal academic qualification is more

beneficial than in-house training as a formal qualification can be used across different settings. There is scope for further research to be conducted on progression paths of PAs which will probably include prescribing, further academic qualifications and management opportunities for PAs. This will therefore require the job roles and remuneration of PAs to be reviewed in anticipation of PAs becoming more experienced and undertaking more advanced tasks that they are currently doing.

Each participant was asked an open question in regard to what they are attending in terms of training and CPD. Typical participant comments are included below:

*I've just set up a local CPD and for PAs between ourselves and some other practices in the area because we need to have CPD, which is appropriate to the discipline. And you know, it's no good me going to go to surgical teaching events if I'm not going to do any surgery (P002)*

*...and there are things like RCP Player and stuff which is really good because the thing is for PAs, is that although you need to maintain your CPD for your area, you need to maintain that broad-based CPD, relevant to your requalification or recertification every few years (P002)*

### **Impact of COVID-19**

PAs who were interviewed were asked to describe the impact of COVID-19 on their training and CPD. Comments included:

*Erm, I think impacted massively, especially as someone that's really new to the profession because I haven't been able to attend any teaching, any clinical skills lab, erm you know, even just meeting face-to-face with like the educational lead. I haven't been able to do that, everything's been done over Teams (Microsoft Teams) (P001)*

*I think in terms of ongoing CPD, everything's impersonal really, all the teaching...all the training we'd had, has all been virtual, which I think does possible challenge things when you want to try and have some audience participation, get discussion going...it is a bit difficult (P004)*

Only one participant commented that COVID-19 did not have a huge impact on their training and CPD:

*Yeah, I mean, of course, things like conferences became virtual and yeah, I don't know, but I don't think it really has...it's not been affected a great deal. There always ways to do CPD, whether that's, you know, your personal CPD or we still had clinical meetings within our practices, which counts as CPD (P008)*

## **Academic**

A few PAs suggested that PAs should consider undertaking further academic study post-qualification. Many of the PAs who were interviewed had already completed, or were currently completing an additional qualification:

*Yeah, so I've completed a doctor of advanced professional practice in primary care medicine qualification...and I've started a PgDip on healthcare management (P002)*

*...I think having a body of CPD courses with an academic backbone to them that people could pick and choose would be a really good idea. You know, there are people who are in surgery, for example, who may assist in procedures, and if they had advanced skills or more advanced skills and surgical interventions, they could do a lot more (P002)*

## **Leadership**

Some PAs who were interviewed were involved in aspects of leadership currently, whereas other PAs were thinking about taking on more leadership responsibility. Leadership was a point of discussion in one particular interview – there was some comments about what further leadership responsibility or career progression might entail:

*I think personally, it would be kind of more in a management role as well for more PAs coming through...so, I think for me personally, I think the next step would be to try and help lead those PAs in the department and try and give everyone a fair and kind of equal role, but also equal opportunity to progress as well. I think that's going to be the difficulty in the future when there's so much manpower on the ground that we all want to progress and we're all going to become very kind of specialised in our areas. It's like where do we go without taking opportunities away from other people? (P005)*



## Further Training and CPD

Participants were asked to comment on what further support in regard to training and CPD they require in their roles. PAs called for protected CPD time, conferences and networking opportunities to be made more accessible and a possible framework to make it easier to record CPD. Responses included:

*Umm... so I don't think that it would be agreeable that, because we're supposed to be generalists, I feel although it's nice if you had an interest in a speciality, going and spending a couple of days within that speciality would be great...I don't think that would work for the PA role generally. I think that would just be nice to have. (P001)*

*Erm, [pauses] I...like I said I need more aware of what's expected CPD wise. I think you'll probably speak to other PAs and they'll know a lot more than what I do, to be honest. I feel it's because...partly because I haven't thought about it because I've been working and sitting my exams, so my thoughts have just been trying to get through work and sit my exam and pass. Erm, but also, we weren't told anything about it at university, and I think other universities would be very different (P001)*

*I think it's actually really, really important to have that kind of blocked off half a day where no-one disturbs you, where you catch up with your admin, or you do your CPD work, or, you know, you're quite pushy and forceful to go to your study days, to go to these CPD days et cetera. I think that's really, really*

*important. So, I think in hindsight, yeah, I think I would have I would have changed my kind of working schedule a little bit to have a protected day (P005)*

## **Understanding of CPD Requirements**

Participants were asked about their understanding of CPD requirements for a PA. If they knew what was exactly required, and how their understanding of CPD requirements came about. Interestingly, most PAs had a good understanding of what was required of them in terms of the number of hours and internal and external CPD.

There were mixed responses in relation to how participants' understanding of CPD came about. While some PAs attended a session about CPD at university, others learnt about their CPD requirements through their own research.

Comments included:

*So, I think it was introduced when we were at university and then there was a big push on qualification because the standards and requirements are the same for us as what they offer general practitioners in terms of the hours, so it's something that's been there (P002)*

*Learnt myself. I think when I passed, there were some documents on the FPA website where if you were to pay for membership, they give you some things, so I just had a read of that and checked myself...we weren't really informed by our...whoever ran the programme (P009).*

## Theme 4 – GMC Regulation

The regulation of PAs by the GMC was welcomed by PAs and many viewed this as a positive milestone for the profession and were conscious that this could pave the way for prescribing rights in the future. Whilst not all PAs classed the inability to prescribe as a barrier to them performing their roles, many PAs felt limited and restricted by not being able to prescribe, and regularly found themselves having to rely on colleagues who could prescribe.

PAs also reported that regulation will enable the profession to be taken more seriously amongst patients and other members of the healthcare workforce, however, one participant did note that the GMC needed to ensure that PAs were not overlooked in favour of doctors. Furthermore, PAs were unsure as to what the role of the FPA and the RCP may entail once regulation begins, suggesting that greater clarity was needed on this, particularly as many PAs benefit from initiatives run by both bodies including “PA week” by the FPA and RCP Player from the RCP.

As stated earlier in the thesis, PAs are currently not regulated but are due to be regulated by the GMC, although this has now been delayed, meaning that PAs will not be regulated before summer 2024 at the earliest (RCP 2022). The GMC has published limited information on the regulation of PAs and anaesthesia associates (who will also be regulated by the GMC). The GMC (2021) have stated that regulation will bring about policies and processes that cover registration, professional guidance, education and fitness to practice through a regulatory framework which will be proportionate to the PA profession. They

have also emphasised that they understand the importance of future prescribing to PAs and understand that statutory regulation needs to be implemented prior to PAs attaining prescribing rights (GMC 2021). This statement not only underlines the importance of statutory regulation but also of the sense of urgency to allow the profession to maximise its potential within the healthcare workforce.

## **Prescribing**

All of the PAs who were interviewed as part of this PhD project mentioned prescribing multiple times during their interview. Usually framed as a limitation, prescribing was identified by most participants as a barrier to their role:

*...not having prescribing rights sometimes is a bit tricky erm... in that occasionally you can be the only medical professional on a ward and if something goes wrong and the patient needs medicine, you can't do it, so then it's hunting around to find someone that can (P003)*

*It affects me every day. Fortunately, I work with doctors that are, you know, amenable or supporting, but it is difficult. And, I think sometimes it is difficult for them to help you and they're busy...sometimes, it would just be easier if I could prescribe, from a time point of view (P006)*

Nevertheless, not all PAs reported prescribing being an obstacle to them performing their roles:

*Yeah, so a lot of the time I found that a lot of the time you'll be on the ward with a junior doctor so that isn't an issue really. The times where I have been on my own, we use e-prescribing anyway so you can sort of speak to someone over the phone...there are times where it would be ideal to prescribe or request certain things that we're not allowed to request erm... [pauses] but it hasn't presented a massive issue...that's a personal experience (P003)*

*...it actually makes the splitting of jobs very easy between the SHOs and ourselves (P005)*

Many PAs called for the GMC to advocate and eventually introduce prescribing for PAs:

*I think the only sort of...thing that would be additional and would be nice is if the GMC would take us and we could start looking towards prescribing rights and sort of having some support towards that, but I think until it's certain there's no rush for it (P003)*

*And then, obviously, look at how PAs would get prescribing rights and if we need them...I think is another task for post-regulation (P003)*

However, PAs had differing views as to how the GMC may potentially incorporate prescribing for PAs in the future:

*I don't know if they'll just keep the two years the same [of the current PA course] and then say, right, you have to do an extra six months prescribing and it is part of when you're employed [sighs] (P001)*

*If prescribing does come though, I think it should be like a top-up module or something like that. There was hardly any prescribing information or module in our programme. But I feel that, you know, we do need more training on that. I don't think the uni programme does provide enough training on things like prescribing (P007)*

Above all, PAs called for greater clarity on information regarding prescribing:

*I don't think there's anything more frustrating than when it would be and what exactly will happen once it happens...so will we instantly be able to prescribe and arrange for, or request ionising radiation? Or, will we have to go on a course for that? I don't think there's been anything concrete on what there will be. So, yeah, I just think more information really, because it's been a bit quiet other than I've been told that the regulation will happen next year, so yeah, definitely more information and clarification would be appreciated (P004)*

## **PA Identity**

Participants were asked about whether the GMC had a role in PA identity once they become the regulatory body for the profession. A few PAs commented that GMC regulation will be positive for PAs and for the profession generally. In particular, it was noted that regulation will enable the profession to be taken

more seriously amongst patients and within a variety of healthcare teams.

Indicative comments included:

*I guess for me, I think the GMC are just so well known to be... and have, I guess, and carry the, you know, as the regulators of doctors. And to share that with PAs, I think that... I think that standalone will, you know, will provide a lot of reassurance to all disciplines of medicine and across the workforce in that, you know, it's a GMC that are regulating, and I can't help but think that we shouldn't be seen as a profession that, you know, is...is any different to any other regulated profession, really (P008)*

*...at the end of day, we're joining onto, effectively, a similar regulation, regulation body as the doctors. So, I think they have to protect their own. And if we're going to be using their service and using their name, I think they have a right to kind of respect to us as well, and, also really erm, drive... if we're supposed to be, you know, this extra pair of hands that works to the same medical model as an SHO, I think they do have to protect us, and they do have to really get behind us and really promote us as well (P005)*

One PA expressed concern that the profession may be overlooked by the GMC:

*I do think the GMC are better placed to take us than HCPC because of the way our roles work. But, yeah, I do think there needs to be some sort of, a campaign, or a national recognition of this is what a PA is. It's very much the NHS is run on doctors and nurses and they're the only two professions that sort*

*of exist in the NHS, and it's a very overlooked profession at the minute...and whether being taken by the GMC will sort of diminish our sort of, I don't know...recognition even further because we'll be lumped in with doctors, I don't know...but I think it's a trial and error thing, very much (P003)*

### **Role of FPA and RCP**

PAs were unsure when asked about the role of the FPA and RCP once regulation begins. A few were concerned about paying fees for two bodies, whilst others suggested a collaboration between bodies would strengthen the profession. Typical comments in relation to the role of the FPA and RCP include:

*...but I really like how the FPA do like a PA week. I think really getting hospitals on board to sort of bring awareness of the PA profession. I suppose as more of us qualify, more of us are incorporated into the workforce. It will [GMC regulation], it will improve your identity, but I think especially when you're the first PA somewhere, unfortunately it's going to be a fine thing to prove yourself and show off what a PA can do. I think, you know, you're just going to have to be cut out for the role, really...a bit of added pressure (P001)*

*...they [the FPA] started this great initiative about, you know, doing this PA week, I think was a great idea. Apart from that though, I don't really know what else they do, I suppose it's great they do this voluntary managed register to try and sort of pseudo-regulation, I suppose [laughs] (P001).*



## **Theme 5 – Miscellaneous (adaptations to curriculum and placements)**

Some participants commented on possible changes they would make to the PA curriculum and placements based on their experience as a PA student. Many PAs found their university teaching to be of a poor standard and quality:

*Yeah, I think the university courses don't really... I don't think at the moment they prepare PA students for the world of work (P009)*

*So, I think that the university courses are not standardised, so what happens is that you get a variety of different courses based on wherever it's taught. And that essentially means that the courses prey to whatever teaching formula that each university sets in terms of credits for teaching sessions (P009)*

*So, I think trying to get first of all, PAs involved in the teaching because when we did have a PA teaching us, which we were very lucky, that one of our course leaders is a PA, things were very relevant, and erm, and relevant...I can't think of another word and well thought-out. So, I think definitely having a PA involved in the course is really, really important (P001)*

Only one PA called for a better structure for placements:

*So, a bit more structure for the placements and where they're going to go on placements in relation to what's being taught academically, I think (P002)*

A few PAs were very complimentary about the university teaching which they received and the placements which they attended:

*...I think with placements the way we did them, we had sort of one-day a week of GP placement from the very beginning of the course, which I think was probably quite a benefit to the XXXXX [name of university] course, because we got very early exposure to placement (P003)*

*...I think the course we did was very good. We did have a very nice mix of uni and placement, and when we were in uni or on placement, we did have a good mix of different specialities that we went to for help (P004)*

## **Chapter Six Summary**

The semi-structured format of the PA interviews was effective in obtaining insightful data from participants which could be categorised within themes and sub-themes. Analysing the qualitative comments from the questionnaire beforehand was useful in identifying topics which had potential to be explored further during the PA interviews. The quality of the data was enhanced by participants working across various specialties, working in both primary and secondary care settings, and having completed their PA training at different universities. Although several different platforms were used for the interviews, this did not affect the data which was collected, both in terms of amount and quality.

This chapter explored the interviews that were undertaken with PAs and the different themes which emerged from the data. Chapter Nine includes a discussion on how the data from the PA interviews support the hypothesis. The next chapter will explore the Clinical Supervisors interviews which took place.

## **Chapter Seven – Clinical Supervisor Interviews**

This chapter will summarise the results of the three interviews which took place with clinical supervisors. This chapter will outline how the interviews were arranged, the process for analysing the results, followed by a discussion of the results. The chapter will conclude by examining how the results align with hypothesis of this thesis.

### **Purpose**

The primary purpose of conducting interviews with clinical supervisors was to ascertain specific views relating to preparedness for practice and CPD requirements from the perspective of those who have responsibility of supervising PAs in practice. A secondary aim was to further develop the understanding of preliminary results from the questionnaire in Stage 1 of the project. Preliminary, qualitative results, generated from the free-text comments in the questionnaire were analysed and following extensive discussion with the supervisory team, some themes were chosen to be included as an addendum to the interview guide and were posed to participants. Participants who took part in the clinical supervisor interviews were asked about their experiences of working with newly qualified PAs, their perceptions on the preparedness for practice and CPD requirements of newly qualified PAs upon joining existing clinical teams, and the impact of COVID-19 on their teams and the PAs which they were supervising. Further detail around interview methodology, including the integration of interviews and questionnaires is discussed in Chapter Three.

The participant profile of the clinical supervisors who were interviewed is outlined in Table 11 below.

**Table 11:** Participant profile of Clinical Supervisors who were interviewed

<b>Participant</b>	<b>Setting</b>	<b>Specialty</b>	<b>Interview Platform</b>
101	Secondary Care	Neonates	Telephone
102	Primary Care	General Practice	MS Teams
103	Secondary Care	Infectious Disease	Telephone

Participants chose a variety of platforms for their interview. For many participants, this was the platform they were most familiar with using for work purposes. Participants were encouraged to turn their cameras on to increase interactivity and to increase resemblance with a face-to-face interview; the participant who opted for video-conferencing chose to have their camera on for the duration of the interview. Two participants opted for a telephone interview as they were encountering connection difficulties when using video-conferencing software.

Each participant took part voluntarily in the research project. All participants were provided with an information sheet prior to taking part which outlined the rationale and nature of the research. Prior to the interview commencing, participants were reminded of their right to leave the interview at any time and

return only if they were happy to continue. Participants were also informed that their participation would remain strictly anonymous and that audio recordings would be securely deleted once transcription of the interviews had occurred. The analysis of the data produced from the clinical supervisor interviews used exactly the same approach which occurred in the data analysis of the PA interviews. This approach is outlined in more detail in Chapter Six of this thesis.

## **Results**

The results of the clinical supervisor interviews are outlined and discussed below. As there were only three clinical supervisor interviews, the data was summarised into manageable themes (with sub-themes not deemed necessary). The results are presented in the following five themes:

- 1) Preparedness for Practice
- 2) The Physician Associate Role
- 3) Impact of COVID-19
- 4) Post-Qualification Training and CPD
- 5) GMC Regulation

## Preparedness for Practice

Clinical supervisors were asked to comment on the preparedness for practice of the PAs which they had worked with. Responses were overwhelmingly positive:

*They're very enthusiastic, really keen to learn. They're a little bit more mature than the usual student because they tend to be slightly older. And they seem really good (P101)*

*They were great [when asked about preparedness for practice]. Both of them came through our ED department during their training so they had both worked here as part of their training. So, they knew how the department worked, so that was easier. But I think their skills and I find they work just like junior doctors and need a minimum of supervision really (P101)*

When asked about skills, clinical supervisors were complimentary about PAs:

*I don't think she was any more competent than an F1 at any particular skill. Erm, he was probably better with reflective practice...when we got her confidence right, she took to it like a duck to water. She's now doing three-way catheters like the rest of us (P103)*

*Yeah, she was she was good. I think she's a really strong PA, her communication skills are good, her team-working skills are good. She's very diligent in her work ethic. I've not had a problem, really, with her (P103)*

## **The Physician Associate Role**

When asked about challenges of the PA role, prescribing was mentioned frequently. Clinical supervisors saw the lack of prescribing as a barrier to the PA role:

*The main challenge is the fact that they can't prescribe and they can't request x-rays, so that means that they have to ask somebody else to do that for them, which has got inherent problems in that often because it's busy, the first person they ask doesn't go to see the patient, so it's just somebody who acts on what they say (P101)*

*Well, I think it will either be at the time of qualification or something like a nurse specialist [when asked about requesting ionising radiation and prescribing].*

*Whilst they might not have the entire formulary or the entire radiology department will come to them, but for example, if our PA could request certain things for what would we do routinely that would help (P103)*

Another topic of discussion within this theme was centred around the relationship of PAs with other members of the healthcare team:

*Yeah, they get along really well with the nursing team, get on well with the other medical team, with the advanced nurse practitioners. So, yeah, I think it's really good (P101)*



*I think there is a little bit of confusion of how are they different to other allied health professional practitioners. And I think there's a little bit of, and I've only heard this from the advanced nurse practitioners, there's a "ooh, they can do any degree and then just do a two-year course and then they do the same as I do" [laughs] (P101)*

*I've just heard it from our advanced nurse practitioners because they're usually nurses that have sort of, you know, fifteen, twenty years of being a nurse. Then they do a master's degree to get to where they get to in the field, a little bit like these younger people do, you know, come in and do a two-year course and now they're seeing patients like me. So, I think there is a bit of animosity that way, but not now they're working here, that seems fine (P101)*

*Absolutely fantastic [when asked about relationship of PAs and junior doctors]. I mean, in the fifteen months that XXXXX [name of PA] worked with me, he must have worked with half a dozen junior doctors and I never had one of them say bad words about him. And I think they all universally felt it was a really positive thing, having XXXXX [name of PA] working with them, you know, very much kind of assisting them and working together with them. And I think the junior doctors themselves recognised the real positive impact that had on their own experience as a junior doctor in the ward, because it can be very, very busy (P102)*

When asked about their prior knowledge and understanding of PAs, all the clinical supervisors who were interviewed revealed a lack of knowledge:

*Erm, so, I guess I didn't really know what to expect. I must say that part of the reason why I agreed to supervise a PA was out of intrigue, really, because I heard a lot about PAs. I'd known about them working within sort of A&E settings, GP settings and acute medicine and surgery, but I was aware there were very few of them working in mental health. But I certainly felt that actually having a PA was not only to be beneficial to me, but also to my junior trainees as well, in terms of allowing them to take on sort of, you know, further opportunities to develop psychiatry specific competencies (P102)*

*So, as a supervisor, I suppose the biggest challenge of all this was two-fold really. We had to look at the other healthcare professions to see what physician associates really were. I think some of our advanced nurse practitioners felt very threatened. It was a case of "this is my stuff, I do this very well...". Erm, actually, I think we've largely got over that, we're looking at expanding the workforce department. There is still a little bit of well, we'll be advertising for a nurse, won't we? But what about an ANP or a physician associate, who would potentially be able to fulfil those roles? (P103)*

### **Impact of COVID-19**

Clinical supervisors were also asked to discuss the impact of COVID-19 in relation to the PAs they were working with:

*Our work hasn't changed really in ED. It's just horrendously busy like it always is. So, we've not had any students during the pandemic, we've not had any*

*physician associate students...so we've just got to supervise the two that have been qualified and it's been okay (P101)*

*I think, I mean, obviously, there was the need to kind of have an awareness about, you know, sort of being aware of some risk factors for, you know, patients who are admitted and are essentially going to be a high risk for COVID-19, et cetera. So, there was a need to kind of pick up on that pretty quickly. But also, I think just for the training of nursing staff, because I think one of the things that XXXXX [name of PA] realised pretty quickly was that if he could train up the nursing staff, then obviously they could take some of that workload from him. But I guess in terms of the actual day-to-day job, it didn't really change as much (P102)*

### **Post-Qualification Training and CPD**

Clinical supervisors were asked to share their thoughts on post-qualification training and CPD for PAs:

*Erm, so at the moment they're not [given specific time for training and CPD]. They attend the doctors teaching on a Thursday, which is for an hour. They have time in their rota to attend that every week. Then they both have clinical supervision with a consultant, so one of the ED consultants is their supervisor, and they have regular educational meetings with them (P101)*

*It's [in-house training] with all our junior doctors, so STs, junior clinical fellows, foundation doctors, yeah. And then the other thing is one of them is a nurse by*

*background and she's just started, I've just signed off on paperwork for her to do her non-medical prescribing... (P101)*

When asked about how their understanding of CPD requirements for PAs came about, two of the clinical supervisors responded as follows:

*Just through me sort of having them as students really [when asked about understanding of CPD requirements]. I've not particularly had any sessions about PAs...when these first two were coming, we had a meeting, but it was more about the funding rather than what they required (P101)*

*So, yeah, I think some form of formal guidance would be helpful. Maybe even like peer group supervision for supervisors or something like that might have been an idea. And I think moving forward that that would be something that I would certainly advocate for, if there are going to be more PAs in the Trust because then there will be more consultants supervising them (P102)*

### **GMC Regulation**

Clinical supervisors were then asked to share their thoughts on GMC regulation. As expected, some of the conversation was focused on prescribing and requesting ionising radiation:

*So, I would hope that with registration [GMC regulation] they would be able to progress and prescribe and request x-rays. And then, I think they'll be a really*

*invaluable part of the workforce. Erm, I think in the future they could rotate across all other departments as well (P101)*

*I think it is important that you've got a separate regulatory body. GMC, I think there are pros and cons. I think it is helpful that as PAs are trained to the medical model and their work is very closely integrated with those of junior doctors, I think in many ways it makes sense. I think there is a degree of concern that fees may go up, whether that is fees for physician associates and/or for doctors, which would be unfortunate. I think hopefully the GMC will be sensitive to the needs of a particular group if it comes to fitness for practice proceedings, for example. I did wonder if moving registration to the GMC is paving the way for PAs to request ionising radiation and for them to prescribe (P103)*

## **Discussion**

Although only three clinical supervisors were interviewed as part of this project, many themes emerged from the data which correspond to the themes identified from the PA interviews. The perspective of the clinical supervisors strengthens the research project and adds an additional lens in the triangulation and analysis of the overall data.

In relation to preparedness for practice, it was interesting to note that clinical supervisor responses tended to refer to work ethic and an eagerness to learn, rather than how prepared to practice a PA was. This could be attributed to clinical supervisor expectations of a PA and highlights work ethic and an

eagerness to learn as key traits of a “prepared” PA. This is also the case when participants were asked to comment on skills and again referred to work ethic and confidence as key contributors in being able to perform skills.

Clinical supervisors suggested that prescribing was a barrier to the PA role, and viewed the lack of prescribing rights as a hindrance for the rest of the team in which they were working in. It was clear from responses gathered, that clinical supervisors think that prescribing would be beneficial, particularly in certain settings.

Each clinical supervisor interview included a fascinating discussion around PA identity and the relationship of PAs with other members of the healthcare team. PAs were commonly grouped together in the interviews with junior doctors and advanced nurse practitioners as key members of healthcare teams. However, some clinical supervisors outlined initial resistance to PAs from the advanced nurse practitioners when PAs were first introduced to the team. This resistance was attributed to the fact that PAs undertake a two-year course, whereas advanced nurse practitioners have many years of experience in addition to their formal qualifications. Despite this, it became apparent that this resistance seemed to have eased once PAs became integrated within teams.

These interviews also revealed how little clinical supervisors knew about PAs, with some of them only finding out more about the PA role because they were required to act as a clinical supervisor. This suggests that more work is required to promote the PA role across healthcare settings as this will help to better integrate PAs within teams. Interestingly, many PAs who were interviewed as

part of this project identified that some consultants who they had worked with had a lack of understanding of the PA role resulting in them being under-utilised, despite being highly skilled professionals.

In relation to the COVID-19 pandemic, clinical supervisors were complimentary about the PAs which they were working with at the time and expressed how PAs were able to take advantage of the virtual teaching which was being delivered. However, when asked to share their thoughts on post-qualification training and CPD for PAs, one clinical supervisor stated that PAs were not given specific time for training and CPD. This was something which was highlighted as a fundamental requirement by PAs in both the PA questionnaires and the PA interviews.

Thinking about GMC regulation, clinical supervisors, much like the PAs in their interviews, were overwhelmingly supportive of PAs being regulated by the GMC. Interestingly, whilst comments by PAs relating to regulation emphasised the role of the GMC in helping PA identity across the healthcare workforce, comments from clinical supervisors were mainly related to prescribing. All the clinical supervisors noted GMC regulation as being the necessary step in PAs being able to obtain essential prescribing rights, providing further support to their earlier comments on how the current lack of prescribing rights for PAs is a barrier to the role.

One clinical supervisor commented on the potential impact on the healthcare team once PAs were regulated and were given prescribing rights. These thoughts related to job roles and pay, particularly in relation to advanced nurse

practitioners. Whilst it was acknowledged that it was still too early to make any predictions, this is something which must be considered in the near future, as it could lead to potential animosity between advanced nurse practitioners and PAs and could impact on the success of healthcare teams. The data gathered from PAs and clinical supervisors clearly suggest that regulation and prescribing rights will be key milestones for the PA profession, however, measures must be implemented to ensure that all PAs are able to access prescribing training and further clarity is required on how the job role and pay of a PA will differ from that of an advanced nurse practitioner. This clarification will benefit all members of the healthcare team including those who may not have worked with PAs previously.

### **Chapter Seven Summary**

This chapter outlined the interviews which were undertaken with clinical supervisors and explored the different themes which emerged from the data. Chapter Nine includes a discussion on how the data from the clinical supervisor interviews support the hypothesis. The next chapter will seek to examine the impact of COVID-19 on this PhD research project including the adaptations which were required to be implemented in response to the pandemic, as well as personal reflections from the author of this thesis.



## **Chapter Eight – PhD in a Pandemic**

During the point at which documents had been submitted for HRA Approval (February 2020), the COVID-19 pandemic worsened considerably, and the UK soon found itself in the first of a series of lockdowns (March 2020) and tough, restrictive measures were introduced. It was originally intended that all data would be collected face-to-face and all the necessary permissions had been granted. However, the changes which were required to be made to the project because of the pandemic meant that ethics applications had to be resubmitted and this caused considerable delay to the project, particularly as studies relating to COVID-19 were being prioritised.

This chapter explores how the COVID-19 pandemic, as well as the measures which were resultantly introduced, reshaped the focus and design of the study. This chapter will explore the logistical considerations which were brought about due to the pandemic.

### **Proposed PhD Project**

The proposed PhD project had two participant types, PAs and clinical supervisors. Stage two of the proposed PhD project was intended to consist of focus groups with PAs and individual interviews with clinical supervisors. The rationale for this was based on availability as clinical supervisors were likely to have less flexibility in their availability, hence an individual interview (either face-to-face or a telephone interview) was logistically, more appropriate.

## **COVID-19 Adaptations**

The COVID-19 pandemic placed significant a pressure on the NHS, with staff having to wear PPE and alter their working practices drastically to ensure their personal safety, but also to provide appropriate care for a significant number of patients who needed to access healthcare services. Individuals working in fields other than healthcare were also having to change their working habits and behaviour, with most of the population working from home and having restrictions imposed on them which meant that the virtual world became the most common mode for communication and interaction with others.

Conducting research in a virtual environment meant that adaptations were required to the PhD project. The proposed questionnaires which were intended to be distributed electronically required no change. Interviews with clinical supervisors had to be conducted virtually and several platforms were offered to conduct these interviews including Zoom, MS Teams, Skype and telephone. In-person focus groups with PAs were adapted to become virtual one-to-one interviews, with the technological platforms listed above offered to increase the likelihood that a participant will be familiar and comfortable with at least one of the platforms.

A further ethical lens in relation to COVID-19 was brought to the research. All research undertaken globally was impacted in different ways by the COVID-19 pandemic (Harper et al. 2020). In relation to this PhD project, due to the pandemic, changes were required to be made to the wording of pre-approved study documentation to ensure that participants only took part in the study if

their participation did not affect NHS clinical time, which was a vital resource during the peak of the pandemic. Many participants who were eventually interviewed revealed that they took part in the study as they were able to afford the time to do so due to maternity leave, study leave, a period of self-isolation or annual leave.

### **Impact of COVID-19**

The impact of the pandemic on this study extends beyond data collection. All PhD supervisory meetings became virtual from March 2020 until the submission of the thesis. Liaising with external stakeholders, particularly staff within NHS Trusts was also done virtually, hence a degree of flexibility was required in relation to the timing of responses received as well as capacity to respond to queries. This resulted in a delay, in some instances, of email communication regarding the recruitment of participants being sent out. There was also some difficulty in confirming a suitable time and platform to conduct interviews as the working schedule of PAs was changing to suit the needs of the departments in which they were working. This was of utmost priority and therefore, the lead researcher needed to be flexible in the timings offered for interviews. Many interviews were conducted early in the morning, late in the evening or at weekends to ensure maximum participation in the PhD project. Whilst the pandemic limited the number of participants in this project, as highlighted in earlier chapters, this did not prevent the generation of rich data which could be triangulated as part of a robust analysis process.

## **A Reflexive Approach**

This section of the thesis is intentionally written in the first person. Through regular supervision with my supervisory team, it became apparent that this PhD project was being influenced and shaped by me as a researcher, by me as a healthcare professional, by me as a doctoral student and by me as an educator. My initial attraction to this project was based around my fascination with PAs as a new profession entering the healthcare workforce. I had first heard about PAs when I was coming to the end of my first degree and was on the cusp of graduation and entering practice as a trainee pharmacist. I felt a strong affinity to PAs as they would be entering an NHS which was by no means perfect, just as I would be.

Truth be told, I found the initial stages of the PhD relatively stress-free. I still didn't consider myself a researcher (more of an imposter, really) but could sense that I was involved in a project that could influence the future of a profession. That excited me and slightly worried me too; I felt a heightened sense of responsibility, and still do.

Then, the pandemic hit. I can recall receiving HRA approval just as the university closed and the country went into lockdown. Alykhan, the healthcare professional, felt a massive urge to remain on the frontline as a key worker. Alykhan, the educator, had a responsibility to ensure that my students had the best experience of online learning. Alykhan, the researcher, felt a greater conviction than ever before to complete this PhD project and to contribute to the existing evidence base of PAs in this country. At this time, I was working as a

pharmacist and as a Graduate Teaching Assistant (GTA), a role which required me to contribute to teaching alongside my PhD. The shift to online teaching which I needed to make as part of my GTA role helped me to complete the remainder of my PhD in a virtual world.

Since COVID-19, each supervisory meeting which I have attended has been virtual. Indeed, all the data collection for this project has been gathered virtually too. Speaking to each participant, their story, their journey really resonated with me. I could relate to them entering the NHS workforce, I could relate to them navigating with their identity as a healthcare professional (especially as I started this project just a few weeks prior to qualifying myself), and I could also relate to the challenges which they faced during COVID-19. Most significantly, I could relate to their experience of CPD – ensuring that they were able to access CPD, ensuring that they knew which CPD was most suited to them, but also in thinking about future CPD and what the future might hold for them in the profession. Indeed, as a non-prescriber currently, I understood the public perceptions which the PAs I spoke to shared with me.

Sharing these musings with my supervisors and in my journal, what I had failed to acknowledge was that these thoughts, feelings, and experiences had helped me to grow as a researcher and helped to shape this PhD project. Alykhan, the researcher, was no longer an imposter, but a bona-fide researcher. I could recall my induction as a doctoral student where I was introduced to the concept of a “PhD journey” and was reassured that a PhD is “research training”. I believe a PhD is more than that. A PhD is a journey which trains you to be a reflexive researcher.

My supervisors introduced me to the notion of reflexivity. Dodgson (2019) outlines reflexivity as a concept in which a researcher describes the contextual intersecting relationships between the participants and themselves. This “reflexivity” can increase the credibility of findings and can help to provide a deeper understanding of the work. This rings true for when I was analysing the data and generating themes with my supervisors. I was able to immerse myself in the data and add my own thoughts and experience as an additional lens, leading to deeper analysis. Similarly, when interviewing participants, I was able to obtain rich data from each interview, not because I am a good researcher, but because I am a reflexive researcher.

Whitaker and Atkinson (2019) suggest that reflexivity is an awareness that the researcher and the object of study exist in a mutual relationship. Having researched further into reflexivity, I really relate to this. Since the start of this PhD project, I have always been aware that there was “something” which existed that encouraged and allowed me to examine things from multiple lenses and bring my own life experience into the project to add value to the data and its interpretation (Lumsden 2019). That “something” was reflexivity and has influenced this PhD project considerably and has shaped me to be the researcher I am today.

## Chapter Eight Summary

This chapter examined the effect of the COVID-19 pandemic on this PhD project and the adaptations which were required to be made to allow the research to be conducted in a safe, ethical, and appropriate fashion.

Reflecting on this chapter has allowed me to appreciate how much I have developed in my current role as Lecturer in Medical Education. At the height of the pandemic, I was a novice researcher, healthcare professional and a new university teacher. However, I now consider myself an experienced healthcare professional and academic. I have a far greater understanding of PAs than some of my colleagues and I can incorporate this into my teaching sessions and when providing assessment support to my PA students, particularly in assessments relating to critical reflection, in which students are encouraged to reflect on the PA role. My preconceived idea that PAs will make an invaluable addition to the workforce has only been strengthened because of this PhD project. I now consider myself to be an advocate for the PA profession, for GMC regulation, and for PAs to obtain prescribing rights at the earliest opportunity as I believe that this will help to ease the burden on the NHS workforce.

Chapter Nine will conclude the thesis and will include some recommendations based on key research findings and some suggestions for further research. This chapter will also consider the original contribution to research which has been made as a result of this PhD project.

## **Chapter Nine – Final Discussion and Conclusion**

This chapter seeks to review key themes from the thesis and provides an overall summary and discussion of key findings from the data. Limitations of the PhD project are explored, and recommendations are made for future research which can be conducted in this area.

### **Key Research Findings**

The quantitative data from the PA questionnaire revealed:

- 85% of PAs (n=34) felt at least quite well prepared to work as a PA by their pre-qualification PA programme
- 100% of PAs (n=40) felt at least quite well prepared to perform a physical cardiovascular, respiratory, or abdominal examination
- 25.6% of PAs (n=10) reported feeling not well prepared to perform a physical paediatric examination
- 42.5% of PAs (n=17) felt well supported to meet their CPD needs
- 45% of PAs (n=18) felt their overall CPD needs as a PA are being met.

The key themes which emerged from the interviews included: preparedness for practice; the physician associate role; post-qualification training and CPD and GMC regulation. Key findings from the interviews (both PA and clinical supervisor interviews) included that PA curricula prepared trainees well for practice, but a greater variety of placements was required. There also needed to be a greater emphasis on paediatric teaching. Further, it was important for



PAs to have access to post-qualification training at a local level and nationally too, as well as protected time for CPD. It was hoped that GMC regulation would help shape the identity of the PA profession and that the GMC could map out routes into PA progression which may include academic qualifications and leadership training.

### **Recap of the PhD Research Question and Objectives**

This PhD project was designed to answer the following research question:

How prepared are physician associates to undertake the skills outlined in the Competence Framework and what are their CPD requirements?

The objectives of the PhD project were:

- 1) To identify the level of preparedness PAs are rated to undertake the skills outlined in the Competence Framework by self-assessment
- 2) To establish the factors which affect the preparedness and competence of PAs to undertake the skills outlined in the Competence Framework, in relation to their training and early employment experience.
- 3) To determine the CPD requirements of PAs through self-declaration.

The hypothesis tested in this PhD project was that current PA curricula prepares and equips students with the skills and behaviour required for clinical

practice, and that post-qualification, PAs would like structured CPD to aid their development. The evidence, as illustrated throughout this thesis, suggests that overall, PAs in this study are well prepared to enter clinical practice and feel supported in their roles. Nevertheless, suggestions were made in relation to adapting university courses and post-qualification CPD to provide better support to PAs, particularly in relation to increased paediatric teaching at university and increased CPD sessions to allow PAs to maintain their generalist knowledge and skills. A more comprehensive discussion relating to the hypothesis and the data can be found later in this chapter. At the time of writing, whilst GMC regulation has been announced, it is yet to be implemented and specific details about what this will look like and the implication for students and qualified PAs is not exactly known.

Due to the COVID-19 pandemic, changes were made to this PhD project. As such, the main viewpoint presented in this thesis is that of PAs. A limited number of clinical supervisor interviews took place, although these are still included within the thesis as it was deemed important that the voice of all participants was heard and to help in providing context and understanding from a different perspective. The inclusion of the clinical supervisor interviews also provided an opportunity for the data to be triangulated with the data generated from the PA questionnaires and interviews.

## **Final Discussion**

This section of the chapter will seek to triangulate the findings from different parts of this PhD project and will consider how this project will contribute to existing literature focused on the wider healthcare landscape. In doing so, this will add considerable validity to findings and will position the findings amongst various contexts beyond PAs and medical education. This discussion within this section is presented under the three main themes which were established during the analysis of the PA interviews: 'Post-Qualification Training and CPD'; 'Preparedness for Practice'; and 'The Physician Associate Role'.

### **Post-Qualification Training and CPD**

In relation to CPD, a key finding from the questionnaire was that 42.5% of PAs (n=17) who participated in this project felt well supported to meet their CPD needs. Further exploration of this during the interviews with PAs based on the above statistic as well as from the qualitative data from the questionnaire revealed that PAs needed to have protected time for CPD and needed to access post-qualification training at a local level and nationally. Therefore, it is suggested that CPD becomes an integral part of the PA working week, irrespective of the setting which they are working in. Protected time for CPD and post-qualification training was also highlighted during the clinical supervisor interviews in which one clinical supervisor stated that PAs were not given specific time for training and CPD.

The significance and value of CPD amongst healthcare professionals has been widely published. Alshahrani (2020) explored the impact of CPD within intensive care unit nurses in the UK by examining pre-existing literature. It was found that CPD programmes are highly beneficial for practicing nurses as it provides as opportunity for the nurses to maintain their knowledge and skills in the ever-evolving nursing and wider healthcare landscape. However, Alshahrani (2020) also acknowledges that there are barriers to CPD which needed to be addressed such as monetary issues, staff shortages within UK nursing, and lack of adequate time for CPD. Moreover, Allinson et al. (2019) conducted interviews with pharmacy graduates to ascertain how prepared they felt to deal with ethical problems during their pre-registration year and early careers practice. Whilst the article does not explicitly state how prepared pharmacy graduates were, one theme which emerged was learning through practice and CPD; participants reported that they needed greater support in dealing with ethical dilemmas post-graduation and were willing to learn through CPD. It is evident therefore, that there is a willingness to engage with and learn through CPD by PAs and other healthcare professionals, although the success of this is dependent on the barriers being addressed.

The importance placed on CPD and the lack of capacity for PAs to complete their CPD or to feel supported in completing their CPD was a key finding from this PhD project and emerged at various points through the different data sources. This also forms one of the recommendations which is discussed later in this chapter.

## Preparedness for Practice

Whilst not a complete solution to the barriers facing PAs in relation to CPD, the increase in peer assisted learning (PAL) amongst the healthcare team could prove to be beneficial to qualified PAs. Working with other members of the healthcare team and becoming integrated within teams allowed PAs to excel in practice. The clinical supervisor interviews revealed that although there was initial resistance to PAs from advanced nurse practitioners, this seemed to ease once PAs became integrated within the team. This corresponded with findings from the PA interviews in which the PA role worked well in instances where the PA role was well understood by other members of the healthcare team. This led to PAs being able to ask questions to nurses and junior doctors and they were also able to benefit from training which was delivered to junior doctors.

Moreover, the perception of PAs by others as well as the benefit of PAs within healthcare teams relates to lack of regulation by PAs at this moment in time. As discussed at various points throughout the thesis, GMC regulation will be crucial in shaping the profession and will also contribute to enhancing the PA role and its identity. The potential introduction of prescribing rights and the ability to request ionising radiation will further increase the usefulness of PAs within healthcare teams. GMC regulation forms the basis of one of the recommendations of this PhD project and is outlined later in this chapter.

Burgess and McGregor (2018) performed a systematic review of peer teaching training for health professional students and found that clinical skills and knowledge of medical students and health professional students could be enhanced by more teaching opportunities such as PAL. The researchers

suggest that students and institutions would benefit from greater interprofessional education which could be embedded within curricula. A qualitative systematic review of PAL in clinical practice from the experiences of undergraduate nursing students on placement performed by Carey et al. (2018) found that challenges of clinical practice are mitigated through PAL and, PAL can enhance the competence and confidence of peers as well as reduce stress and anxiety. Therefore, the incorporation of PAL across all settings where feasible, could contribute to the development and confidence and PAs.

In addition to PAL and interprofessional education, the preparedness for practice and CPD requirements of PAs can also be met by incorporating simulation during PA education and post-qualification training. Literature from across medical and healthcare education suggests that graduates from a range of disciplines benefit from the incorporation of simulation and virtual patients in their degree programmes, as students can practise their skills and understand what is expected of them in professional practice. (Monrouxe et al. 2018; Thompson et al. 2020; Davies et al. 2021). At Edge Hill University, there is a significant drive to increase simulation and interprofessional education at department level and faculty-wide, with a clear recognition of the benefits and value of simulation and interprofessional education in contributing to preparing students for post-graduate practice, irrespective of their discipline. A greater incorporation of simulation and interprofessional education will help to eliminate some of the barriers to CPD which emerged from interviews as some of the teaching opportunities could be carried out virtually, as many participants had engaged with during the pandemic which would remove the barrier of cost and space. The PA questionnaire revealed that 10.3% of PAs (n=4) were not well

prepared or not at all well prepared to prioritise workload and use time and resources more effectively, and in the interviews, many PAs called for protected time for training and CPD. Therefore, a virtual simulation or interprofessional education session would provide a greater degree of flexibility for PAs as travel times could be reduced and sessions could be recorded which would align with the busy schedules and competing priorities that PAs face.

A key finding from the PA questionnaire was that 10.3% of PAs (n=4) were not well prepared or not at all well prepared in being able to critically evaluate their own practice and identify learning/development opportunities and identify and utilise learning opportunities. In the interviews with PAs, many were unable to articulate their learning and developmental needs due to a lack of knowledge of the speciality they were working in. Despite 85% of PAs feeling at least quite well prepared to work as a PA by their pre-qualification PA programme, many of the PAs who participated in interviews commented that they found placements to be more beneficial than theory sessions at university as the theory sessions were tailored to a more generalised role. The challenge of applying of theory to practice is not a concept which is unique to PAs. Monrouxe et al. (2018) found that in relation to unpreparedness, medical graduates are less well prepared to apply biomedical scientific knowledge to clinical practice. Whilst Monrouxe et al. (2018) were able to gather a large data set (2186 narratives from 185 participants), they only employed qualitative methodology and there was no option for participants to complete a survey in relation to preparedness which could have produced quantitative data to support the findings from the qualitative data. Nevertheless, the findings correspond to the findings from this PhD project in that those trained to the medical model experience difficulty in

applying theory to practice and clinical supervisors play a vital role in supporting students and newly qualified graduates in being able to do this.

In relation to clinical skills and other activities, whilst 100% of PAs (n=40) who completed the questionnaire felt at least quite well prepared to perform venepuncture and cannulation, 27.5% of PAs (n=11) were either not well prepared or not at all well prepared to place urinary catheters. The 2020 FPA census revealed that performing venepuncture was the most common miscellaneous activity undertaken with 82% of PAs reporting that they performed venepuncture (RCP 2021) indicating that it is a clinical skill which is undertaken frequently by a PA. Whilst clinical supervisors tended to refer to work ethic and an eagerness to learn rather than how prepared to practice a PA actually was, an exploration of the above statistics during the PA interviews revealed that frequency of exposure and experience of clinical skills and activities had a positive correlation to how prepared a PA felt to undertake a particular skill or activity.

The questionnaire data indicated that 25.6% of PAs (n=10) were not well prepared to recognise when to take appropriate action in safeguarding and promoting the welfare of the child. Further exploration of this during the PA interviews revealed that PAs felt that they needed more experience of children and young people whilst at university and on placement. A rapid review by Monrouxe et al. (2017) found that junior doctors tended to be prepared for history taking and some clinical skills but were unprepared for ethical and legal issues. This suggests that increased teaching and exposure to children and



young people, as well as ethical and legal issues is required for both medical students and for PA students.

Vance et al. (2019) performed a cross-sectional mixed methods study involving foundation year doctors and staff who work with them such as supervisors and nurses to ascertain the frequency of skills and activities which were undertaken in clinical practice. 88.3% of F1 and F2 doctors reported they perform venepuncture regularly (at least once or twice a week). In relation to skills and activities which were undertaken less often by F1 and F2 doctors, these included performing a female urethral catheterisation (8%) and looking for signs of abuse or neglect in children or vulnerable adults (28.6%). The PA and clinical supervisor interviews have demonstrated how closely the PA role resembles the role of a F1 doctor. Thus, it is interesting to note the frequency of the skills and activities outlined in the above study and how these relate to the findings from this PhD project. This provides considerable scope on what is required within the education and healthcare sector to support PAs during their training, but also post-qualification.

Moreover, A multicentre narrative study by Monrouxe et al. (2018) found that doctors one-year post qualification, commonly referred to as Foundation Year 1 Doctors or F1s, were prepared to perform practical procedures which they were required to undertake more frequently such as obtaining blood samples and inserting cannulas. Interestingly, in Monrouxe et al.'s (2018) study, most participants reported increased confidence in performing practical procedures post-qualification as they found it beneficial to perform these tasks on a more frequent basis with real patients.

Burridge et al. (2020) conducted semi-structured interviews with doctors one-year post-qualification who were working in acute care, with the aim to ascertain their preparedness for practice. The researchers found that most participants felt unprepared initially when having to respond to acutely unwell patients. One factor which was attributed to this was a lack of acute care exposure within medical school. However, participants felt prepared to respond to unwell patients three to six months post-employment and this was preparedness was attributed to work experience, reflection and simulation. This corresponds to the findings from this PhD project in which 25.6% of PAs (n=10) reported not feeling well prepared to perform a physical paediatric examination which during the PA interviews was attributed to a lack of specialised teaching centred around children and young people and a short paediatric placement. In both cases, a lack of exposure to a particular setting or speciality led to feeling unprepared or not well prepared.

At Edge Hill University Medical School, the PA programme has incorporated paediatric simulation teaching and topics such as safeguarding is now delivered in separate sessions (one for adults and one for children and young people) to ensure that PA students are able to receive specialised teaching from subject experts. The academic team have also provided increased opportunities for students to practice their clinical skills with a view to enhancing their competence and confidence. It is anticipated that these changes will help address the lack of preparedness expressed by PA graduates in the respective areas at Edge Hill University.

Based on the findings from the data in relation to paediatric teaching and exposure to paediatrics on placement as outlined above and earlier in the thesis, paediatrics forms the basis of one of the recommendations from this PhD project and is discussed later in this chapter.

### **The Physician Associate Role**

As mentioned above, the varied perception of PAs by nurses, and in particular, advanced nurse practitioners, was mentioned in several instances during interviews with PAs and clinical supervisors, thus highlighting the prominence and significance of the nursing role within healthcare teams. Participants in a study by Monrouxe et al. (2018) cited nurses as key players in healthcare teams. Interestingly, nurses who participated in a study by Vance et al. (2019) noted the importance of early support to foundation year doctors by other members of the healthcare team and deemed this as critical to the development of the newly qualified doctor. Therefore, it is crucial to embrace the symbiotic relationship between various members of the healthcare team and to distinguish how each different team member can contribute to the learning and development of others. In relation to PAs, this interprofessional relationship with other members of the healthcare team will also help to establish the PA role and identity which was identified as a challenge in both the PA interviews as well as the clinical supervisor interviews. This also supports the theory of communities of practice (Wenger 2004) which was introduced in Chapter One of this PhD thesis. In particular, the concept of communities of practice is useful in providing insights into good practices or mistakes to be avoided (Scarso et al. 2009) which is of particular significance in healthcare teams which may consist of a

newly qualified PA and a F1 doctor, both of whom may feel a varied level of preparedness in relation to performing key clinical skills and other activities within the workplace. The theory of communities of practice and its relevance to this PhD project is discussed in the next section of this thesis.

### **Revisiting Communities of Practice**

Chapter One of this thesis introduced the theory of communities of practice Wenger (2004) and was used as a conceptual framework for this PhD project. This theory is particularly useful in understanding how a group of people with a shared interest (in this case, PAs) can enhance their knowledge through continual interaction and dialogue (Mortier 2018).

The theory of communities of practice was highly relevant to this PhD project as it provided a theoretical framework which was useful to understand the learning experiences of PAs and the social context in which they learn and collaborate. The PAs in this PhD project could be seen as a community of practice as they shared a common interest and practice in healthcare as a relatively new role within the healthcare workforce, and they regularly interacted with other healthcare professionals including their clinical supervisors, in addition to engaging with bodies such as the FPA. The community of practice theory provided insights into the learning experiences, social networks, and professional identities of PAs, all of which were important factors which influenced their CPD requirements.

During the analysis of data, the communities of practice theory was relevant as it provided an initial lens through which the researcher and the supervisory team could understand how professionals learn, develop, and maintain their expertise through interaction with others in their community of practice. The coding framework which was developed in this PhD project was established from the identified themes in relation to the research question and aims and was based on the communities of practice theory. This related to learning experiences, social network and professional identity and shaped the final themes which were: Preparedness for Practice; The Physician Associate Role; Post-Qualification Training and CPD; and GMC Regulation.

Overall, the communities of practice theory was valuable in shaping the analysis of qualitative data in this PhD project. The theory helped to identify key themes which was relevant to understanding the learning experiences, professional identities and CPD requirements of PAs.

### **Revisiting the Hypothesis**

In relation to the following hypothesis which was outlined earlier in the thesis, *“current PA curricula prepare and equip students with the skills and behaviour required for clinical practice. Post-qualification, PAs would like structured CPD to aid their development”*, the questionnaire data suggests that the PA curricula is adequate and does prepare students with the skills and behaviour needed for clinical practice. This is supported by both the quantitative and qualitative comments. For example, 85% of PAs (n=34) felt at least quite well prepared to work as a PA by their pre-qualification PA programme. Qualitative comments

supported this statistic with respondents praising the variety and quality of the teaching and placements as part of their university course. Also, based on the questionnaire data, it can be concluded that post-qualification, PAs would like structured CPD to aid their development. Again, this is based on both the quantitative and qualitative data, as only 42.5% of PAs (n=17) felt supported to meet their CPD needs, and the qualitative data suggested that many PAs would like protected CPD time, more focused and tailored teaching and conferences to allow them to meet their CPD needs.

The findings from the PA interviews correspond to key findings from the PA questionnaires. For example, the questionnaire data revealed that 10.3% of PAs (n=4) were not well prepared or not at all well prepared in being able to critically evaluate their own practice and identify learning/developmental needs and identify and utilise learning opportunities, and in the interviews, many PAs were unable to articulate their learning/developmental needs due to a lack of knowledge of the speciality they were working in. Moreover, 10.3% of PAs (n=4) were not well prepared or not at all well prepared to prioritise workload using time and resources effectively, and in the interviews, many PAs called for protected time for training and CPD. Interestingly, there were no notable differences from the interview data between participants who worked in a particular setting (either primary or secondary care).

The results from the PA interviews support the hypothesis that the PA curricula at the time prepared and equipped students with the skills and behaviour required for clinical practice, and that post-qualification, PAs would like structured CPD to aid their development, particularly being a new and unregulated profession, at present.

In relation to the hypothesis which is being tested in this PhD thesis, the results from the clinical supervisor interviews suggest that current PA curricula prepare and equip students with the skills and behaviour required for clinical practice. Despite only a small sample of clinical supervisors partaking in this project, the data generated was invaluable and many findings were corroborated by different participants. Moreover, the findings provide a valuable insight into the perceptions of clinical supervisors and correspond to the data gathered from PAs, particularly around prescribing and the awareness of the PA role by other members of the healthcare team, thus strengthening the overall findings from this PhD project.

### **Limitations**

Limitations of this PhD project include: sample size; the COVID-19 pandemic; the change in methodology; and clinical supervisor availability. Each of these limitations is discussed in further detail below.

### **Sample Size**

Sample size is perhaps one of the most noticeable limitations of this PhD project in that the response rate could have been higher considering the estimated number of qualified PAs working in the Northwest. Despite this, there was a good range of respondents for the questionnaires and the interviews, particularly as the data collection stage of this PhD project began as the UK was entering the first peak of the COVID-19 pandemic. The interview

participants were from a range of settings and NHS trusts and themes were evidently emerging after a few interviews took place, hence there is a degree of confidence that whilst only ten PA interviews and three clinical supervisor interviews were conducted, the data produced from these interviews was robust.

In relation to the sample size of ten participants for the PA interviews, this can be viewed as a potential limitation, however, the participant profile demonstrates that the sample covered different specialties and settings suggesting a good representation of the PA workforce. Moreover, the sample consisted of self-selecting participants which had the potential to have attracted PAs with strong views about their education. However, this sample of ten PAs did not have any particularly strong views about the PA course or training. Whilst participants were not asked which university they attended to protect their anonymity, it is likely that some participants would have completed a PgDip and others would have completed a masters (MSc) programme. Despite this, most institutions in the Northwest from 2016 onwards, and indeed elsewhere in the country, followed the same format of academic and placement weeks and followed RCP guidance in relation to the matrix so would have had a similar experience, irrespective of whether they completed a PgDip or a MSc. Moreover, there was a clear saturation of themes from the ten PA interviews and findings from the clinical supervisor interviews corroborated the findings from the PA interviews when the data was triangulated.



## **COVID-19**

Whilst considered a limitation in many respects, it can be argued that COVID-19 truly shaped this PhD project and provided an opportunity for the principal researcher to develop unimaginably. The difficulty caused by the pandemic was mainly time related as liaising with local NHS trusts and participants took longer than usual. There were also times where it was not ethically appropriate to collect data and a degree of sensitivity was required when discussing the pandemic with participants. Participants completed the questionnaire during the COVID-19 pandemic, at a time when many NHS workers were experiencing stress and burnout and may not have had time to complete CPD (Newman et al. 2021). It is possible therefore, that the timing of the distribution of the questionnaire may have impacted the results.

### **Adaptations to Methods**

The adaptations to methods, brought about by the COVID-19 pandemic still allowed rich data to be produced in this PhD project. Whilst focus groups were the preferred option for gathering PA viewpoints in the first instance, the use of virtual interviews worked quite well. Upon completion of each interview, the participant them self would usually provide a compliment about the ease of the process. The flexibility in allowing participants to choose their own virtual platform certainly helped. However, it was difficult to read non-verbal signs and cues, and it was sometimes difficult to conduct an interview through means of video conferencing when the participant had their camera turned off or if it was

not working. This is something that was initially proving tricky but did get easier as more virtual interviews were conducted.

### **Questionnaire Limitations**

Some questions in the questionnaire required participants to think back to their PA studies; the dates when participants would have been completing their studies would have varied and this also exposes the results to potential retrospective bias. However, 42.5% of respondents (n=17) had graduated from their PA course in 2018, and only one respondent had graduated earlier than 2018. Literature has demonstrated that medical graduates are able to reflect back six years after graduation (Watmough et al. 2012). Some participants may also have chosen to answer all the questions in a certain way based solely on their university experience, reducing the accuracy of the overall results.

Furthermore, the questionnaire was only distributed to PAs working in the Northwest of England, potentially reducing the external validity of the research. However, PAs at five NHS Trusts took part and participants were not restricted to participate based on the institution where they completed their PA studies. Whilst the exact number of PAs who were working at each Trust is unknown, there were a total of 269 PAs working across the Northwest and Mersey regions during the timeframe in which the questionnaire was distributed (RCP 2021). Based on this figure, as forty questionnaires were returned, the approximate response rate for this questionnaire was 14.9%. This can affect the generalisability of the findings as it can be argued that the 14.9% approximate response rate suggests that findings are not fully reflective of all PAs in practice.

The design of the questionnaire was adapted based on feedback from academics at Edge Hill University Medical School and from the Northwest Physician Forum Committee. This reduced potential limitations regarding the number and length of questions as it was crucial to strike a balance between quantitative and qualitative data as well as ensure a high completion rate for all the questions. A strength of the questionnaire was the amount of rich qualitative data produced which was helpful in generating questions and themes which were to be explored in greater detail during the interviews.

Whilst there was scope to undertake statistical tests from the quantitative data generated from the questionnaire such as examining differences between universities, or differences in gender, this was not the focus of the questionnaire. Also, following advice, the small numbers of participants would not have made it possible to produce meaningful results from statistical tests, and the purpose of the questionnaire was to look at the results as a whole for this particular group of PAs as a case study within one region of the UK at a time when all regions were developing PAs. All of the PAs who began their PA studies in the Northwest in 2016 as part of the initial cohort in this region would have followed a similar curriculum. Another negation of the potential limitations is that the biases were the same for all respondents and that there was a good representation of different specialities in terms of the participant demographic. Further, the qualitative part of the questionnaire allowed for triangulation to occur between the quantitative and qualitative data from the questionnaire as well as the data produced from the interviews.

## **Clinical Supervisor Availability**

Another limitation of this PhD project is the availability of clinical supervisors. It was only possible to interview three clinical supervisors as many of them were only responding to research requests if the projects were related to COVID-19 and many of them had taken on additional leadership responsibilities during the pandemic. Many local NHS trusts had advised not to contact clinical supervisors as they were usually senior members of staff with high clinical workloads and were unlikely to respond. The three clinical supervisors who did partake in this project did so as their PA had been interviewed prior as part of this project.

If more clinical supervisors were interviewed, richer data may have been produced, however, the interviews which took place (n=3) provided valuable insights and an additional viewpoint which could be triangulated with the views of the PAs. Two of the three interviews were quite short in duration which is again attributed to the time constraints of the role of a senior clinician. Despite these limitations, the data produced was insightful and the themes which emerged corresponded to the themes identified from the PA interviews.

In relation to preparedness for practice, the questionnaire data, as well as the data produced from the PA and clinical supervisor interviews, suggest that the university curriculum at the time was generally effective in preparing PAs for practice. Moreover, the collective data from this PhD project indicates an overwhelming support for GMC regulation from both PAs and clinical supervisors. There was also corroboration regarding prescribing as both PAs and clinical supervisors commented that the inability to prescribe was a barrier

to the PA role and limited the potential a PA could have within healthcare teams, which is also mentioned in the existing literature base (Drennan et al. 2017). Hence, it was deemed imperative to include the clinical supervisor perspective in this research project as the data could be triangulated with the data generated from PAs and help to enhance overall findings.

## **Recommendations**

The following recommendations can be made resulting from this PhD thesis:

**Recommendation 1:** University teaching needs to incorporate guidance on post-qualification CPD.

This recommendation is supported by findings from the study data: the questionnaire data revealed that 35% of PAs (n=14) who completed the questionnaire were not sure if they felt well supported to meet their CPD needs. The qualitative comments indicated that many PAs had a poor understanding of CPD and called for increased teaching on CPD as part of the university curriculum. This is something which was explored further during the interviews in which PAs felt that there was a lack of understanding around CPD due to limited information being provided whilst they were completing their training at university. Therefore, this recommendation is centred on increasing the understanding of trainees about post-qualification CPD whilst they are at university by providing more guidance through taught sessions and by asking qualified PAs to deliver sessions about their experience of completing post-qualification CPD. This would provide trainees with an opportunity to ask any

questions and to feel prepared for the workload and expectations ahead of them regarding CPD once they qualify.

**Recommendation 2:** PAs need protected learning time and access to opportunities at a local and national level (this includes teaching session and conferences to meet their CPD needs and network with others)

This recommendation is supported by findings from the study data: the PA questionnaire data revealed that 45% of participants (n=18) felt their overall CPD needs as a PAs were being met. This is less than half of the total number of participants who completed the questionnaire. Qualitative comments from the questionnaire and participant comments from the interviews indicated that PAs do not have enough time to complete their CPD and there were varying experiences in relation to local study opportunities and access to national conferences and networking opportunities. This results in disparity regarding the support which qualified PAs receive based on where they work in terms of geography and clinical setting. A standardised approach to ensure that all PAs, irrespective of location or setting, have protected learning time and access to opportunities at a local and national level will allow PAs to complete their CPD and network with others.

**Recommendation 3:** PA programmes need to incorporate more paediatric-specific teaching sessions. Similarly, there needs to be increased opportunities for PA students to work within paediatrics during their placements so that they feel confident in their knowledge and application when treating this patient group

This recommendation is supported by findings from the study data: the PA questionnaire data revealed that 25.6% of respondents (n=10) reported not feeling well prepared to recognise when to take appropriate action in safeguarding and promoting the welfare of the child. Similarly, 25.6% of respondents (n=10) reported not feeling well prepared to perform a physical paediatric examination. The free-text comments revealed that more teaching time and placements were needed to be dedicated to paediatrics. This was supported by comments in the PA interviews in which participants noted that they received less teaching which was specific to paediatrics. Whilst it is acknowledged that all PA programmes differ slightly, this recommendation is tailored to ensure that HEIs deliver paediatric-specific sessions to complement their current teaching. Similarly, and if possible, it is recommended for trainees to spend some more time in paediatric wards where they can apply their theoretical knowledge and gain further confidence in treating this patient group.

**Recommendation 4:** The GMC should endeavour to commence regulation at the earliest opportunity and should advocate for PAs to have prescribing rights as well as the right to request ionising radiation.

This recommendation is supported by the qualitative free-text comments from the PA questionnaire and the PA interviews. Many PAs currently feel that they are limited by their role due to the inability to prescribe or to request ionising radiation. Therefore, this recommendation ensures that PAs can contribute further to the NHS workforce to relieve the pressures on existing teams. It is acknowledged that further training is likely to be required before PAs can prescribe so information regarding this will be useful to PAs, particularly for those that may have to factor in the financial burden of additional study and well as managing their studies alongside their clinical commitments and personal lives. Moreover, this recommendation will contribute to enhancing the visibility and identify of the PA role amongst other healthcare professionals who are already part of regulated profession. The PA identity was a sub-theme which was identified through the analysis of the data in this PhD project.

Should the above recommendations be incorporated by the various stakeholders, it is anticipated that graduate PAs will have a better understanding of CPD and how to identify learning opportunities which will be crucial for their development post-qualification. It will also ensure that universities are able to plan teaching sessions and placements in accordance with the requirements of PAs by increasing paediatric teaching and placements, and by supplementing this with other suitable learning opportunities such as simulation which is a research-proven teaching intervention that is beneficial for



medical and healthcare students (Monrouxe et al. 2018; Thompson et al. 2020; Davies et al. 2021). Employers, irrespective of their setting, need to ensure that the PAs which they employ have protected time for CPD and are able to access local and national opportunities. Above all, the GMC will have a significant role as the incoming regulator of PAs to ensure that standards are set and met by all stakeholders to support PAs but also to support patient care and safety.

### **Original Contribution to Knowledge**

The PhD project adds considerable value to the existing literature on PAs, who are still considered a relatively new addition to the healthcare workforce in the UK. Existing literature on PAs in the UK is minimal, as is the number of PAs currently working in the UK, particularly in the Northwest of England. The findings from this research project are transferable to other parts of the country which saw an expansion of PA training and employment at a similar time to the Northwest. Therefore, many of the experiences of the PAs who participated in this project can be extrapolated to PAs who are working in other parts of the country and had completed their PA training at a similar time.

With specific regard to the research question, this PhD project focused on the preparedness for practice and CPD requirements of PAs. There is a distinct lack of evidence about the competence of PAs and by researching how well prepared they are for practice, this would clearly contribute to the formation of new knowledge.

The mixed methods approach of the PhD project ensured that the views of PAs and clinical supervisors were considered and ensured that a holistic narrative was able to be produced once the data were collected and analysed. The methods could easily be replicated elsewhere and would prove particularly useful when conducting further research once GMC regulation begins.

With the regulation of PAs in the near future (RCP 2018b), this contributes to the necessity of building a strong evidence base to examine how prepared PAs are for practice post-qualification. Researching the competence and factors which have affected preparedness for practice of PAs (the main objectives of this research) was also useful in establishing the positive impact which PAs are having on the NHS.

Findings from this PhD project will be presented as a poster presentation at the Association for the Study of Medical Education's (ASME) upcoming conference in July 2023 with the abstract being published in *The Clinical Teacher* journal later in 2023. At the time of submission, the thesis author is also working with the supervisory team on preparing papers for journal publications. The thesis author is also using the results from the thesis to help shape the teaching on the PA programme at Edge Hill University.

### **Suggestions for Further Research**

Prescribing is a common and significant factor which affects many PAs. Whilst some suggestions about prescribing were made by participants during this PhD project, further study is required into prescribing, particularly regarding the

support needed for PAs as well as the logistical considerations which need to be accounted for in relation to prescribing.

Further research is also required to be undertaken with the nursing profession, specifically Advanced Nurse Practitioners (ANPs). This research needs to be centred around the perception of PAs and this will help to understand any misconceptions which ANPs may hold which may affect the working relationship and effectiveness of PAs and ANPs within the workplace.

Research will also be required to ascertain the views of PAs once GMC regulation is underway and whether PAs think GMC regulation has benefitted the profession as many expect it to do so.

The methods employed in this PhD project could easily be replicated and applied to any of the above suggestions for further research. In addition, this research project could be replicated in a different part of the country or could be replicated with the inclusion of more clinical supervisor interviews.

### **Summary of Thesis**

The recent expansion of PAs, particularly in the Northwest, as a new profession engenders the necessity for research. Whilst the existing literature on PAs in the UK is limited, it has demonstrated that PAs are able to work successfully in healthcare teams (White and Round 2013, Newton et al. 2017). However, the preparedness for practice and CPD requirements of PAs were not exactly known.

This PhD project addressed this gap in knowledge by determining the impact of a new profession on healthcare in the Northwest which will benefit healthcare teams, patients and patient safety. The hypothesis which was set out at the beginning of this PhD project was *“current PA curricula prepare and equip students with the skills and behaviour required for clinical practice. Post-qualification, PAs would like structured CPD to aid their development”*. The data from both the questionnaires and the interviews, as well as the subsequent analysis of the data produced, overwhelmingly supports this hypothesis.

The findings from this PhD project provide a sound evidence base which can be used in conjunction with other key documents such as the annual census by the FPA, to inform changes to PA curriculum (at Edge Hill University and nationally). It also provides an evidence base to inform GMC regulation, which is unlikely to come into action until summer 2023 at the earliest (RCP 2022) as well as CPD requirements of PAs. The data from the questionnaire indicated that 85% of respondents (n=34) felt at least quite well prepared or better to work as a PA by their pre-qualification PA programme. Whilst this suggests that significant changes would not be required ahead of GMC regulation, course providers will certainly seek to adapt their programmes to suit the current health and education landscape. For example, at Edge Hill University, whilst major changes in relation to academic blocks or placements are not anticipated to be introduced, the course will adopt a greater emphasis on public health and will transition from a modular curriculum to a thematic curriculum to allow for greater integration amongst concepts. Indeed, the incoming regulation of PAs by the GMC will ensure that there are a set of standards in relation to education and

the monitoring of professional behaviour – two key attributes of regulation that support patient safety (Parle 2019).

## **Conclusion**

To conclude, the findings from this PhD thesis have revealed that most PAs (n=34, 85%) felt at least quite well prepared to work as a PA by their pre-qualification PA programme, and that 100% of PAs (n=40) felt at least quite well prepared to perform a physical cardiovascular, respiratory or abdominal examination. However, 25.6% of PAs (n=10) reported feeling not well prepared to perform a physical paediatric examination. Thinking ahead, particularly as only 45% of PAs (n=18) felt that their overall CPD needs as a PA are being met, structured CPD needs to be introduced to aid the development of PAs. This includes protected CPD time, greater access to conferences and more teaching opportunities. There also needs to be increased teaching on CPD and paediatrics as part of the PA curriculum.

## References

ADAMS, A. and COX, A., L., 2008. Questionnaires, in-depth interviews and focus groups. In: CAIRNS, P. and COX, A., L. *Research Methods for Human Computer Interaction*. Cambridge, UK: Cambridge University Press, pp. 17–34.

ALLINSON, M., BLACK, P. and WHITE, S., 2019. Transition from undergraduate education to early careers practice: preparedness for dealing with ethical and professional ethical dilemmas in practice. *International Journal of Pharmacy Practice*. 27 (2), pp. 19.

ALLMAN, M. J., ALLEN, A. M. and TANNER, J. K., 2015. An emerging pathway for physician assistant employment: podiatric PA. *Journal of Allied Health*. 44 (1), pp. e1.

ALSHAHRANI, H. H., (2020). Evaluating the impact of continuing professional development within intensive care unit nursing in the UK. *American Journal of Nursing Research*. 8 (2), pp. 227-244.

ANDREW, N., TOLSON, D. and FERGUSON, D., 2008. Building on Wenger: Communities of practice in Nursing. *Nurse Education Today*. 28 (2), pp. 246-252.

ARSHAD, N., 2015. Physician associates. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners*. 65 (635), pp. 286.

ATKINSON, P. and PUGSLEY, L., 2005. Making sense of ethnography and medical education. *Medical Education*. 39 (2), pp. 228-234.

BAZELEY, P., 2009. Editorial: Integrating Data Analyses in Mixed Methods Research. *Journal of Mixed Methods Research*. 3 (3), pp. 203-207.

BENNETT, C., 2018. Anatomic Body Painting as a Teaching Tool in Physician Assistant Education. *Medical Science Educator*. 28 (3), pp. 525-532.

BLEAKLEY A., and BRENNAN N., 2011. Does undergraduate curriculum design make a difference to practice as a junior doctor? *Medical Teacher*. 33, pp. 459-467.

BOAK, G., MITCHELL, L., and MOORE, D., 2013. 'Transition to independent practice: A literature review to identify risks to patient safety during the transition period from first qualifying as a dentist or dental care professional to fully unsupervised practice'. Report for the General Dental Council prepared by Prime Research & Development Ltd.

BOURNE, K., DAHER, N., JAVAHERIAN, H., HEWITT, L. and WILSON, C., 2012. Physician assistant: motivations and perceptions of the profession. *Journal of Allied Health*. 41 (2), pp. 70.

BRASHERS, V., ERICKSON, J. M., BLACKHALL, L., OWEN, J. A., THOMAS, S. M. and CONAWAY, M. R., 2016. Measuring the impact of clinically relevant interprofessional education on undergraduate medical and nursing student competencies: A longitudinal mixed methods approach. *Journal of Interprofessional Care*. 30 (4), pp. 448-457.

BRAUN, V. and CLARKE, V., 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp. 77-101.

BRETT, J., STANISZEWSKA, S., MOCKFORD, C., HERRON-MARX, S., HUGHES, J., TYSALL, C. and SULEMAN, R., 2017. GRIPP2 reporting checklists: tools to improve reporting of patient and public involvement in research. *Research Involvement and Engagement*, 3, pp. 13.

BRITISH MEDICAL ASSOCIATION., 2018. *Physician Associates in the UK*. [online]. Available from: <https://www.bma.org.uk/collective-voice/policy-and->



[research/education-training-and-workforce/physician-associates-in-the-uk](#)

[Accessed on 1<sup>st</sup> December, 2018].

BRITTEN, N., 1995. Qualitative research; Qualitative interviews in medical research. *British Medical Journal*, 311, pp. 251-253.

BRITTEN, N., 2005. Making sense of qualitative research: a new series. *Medical education*, 39(1), pp. 5-6.

BROWNING, D. J., 2018. Physician Assistants and Nurse Practitioners in Ophthalmology—Has the Time Come?. *American Journal of Ophthalmology*. 186, pp. xi.

BRYMAN, A., 2012. *Social Research Methods* (4th ed.). Oxford: Oxford University Press.

BUMBUC, S., 2016. About Subjectivity in Qualitative Data Interpretation. *International conference Knowledge Based Organization* (22).

BURGESS, A. and MCGREGOR, D., 2018. Peer teacher training for health professional students: a systematic review of formal programs. *BMC Medical Education*. 18, pp. 263.

BURNETT, K., ARMER, N., MCGREGOR, J., FARREL, M., BAINES, J. and BAKER, P., 2019. The career aspirations and expectations of student physician associates in the UK. *Future Healthcare Journal*. 6 (1), pp. 36-40.

BURNS, R., 2000. *Introduction to Research Methods*. California: Sage; Thousand Oaks.

BURRIDGE, S., SHANMUGALINGAM, T., NAWROZZADEH, F., LEEDHAM-GREEN, K. and SHARIF, A., 2020. A qualitative analysis of junior doctors' journeys to preparedness in acute care. *BMC Medical Education*. 20 (12), pp. 1-9.

CALMAN, K. and DONALDSON, M., 1991. The pre-registration year: a critical incident study. *Medical Education*. 25, pp. 51-59.

CAREY, M. C., KENT, B. and LATOUR, J. M., 2018. Experiences of undergraduate nursing students in peer assisted learning in clinical practice: a

qualitative systematic review. *JBI Database of Systematic Reviews and Implementation Reports*. 16 (5), pp. 1190-1219.

CAVE J., GOLDACRE M., LAMBERT T., WOOLF K., JONES A. and DACRE J., 2007. Newly qualified doctors' views about whether their medical school had trained them well: questionnaire surveys. *BMC Medical Education*. 7, pp. 38.

CAWLEY, J.F., CAWTHON, E. and HOOKER, R.S., 2012. Origins of the physician assistant movement in the United States. *JAAPA: official journal of the American Academy of Physician Assistants*, 25(12), pp. 36-40.

COPLAN, B., CAWLEY, J. and STOEHR, J., 2013. Physician Assistants in Primary Care: Trends and Characteristics. *Annals of Family Medicine*. 11 (1), pp. 75-79.

CRESSWELL, J., 2014. *A concise introduction to mixed methods research*. 1st ed. California: SAGE Publications.

CRESSWELL, J., and PLANO CLARK, V.L., 2011. *A concise introduction to mixed methods research*. 2<sup>nd</sup> ed. Los Angeles: SAGE Publications.

DATA PROTECTION ACT., 2018. *Data Protection Act 2019*. [online]. Available from: <https://www.gov.uk/government/collections/data-protection-act-2018> [Accessed on 1<sup>st</sup> March, 2022].

DAVIES, H., SUNDIN, D., ROBINSON, S. and JACOB, E., 2021. Does participation in extended immersive ward-based simulation improve preparedness of undergraduate bachelor's degree nursing students to be ready for clinical practice as a registered nurse? An integrative literature review. *Journal of Clinical Nursing*. 30 (19-20), pp. 2897-2911.

DE LUSIGNAN, S., P MCGOVERN, A. P., TAHIR, M. A., HASSAN, S., JONES, S., HALTER, M., JOLY, L. and DRENNAN, V. M., 2016. Physician Associate and General Practitioner Consultations: A Comparative Observational Video Study. *PLoS One*. 11 (8), pp. e0160902.

DEPARTMENT OF HEALTH., 2012. *The Competence and Curriculum Framework for the Physician Assistant*. [online]. Available from: [https://www.fparcp.co.uk/webapp/data/media/58e235ff1a1be\\_CCF\\_for\\_the\\_physician\\_assistant\\_2012.pdf](https://www.fparcp.co.uk/webapp/data/media/58e235ff1a1be_CCF_for_the_physician_assistant_2012.pdf) [Accessed on 1<sup>st</sup> December, 2018].

DILL, M. J., PANKOW, S., ERIKSON, C. and SHIPMAN, S., 2013. Survey Shows Consumers Open To A Greater Role For Physician Assistants And Nurse Practitioners. *Health Affairs*. 32 (6), pp. 1135.

DODGSON, J. E., 2019. Reflexivity in Qualitative Research. *Journal of Human Lactation*. 32 (2), pp. 220-222.

DONKERS, K., BEDNAREK, M., DOWNEY, P. and ENNULAT, C., 2015. Implementation of simulation-based learning in a physician assistant curriculum. *Journal of Allied Health*. 44 (1), pp. e5.

DOYLE, L., BRADY, A. and BYRNE, G., 2009. An overview of mixed methods research. *Journal of Research in Nursing*. 14 (2), pp. 175-185.

DOYLE, L., BRADY, A. and BYRNE, G., 2016. An overview of mixed methods research – revisited. *Journal of Research in Nursing*. 21 (8), pp. 623-635.

DRENNAN, V. M., CHATTOPADHYAY, K., HALTER, M., BREARLEY, S., DE LUSIGNAN, S., GABE, J. and GAGE, H., 2012. Physician assistants in English primary care teams: A survey. *Journal of Interprofessional Care*. 26 (5), pp. 416-418.

DRENNAN, V. M., GABE, J., HALTER, M., DE LUSIGNAN, S. and LEVENSON, R., 2017. *Physician associates in primary health care in England: A challenge to professional boundaries?* 9-16.

DRENNAN, V. M., HALTER, M., BREARLEY, S., CARNEIRO, W., GABE, J., GAGE, H., GRANT, R., JOLY, L. and DE LUSIGNAN, S., 2014. Investigating the contribution of physician assistants to primary care in England: a mixed-methods study. *Health Services and Delivery Research*. 2 (16), pp. 1-136.

DRENNAN, V. M., HALTER, M., WHEELER, C., NICE, L., BREARLEY, S., ENNIS, J., GABE, J., GAGE, H., LEVENSON, R., DE LUSIGAN, S., BEGG, P. and PARLE, J., 2019. What is the contribution of physician associates in hospital care in England? A mixed methods, multiple case study. *British Medical Journal Open*. 9 (1), pp. 1-9.

DRENNAN, V. M., HALTER, M., JOLY, L., GAGE, H., GRANT, R. L., GABE, J., BREARLEY, S., CARNEIRO, W. and DE LUSIGNAN, S., 2015. Physician associates and GPs in primary care: a comparison. *British Journal of General Practice*. 65 (4), pp. 344-350.

DUMELOW, C., LITTLEJOHNS, P. and GRIFFITHS, G., 2000. Relation between a career and family life for English hospital consultants; a qualitative semi structured interviews study. *British Medical Journal*. 320, pp. 1437-1440.

EVERETT, C., THORPE, C., PALTA, M., CARAYON, P., BARTELS, C. and SMITH, M. A., 2013. Physician assistants and nurse practitioners perform

effective roles on teams caring for Medicare patients with diabetes. *Health Affairs (Project Hope)*. 32 (11), pp. 1942.

FACULTY OF PHYSICIAN ASSOCIATES., 2020. *Physician Associate Position Statement*. [online]. Available from: <https://www.fparcp.co.uk/faculty-physician-associates-position-statement> [Accessed on 1<sup>st</sup> February, 2023].

FILIPOVA, A. A., 2014. Factors influencing the satisfaction of rural physician assistants: a cross-sectional study. *Journal of Allied Health*. 43 (1), pp. 22.

FINCH, T.L., MAIR, F.S., O'DONNELL, C., MURRAY, E. and MAY, C.R., 2012. From theory to 'measurement' in complex interventions: methodological lessons from the development of an e-health normalisation instrument. *BMC medical research methodology*, 12(1), pp. 69.

FITZPATRICK, J., SANDERS, J., WORTHEN and B, 2010. *Program Evaluation: Alternative Approaches and Practical Guidelines*. 4 edn. Pearson.

GALE, N. K., HEATH, G., CAMERON, E., RASHID, S. and REDWOOD, S., 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*. 13 (117), pp. 1-8.

GARNER, J., MCKENDREE, J., O'SULLIVAN, H. and TAYLOR, D., 2010.

Undergraduate medical student attitudes to the peer assessment of professional behaviours in two medical schools. *Education for Primary Care*. 21 (1), pp. 32-37.

GENERAL MEDICAL COUNCIL, 1993. *Tomorrow's Doctors: recommendations on undergraduate medical education*. London: GMC.

GENERAL MEDICAL COUNCIL, 2009. *Tomorrow's Doctors: Outcomes and Standards for undergraduate medical education*. London: GMC.

GENERAL MEDICAL COUNCIL., 2022. *Bringing physician associates and anaesthesia associates into regulation*. [online]. Available from: <https://www.gmc-uk.org/pa-and-aa-regulation-hub/map-regulation> [Accessed on 1<sup>st</sup> March, 2022].

GERSHENGORN, H. B., XU, Y. X., CHAN, C. W., ARMONY, M. and GONG, M. N., 2016. The Impact of Adding a Physician Assistant to a Critical Care Outreach Team. *PLoS One*. 11 (12), pp. e0167959.

GHADIRI, S. J., 2020. Physician associates: an asset for physician training and a 21<sup>st</sup>-century NHS? *Future Healthcare Journal*. 7 (3), pp. 9-10.



GILL, K., KAUSER, S., KHATTACK, K. and HYNES, F., 2014. Physician associate: new role within mental health teams. *The Journal of Mental Health Training, Education and Practice*. 9 (2), pp. 79-88.

GILLESPIE, B. M., HARBECK, E., LAVIN, J., GARDINER, T., WITHERS, T. K. and MARSHALL, A. P., 2018. Using normalisation process theory to evaluate the implementation of a complex intervention to embed the surgical safety checklist. *BMC Health Services Research*. 18 (1), pp. 170.

GOLDACRE M., LAMBERT T., SVIRKO, E., 2014. Foundation doctors' views on whether their medical school prepared them well for work: UK graduates of 2008 and 2009. *Postgraduate Medical Journal*. 90, pp. 63-68.

GOLDACRE M., TAYLOR K., LAMBERT T., 2010. Views of Junior Doctors about whether their medical school prepared them well for work: Questionnaire Surveys. *BMC Medical Education*. 10, pp. 78.

GRAY, K., KROGH, K., NEWSOME, D., SMITH, V., LANCASTER, D. and NESTEL, D., 2014. TelePresence in Rural Medical Education: A Mixed Methods Evaluation. *Journal of Biomedical Education*. 2014, pp. 1-8.

GRUCA, T.S. NELSON, G.C. THIESEN, L. ASPREY, D.P. YOUNG, S.G, 2018. The workforce trends of physician assistants in Iowa (1995-2015). *PLOS One*. 13 (10), pp. 1-14.

GUEST, G., 2013. Describing Mixed Methods Research. *Journal of Mixed Methods Research*. 7 (2), pp. 141-151.

GUEST, B. N., CHANDRAKANTHAN, C., BASCOMBE, K. and WATKINS, J., 2022. Preparing physician associates to prescribe: evidence, educational frameworks and pathways. *Future Healthcare Journal*. 9 (1), pp. 21-24.

GUSE, J. G., SCHWEIGERT, E., KULMS, G., HEINEN, I., MARTENS, C. and GUSE, A. H., 2016. Effects of Mentoring Speed Dating as an Innovative Matching Tool in Undergraduate Medical Education: A Mixed Methods Study. *PLoS One*. 11 (2), pp. e0147444.

HALTER, M., DRENNAN, V. M., JOLY, L. M., GABE, J., GAGE, H. and LUSIGNAN, S., 2017. Patients' experiences of consultations with physician associates in primary care in England: A qualitative study. *Health Expectations*. 20 (5), pp. 1011-1019.

HALTER, M., DRENNAN, V., CHATTOPADHYAY, K., CARNEIRO, W., YIALLOUROS, J., DE LUSIGNAN, S., GAGE, H., GABE, J. and GRANT, R.,

2013. The contribution of Physician Assistants in primary care: a systematic review. *BMC Health Services Research*. 13 (1), pp. 223.

HALTER, M., DRENNAN, V., WANG, C., WHEELER, C., GAGE, H., NICE, L., DE LUSIGNAN, S., GABE, J., DREARLEY, S., ENNIS, J., BEGG, P. and PARLE, J., 2020. Comparing physician associates and foundation year two doctors-in-training undertaking emergency medicine consultations in England: a mixed-methods study of processes and outcomes. *British Medical Journal Open*. 10 (9), pp. 1-9.

HALTER, M., WHEELER, C., DRENNAN, V. M., DE LUSIGNAN, S., GRANT, R., GABE, J., GAGE, H., ENNIS, J. and PARLE, J., 2017. Physician associates in England's hospitals: a survey of medical directors exploring current usage and factors affecting recruitment. *Clinical Medicine*. 17 (2), pp. 126-131.

HALTER, M., WHEELER, C., PELONE, F., GAGE, H., DE LUSIGNAN, S., PARLE, J., GRANT, R., GABE, J., NICE, L. and DRENNAN, V. M., 2018. Contribution of physician assistants/associates to secondary care: a systematic review. *BMJ Open*. 8 (6), pp. e019573.

HARPER, L., KALFA, N., BECKERS, G.M.A., KAEFER, M., NIEUWHOF-LEPPINK, A.J., FOSSUM, M., HERBST, K.W., BAGLI, D. and THE ESPU RESEARCH COMMITTEE., 2020. The impact of COVID-19 on research. *Journal of Paediatric Urology*. 16 (5), pp. 715-716.

HE, X. Z., CYRAN, E. and SALLING, M., 2009. National trends in the United States of America physician assistant workforce from 1980 to 2007. *Human Resources for Health*. 7 (1), pp. 86.

HEALE, R. and TWYCROSS, A., 2018. What is a case study?. *Evidence-Based Nursing*. 7 (1), pp. 7-8.

HEALTH EDUCATION ENGLAND., 2016 *Physician Associates in Primary Care*. [online]. Available from: <https://www.hee.nhs.uk/our-work/primary-care/physician-associates-primary-care> [Accessed on 1<sup>st</sup> December, 2018].

HEALTH EDUCATION ENGLAND., 2016a. *Physician Associates in Primary Care: An Evaluation of their Role in a Changing Primary Care Workforce*. [online]. Available from: [https://www.hee.nhs.uk/sites/default/files/documents/Physician\\_Associates\\_in\\_Primary\\_Care.pdf](https://www.hee.nhs.uk/sites/default/files/documents/Physician_Associates_in_Primary_Care.pdf) [Accessed on 1<sup>st</sup> February, 2023].

HENRY, L. R., HOOKER, R. S. and YATES, K. L., 2011. The Role of Physician Assistants in Rural Health Care: A Systematic Review of the Literature. *The Journal of Rural Health*. 27 (2), pp. 220-229.

HESSE-BIBER, S. N., 2010. *Mixed methods research*. New York, NY: Guilford Press.

HODGETTS, S., HOLLIS, V., TRISKA, O., DENNIS, S., MADILL, H. and TAYLOR, E., 2007. Occupational Therapy Students' and Graduates' satisfaction with Professional Education and Preparedness for Practice. *Canadian Journal of Occupational Therapy*. 74, pp. 148- 160.

HOGGINS, R., SCOTT-SMITH, W. and OKORIE, M., 2018. UK physician associate primary care placements: staff and student experiences and perceptions. *International Journal of Medical Education*. 9, pp. 286-292.

HOOKER, R. S. and EVERETT, C. M., 2012. The contributions of physician assistants in primary care systems. *Health & Social Care in the Community*. 20 (1), pp. 20-31.

HOOKER, R. S., KLOCKO, D. J. and LUKE LARKIN, G., 2011. Physician Assistants in Emergency Medicine: The Impact of Their Role. *Academic Emergency Medicine*. 18 (1), pp. 72-77.

HOWIE, N., 2017. Continuing professional development for Physician Associates in primary care. *Education for Primary Care*. 28 (4), pp. 197-200.

HUCKABEE, M. J. and MATKIN, G. S., 2012. Examining intercultural sensitivity and competency of physician assistant students. *Journal of Allied Health*. 41 (3), pp. 55.

ILLING J., KERGON C., BURFORD B., BAULDAUF B., DAVIES C., PIELE E., SPENCER J., JOHNSON N. and ALLEN M., 2013. Morrow G Perceptions of UK medical graduates' preparedness for practice: A multi-centre qualitative study reflecting the importance of learning on the job. *BMC Medical Education*. 13, pp. 34.

ILLING, J., MORROW, G., KERGON, C., BURFORD, B., SPENCER, J., PEILE, E., DAVIES, C., BALDAUF, B., ALLEN, M., JOHNSON, N., MORRISON, J., DONALDSON, M., WHITELAW, M. AND FIELD, M., 2008. How prepared are medical graduates to begin practice? A comparison of 3 diverse UK medical schools. Final report for the GMC Education Committee. General Medical Council/Northern Deanery (University of Newcastle, University of Warwick, University of Glasgow).

INTRATOR, O., MILLER, E. A., GADBOIS, E., ACQUAH, J. K., MAKINENI, R. and TYLER, D., 2015. Trends in Nurse Practitioner and Physician Assistant Practice in Nursing Homes, 2000–2010. *Health Services Research*. 50 (6), pp. 1772-1786.

JABAREEN, Y., 2009. Building a Conceptual Framework: Philosophy, Definitions, and Procedure. *International Journal of Qualitative Methods*. 8 (4), pp. 49-62.

JIAO, S., MURIMI, I. B., STAFFORD, R. S., MOJTABAI, R. and ALEXANDER, G. C., 2018. Quality of Prescribing by Physicians, Nurse Practitioners, and Physician Assistants in the United States. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*. 38 (4), pp. 417-427.

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH., n.d. *Mixed methods designs*. [online image]. Available from: <https://www.jhsph.edu/academics/training-programs/mixed-methods-training-program-for-the-health-sciences/about-the-program/why-mixed-methods/mixed-methods-applications-illustrations/index.html> [Accessed on 11th January, 2019].

JOHNSON, J., HALL, L. H., BERZINS, K., BAKER, J., MELLING, K. and THOMPSON, C., 2018. Mental healthcare staff well-being and burnout: A narrative review of trends, causes, implications, and recommendations for future interventions. *International Journal of Mental Health Nursing*. 27 (1), pp. 20-32.

JOHNSON, R. B. and ONWUEGBUZIE, A. J., 2004. Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher*. 33 (7), pp. 14-26.

JONES, M., MCINTRYRE, J. and NAYLOR, S., 2010. Are Physiotherapy students adequately prepared to successfully gain employment? *Journal of Physiotherapy*. 96 (2) pp. 169-175

KUMAR, N., BHARDWAJ, S. and RAHMAN, E., 2018. Multiple mini-interview as a predictor of performance in the objective structured clinical examination among Physician Associates in the United Kingdom: a cohort study. *Advances in Medical Education and Practice*. 9, pp. 239-245.

KVALE, S., 1994. Interviews. *An Introduction to Qualitative Research Interviewing*. Thousand Oaks, California: Sage.

LAVELLE, E., VUK, J. and BARBER, C., 2013. Twelve tips for getting started using mixed methods in medical education research. *Medical Teacher*. 35 (4), pp. 272-276.

LEE, B., D'SOUZA, M., SINGMAN, E. L., WANG, J., WORETA, F. A., BOLAND, M. V. and SRIKUMARAN, D., 2018. Integration of a Physician Assistant Into an



Ophthalmology Consult Service in an Academic Setting. *American Journal of Ophthalmology*. 190, pp. 125-133.

LEECH, N. and ONWUEGBUZIE, A., 2009. A typology of mixed methods research designs. *Quality & Quantity*. 43 (2), pp. 265-275.

LESTARI, E., STALMEIJER, R. E., WIDYANDANA, D. and SCHERPBIER, A., 2016. Understanding students' readiness for interprofessional learning in an Asian context: a mixed-methods study. *BMC Medical Education*. 16 (1), pp. 179.

LUKASSE, M., LILLEENGEN, A. M., FYLKESNES, A. M. and HENRIKSEN, L., 2017. Norwegian midwives' opinion of their midwifery education - a mixed methods study. *BMC Medical Education*. 17 (1), pp. 80-12.

LUMSDEN, K. 2019. *Reflexivity: Theory, Method and Practice* (1st ed). Abingdon: Routledge.

MACKAY, S. J., ANDERSON, A. C. and HOGG, P., 2008. Preparedness for Clinical Practice – Perceptions of graduates and their work supervisors. *Radiography*. 14 (3), pp. 226-232.

MAUDSLEY, G., 2011. Mixing it but not mixed-up: Mixed methods research in medical education (a critical narrative review). *Medical Teacher*. 33 (2), pp. e104.

MAY, C. R., CUMMINGS, A., GIRLING, M., BRACHER, M., MAIR, F. S., MAY, C. M., MURRAY, E., MYALL, M., RAPLEY, T. and FINCH, T., 2018. Using Normalization Process Theory in feasibility studies and process evaluations of complex healthcare interventions: a systematic review. *Implementation Science*. 13 (1), pp. 80.

MCCARTNEY, M., 2017. Margaret McCartney: Are physician associates just “doctors on the cheap”? *British Medical Journal*. 359.

MCEVOY, R., BALLINI, L., MALTONI, S., O'DONNELL, C.A., MAIR, F.S. and MACFARLANE, A., 2014. A qualitative systematic review of studies using the normalization process theory to research implementation processes. *Implementation science: IS*, 9(1), pp. 2.

MCKIM, C. A., 2017. The Value of Mixed Methods Research. *Journal of Mixed Methods Research*. 11 (2), pp. 202-222.

MERKLE, F., RITSEMA, T. S., BAUER, S. and KUILMAN, L., 2011. The physician assistant: Shifting the Paradigm of European medical practice?. *HSR Proceedings in Intensive Care & Cardiovascular Anaesthesia*. 3 (4), pp. 255-262.

MERTENS, D. M., 2010. Transformative Mixed Methods Research. *Qualitative Inquiry*. 16 (6), pp. 469-474. MERTENS, D. M. and HESSE-BIBER, S., 2012. Triangulation and Mixed Methods Research. *Journal of Mixed Methods Research*. 6 (2), pp. 75-79.

MEVERDEN, R. A., SZOSTEK, J. H., MAHAPATRA, S., SCHLECK, C. D., MANDREKAR, J. N., BECKMAN, T. J. and WITTICH, C. M., 2018. Validation of a clinical rotation evaluation for physician assistant students. *BMC Medical Education*. 18 (1), pp. 123.

MONROUXE, L. V., BULLOCK, A., GORMLEY, G., KAUFHOLD, K., KELLY, N., ROBERTS, C. E., MATTICK, K. and REES, C., 2018. New graduate doctors' preparedness for practice: a multistakeholder, multicentre narrative study. *British Medical Journal Open*. 8, pp. 1-15.

MONROUXE, L., BULLOCK, A., COLE, J., GORMLEY, G., KAUFHOLD, K., KELLY, N., MATTICK, K., REES, C. SCHEFFLER, G., JEFFERIES, C., KOSTOV, C., MANN, M., GRUDNY, L., JOHN, Z. AND PANAGOULAS, E.,

2014. How Prepared are UK Medical Graduates for Practice? Final report from a programme of research commissioned by the General Medical Council.

MONROUXE, L. V., GRUNDY, L., MANN, M., JOHN, Z., PANAGOULAS, E., BULLOCK, A. and MATTICK, K., 2018. How prepared are UK medical graduates for practice? A rapid review of the literature 2009-2014. *British Medical Journal Open*. 7 (1), pp. 1-18.

MORROW G., JOHNSON N., BURFORD B., ROTHWELL C., Spence J., PEILE E., ALLEN M., BALDAUF B., MORRISON J. and ILLING J., 2012. Preparedness for practice: The perceptions of medical graduates and clinical teams. *Medical Teacher*. 34, pp. 123-135.

MORTIER, K., 2020. Communities of Practice: a Conceptual Framework for Inclusion of Students with Significant Disabilities. *International Journal of Inclusive Education*. 24 (3), pp. 329-340.

MUNN, Z., PETERS, M.D.J, STERN, C., TUFANARU, C., MCARTHUR, A., AROMATARIS, E., 2018. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*. 18 (143), pp. 1-7.

MURRAY, M., TREWEEK S, POPE, S., MACFARLANE, A., BALLINI, L., DOWRICK, C., FINCH, T., KENNEDY, A., MAIR, F., O'DONNELL, C., ONG, B., RAPLEY, T., ROGERS A., and MAY, C., 2010. Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. *BMC Medicine*, 8(1), pp. 63

NASSAR, A. and BETHEL, J., 2009. Introducing the physician assistant. *Emergency Nurse*. 16 (10), pp. 12-14. NEWTON, R., PANCHAL, M., AHMED, N., YUEN, S., THALAVA, R. and PUTTHA, R., 2017. G327(P) Safety and health care professionals satisfaction of the task based role of physician associates, supplementing doctors, in a paediatric unit. *Arch Dis Child*. 102, pp. A128.

NEALE, J. 2016. Iterative categorization (IC): a systematic technique for analysing qualitative data. *Addiction*. 111 (6), pp. 1096-1106.

NEWMAN, K. L., JEVE, Y. and MAJUMDER, P., 2021. Experiences and emotional strain of NHS frontline workers during the peak of the COVID-19 pandemic. *International Journal of Social Psychiatry*. 68 (4), pp. 783-790.

NHS ENGLAND., 2016. *General Practice Forward View*. [online]. Available from: <https://www.england.nhs.uk/wp-content/uploads/2016/04/gpfv.pdf> [Accessed on 1<sup>st</sup> December, 2018].

NHS ENGLAND., 2017. *Expanding the Medical Workforce: Enhancing the Role of Physician Associates*. [online]. Available from:

<https://www.england.nhs.uk/publication/expanding-the-medical-workforce-enhancing-the-role-of-physician-associates/> [Accessed on 1<sup>st</sup> February, 2023].

NHS HEALTH CAREERS., 2018. *Physician associate*. [online]. Available from:

<https://www.healthcareers.nhs.uk/explore-roles/medical-associate-professions/roles-medical-associate-professions/physician-associate> [Accessed on 1<sup>st</sup> December, 2018].

O'DONOGHUE, D., DAVISON, G., HANNA, L., MCNAUGHTEN, B., STEVENSON, M. and THOMPSON, A., 2018. Calibration of confidence and assessed clinical skills competence in undergraduate paediatric OSCE scenarios: a mixed methods study. *BMC Medical Education*. 18 (1), pp. 1-8.

OSTLER J., VASSILAS C., PARLE J., 2012. Physician assistants: friends or foes to doctors? *BMJ Careers*.

PARLE, J. V., 2019. Regulation of physician associates: GMC is the best fit. *British Medical Journal*. 366: 15396

PARLE, J. and ENNIS, J., 2015. Physician associates: the challenge facing general practice. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners*. 65 (634), pp. 224-225.

PEARSON, E., BYRNE-DAVIS, L., BULL, E. and HART, J., 2018. Behaviour change techniques in health professional training: developing a coding tool. *Translational Behavioural Medicine*. 10 (1), pp. 96-102.

PEATE, I., 2016. The physician's associate. *British Journal of Nursing*. 25 (10), pp. 533.

PETERS, M.D.J., GODFREY, C., MCINERNEY, P., MUNN, Z., TRICCO, A.C. and KHALIL, H., 2020. Chapter 11: Scoping Reviews (2020 version). *In: JBI Manual for Evidence Synthesis*. Available from: <https://synthesismanual.jbi.global>. <https://doi.org/10.46658/JBIMES-20-12>

PHAM, M.T., RAJIC, A., GREIG, J., SARGEANT, J.M., PAPADOPOULOS, A. and MCEWEN, S.A., 2014. A scoping review of scoping reviews: advancing the approach and enhancing the consistency. *Research Synthesis Methods*. 5 (4), pp. 371-385.

PLANO CLARK, V. L., 2017. Mixed methods research. *The Journal of Positive Psychology*. 12 (3), pp. 305-306.

PRAZAK, K. A., LESTER, P. E. and FAZZARI, M., 2014. Evaluation of physician assistant student knowledge and perception of competence in palliative symptom management. *Journal of Allied Health*. 43 (4), pp. 69.

PREMKUMAR, K., VINOD, E., SATHISHKUMAR, S., PULIMOOD, A. B., UMAEFULAM, V., PRASANNA SAMUEL, P. and JOHN, T. A., 2018. Self-directed learning readiness of Indian medical students: a mixed method study. *BMC Medical Education*. 18 (1), pp. 1-10.

PRICE, A., CLARKE, M., STANISZEWSKA, S., CHU, L., TEMBO, D., KIRKPATRICK, M. and NELKEN, Y., 2022. Patient and Public Involvement in research: A journey to co-production, *Patient Education and Counseling*. 105 (4), pp. 1041-1047.

PROFESSIONAL STANDARDS AUTHORITY., 2019. *Evaluation of the Physician Associate Managed Voluntary Register*. [online]. Available from: <https://www.professionalstandards.org.uk/docs/default-source/publications/research/evaluation-of-the-physician-associate-managed-voluntary-register.pdf> [Accessed on 1<sup>st</sup> February, 2023].



RIMMER, A., 2016. Physician associates—what do they do?. *British Medical Journal*. 354, pp. 4661.

RIMMER, A., 2017. Complexity of primary care is barrier to physician associates, say GPs. *British Medical Journal*. 359, pp. 4685.

RITSEMA, T. S. and ROBERTS, K. A., 2016. Job satisfaction among British physician associates. *Clinical Medicine (London, England)*. 16 (6), pp. 511-513.

RITSEMA, T.S., 2017. Faculty of Physician Associates Census Results *Royal College of Physicians*. [online]. Available from:  
[https://www.fparcp.co.uk/webapp/data/media/5a25292c04763\\_FPA\\_Census\\_2017\\_04\\_12\\_17.pdf](https://www.fparcp.co.uk/webapp/data/media/5a25292c04763_FPA_Census_2017_04_12_17.pdf) [Accessed on 1<sup>st</sup> December, 2018].

ROBERTS, S., 2018. Physician associates: different from but complementary to general practitioners. *British Medical Journal*. 360, pp. k244.

ROBERTS, S., HOWARTH, S., MILLOTT, H. and STROUD, L., 2019. 'What can you do then?' Integrating new roles into healthcare teams: Regional experience with physician associates. *Future Healthcare Journal*. 6 (1), pp. 61-66.

ROOS, M., KADMON, M., KIRSCHFINK, M., KOCH, E., JÜNGER, J.,  
STRITTMATTER-HAUBOLD, V. and STEINER, T., 2014. Developing medical  
educators--a mixed method evaluation of a teaching education program.  
*Medical Education Online*. 19 (1), pp. 23868-8.

ROSS, N. and PARLE, J., 2008. Physician assistants: a UK perspective on  
clinical need, education and regulation. *The Clinical Teacher*. 5 (1), pp. 28-32.

ROSS, N., PARLE, J., BEGG, P. and KUHNS, D., 2012. The case for the  
physician assistant. *Clinical Medicine*. 12 (3), pp. 200-206.

ROYAL COLLEGE OF PHYSICIANS., 2018a. *Faculty of Physician Associates –  
quality health care across the NHS*. [online]. Available from:  
<http://www.fparcp.co.uk/about-fpa/faqs> [Accessed on 1<sup>st</sup> December, 2018].

ROYAL COLLEGE OF PHYSICIANS., 2018b. *Government announces  
regulation of physician associates*. [online]. Available from:  
[https://www.fparcp.co.uk/about-fpa/news/government-announces-regulation-of-  
physician-associates](https://www.fparcp.co.uk/about-fpa/news/government-announces-regulation-of-physician-associates) [Accessed on 1<sup>st</sup> December, 2018].

ROYAL COLLEGE OF PHYSICIANS., 2018c. *Continuing Professional  
Development guidance for Physician Associate*. [online]. Available from:

[https://www.fparcp.co.uk/webapp/data/media/58de25f6ea73a\\_Continuing Professional Development Guidance for Physician Associates.pdf](https://www.fparcp.co.uk/webapp/data/media/58de25f6ea73a_Continuing_Professional_Development_Guidance_for_Physician_Associates.pdf) [Accessed on 1<sup>st</sup> December, 2018].

ROYAL COLLEGE OF PHYSICIANS., 2021. *Focus on physician associates: census 2020*. [online]. Available from: <https://www.fparcp.co.uk/about-fpa/fpa-census> [Accessed on 1<sup>st</sup> April, 2022].

ROYAL COLLEGE OF PHYSICIANS., 2022. *Physician associate – regulation update*. [online]. Available from: <https://www.fparcp.co.uk/about-fpa/news/physician-associate-regulation-update> [Accessed on 1<sup>st</sup> April, 2022].

RUTBERG, S. and BOUIKIDIS, C.D., 2018. Focusing on the Fundamentals: A Simplistic Differentiation Between Qualitative and Quantitative Research. *Nephrology Nursing Journal*. 45 (2), pp. 209-213.

SCARSO, E., BOLISANI, E. and SALVADOR, L., 2009. A systematic framework for analysing the critical success factors of communities of practice. *Journal of Knowledge Management*. 13 (6), pp. 431-447.

SCHIFFERDECKER, K. E. and REED, V. A., 2009. Using mixed methods research in medical education: basic guidelines for researchers. *Medical Education*. 43 (7), pp. 637-644.

SHANNON-BAKER, P., 2016. Making Paradigms Meaningful in Mixed Methods Research. *Journal of Mixed Methods Research*. 10 (4), pp. 319-334.

STEPHENSON, J., 2015. Physician associates in primary care. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners*. 65 (635), pp. 287.

STRAUGHTON, K., ROBERTS, A. A., WATKINS, J., DRENNAN, V. M. and HALTER, M., 2022. Physician associates in the UK: development, status and future. *JAAPA: official journal of the American Academy of Physician Assistants*. 35 (3), pp. 56-60.

STRAWSON, J., TAMURA-ROSE, G., GILES, J. and LINEHAN, G., 2021. Carrying the torch for physician associates (PAs) working in UK hospices. *BMJ Supportive & Palliative Care*. 11 (Suppl 2), A1.

TALLENTIRE V., SMITH S., WYLDE K., CAMERON H., 2011. Are medical graduates ready to face the challenges of Foundation training? *Postgraduate Medical Journal*. 87, pp. 590-595

THOMPSON, J., WHITE, S. and CHAPMAN, S., 2020. Virtual patients as a tool for training pre-registration pharmacists and increasing their preparedness to practice: A qualitative study. *PLOS ONE*. 15 (8), pp. 1-16.

TIMMERMANS, M. J. C., VAN VUGHT, ANNEKE J. A. H., PETERS, Y. A. S., MEERMANS, G., PEUTE, J. G. M., POSTMA, C. T., SMIT, P. C., VERDAASDONK, E., DE, V. R., WENSING, M. and LAURANT, M. G. H., 2017. The impact of the implementation of physician assistants in inpatient care: A multicenter matched-controlled study. *Plos One*. 12 (8), pp. e0178212.

VANCE, G., JANDIAL, S., SCOTT, J. and BURFORD, B., 2019. What are junior doctors for? The work of Foundation doctors in the UK: a mixed methods study. *British Medical Journal Open*. 9 (4), pp. 1-12.

WATMOUGH, S., 2012. An evaluation of the impact of an increase in community-based medical undergraduate education in a UK medical school. *Education for Primary Care*. 23 (6), pp. 385-390.

WATMOUGH, S. and KENNEDY, T., 2014. How competent do graduates feel to undertake the skills required by the General Medical Council?. *British Journal of Hospital Medicine*. 75 (8), pp. 464-467.

WATMOUGH, S., BOX, H., BENNETT, N., STEWART, A. and FARRELL, M., 2016. Unexpected medical undergraduate simulation training (UMUST): can unexpected medical simulation scenarios help prepare medical students for the transition to foundation year doctor?. *BMC Medical Education*. 16 (110), pp. 1-9.

WATMOUGH, S. D., O'SULLIVAN, H. and TAYLOR, D. C. M., 2010. Graduates from a reformed undergraduate medical curriculum based on Tomorrow's Doctors evaluate the effectiveness of their curriculum 6 years after graduation through interviews. *BMC Medical Education*. 10 (1), pp. 65.

WATMOUGH, S., CHERRY, M. G. and O'SULLIVAN, H., 2012. A comparison of self-perceived competencies of traditional and reformed curriculum graduates 6 years after graduation. *Medical Teacher*. 34 (7), pp. 562-568.

WATMOUGH, S., GARDEN, A. and TAYLOR, D., 2006a. Does a new integrated PBL curriculum with specific communication skills classes produce Pre Registration House Officers (PRHOs) with improved communication skills?. *Medical Teacher*. 28 (3), pp. 264-269.

WATMOUGH, S., GARDEN, A. and TAYLOR, D., 2006b. Pre-registration house officers' views on studying under a reformed medical curriculum in the UK. *Medical Education*. 40 (9), pp. 893-899.

WATMOUGH, S., O'SULLIVAN, H. and TAYLOR, D., 2009. Graduates from a traditional medical curriculum evaluate the effectiveness of their medical curriculum through interviews. *BMC Medical Education*. 9 (1), pp. 64.

WENGER, E., 2004. *Communities of practice*. 1. paperback ed., reprint. edn. Cambridge [u.a.]: Cambridge Univ. Press

WHEELER, C., HALTER, M., DRENNAN, V. M., DE LUSIGNAN, S., GRANT, R., GABE, J., GAGE, H., BEGG, P., ENNIS, J. and PARLE, J., 2017. Physician associates working in secondary care teams in England: Interprofessional implications from a national survey. *Journal of Interprofessional Care*. 31 (6), pp. 774-776.

WHILE, A., 2015. Reviewing roles: nurses vs physician assistants. *British Journal of Community Nursing*. 20 (7), pp. 362.

WHITE, H. and ROUND, J. E. C., 2013. Introducing physician assistants into an intensive care unit: process, problems, impact and recommendations. *Clinical Medicine (London, England)*. 13 (1), pp. 15-18.

WHITAKER, E. M. and ATKINSON, P. A., 2019. Reflexivity. [online]. Available from: <http://usir.salford.ac.uk/id/eprint/52821/> [Accessed on 1<sup>st</sup> March, 2022].

WILLIAMS, L. E. and RITSEMA, T. S., 2014. Satisfaction of doctors with the role of physician associates. *Clinical Medicine (London, England)*. 14 (2), pp. 113-116.

WILSON, L. N., WAINWRIGHT, G. A., STEHLY, C. D., STOLTZFUS, J. and HOFF, W. S., 2013. Assessing the academic and professional needs of trauma nurse practitioners and physician assistants. *Journal of Trauma Nursing: The Official Journal of the Society of Trauma Nurses*. 20 (1), pp. 51-55.

WORTHEN, B., SANDERS, J. and FITZPATRICK, J., 1997. *Program Evaluation. Alternative approaches and Practical Guidelines*. New York: Longman.



## **Appendix 1 – Tasks & procedures undertaken by PAs (Ritsema 2017)**

Tasks and procedures that are routinely performed by currently practising PAs, regardless of their specialty, are listed below, sorted in order of frequency and grouped by relative frequency.

The following tasks are routinely performed by nearly all PAs (>90%):

- taking a medical history
- performing a physical examination
- providing patient education.

The following tasks are routinely performed by more than half of PAs (50–89%):

- performing venepuncture
- interpreting an electrocardiogram (ECG)
- obtaining an ECG
- performing cannulation
- obtaining an arterial blood gas.

The following tasks are routinely performed by 25–49% of PAs:

- placing a urinary catheter
- performing a psychiatric examination
- performing suturing
- placing a nasogastric tube
- performing a pelvic examination.

The following tasks are routinely performed by 1-24% of PAs:

- lumbar puncture
- central line insertion
- casting/splinting
- PICC line placement
- surgical first assist
- lipoma removal
- incision and drainage of abscess
- thoracentesis

- joint aspiration/injection
- ultrasonography
- fracture reduction
- foetal heart tones
- dislocation reduction
- intubation
- nerve blocks
- IUD removal
- providing antenatal care
- DEXA scanning
- chest drain insertion
- perinatal care
- general new born examinations
- radiography
- pulmonary function tests
- cystoscopy
- arterial line insertion
- implant removal
- obtaining cervical smears
- IUD placement
- Paracentesis
- OGD
- FAST trauma ultrasound
- participating in cardiac catheterisation
- hematoma blocks
- pregnancy termination
- mole removal
- skin cancer removal.
- skin biopsy

(DEXA = dual-energy X-ray absorptiometry; FAST = focused assessment with sonography for trauma; IUD = intrauterine device; OGD = oesophagogastroduodenoscopy; PICC = peripherally inserted central catheter).

The following tasks are routinely performed by only one PA:

- circumcision
- colonoscopy
- endometrial biopsy
- implant placement
- performing cardiac stress testing
- sigmoidoscopy.

## **Appendix 2 – Competence Framework (DOH 2012)**

### **Specification of core competences**

#### **2.3.1 Professional Behaviour & Probity**

- Consistently behave with integrity and sensitivity.
- Behave as an ambassador for the role of Physician Assistant, acting professionally and behaving considerately towards other professionals and patients.
- Recognise and work within the limits of your professional competence and scope of practice and within the scope of practice of your supervising clinician
- Maintain effective relationships with colleagues from other health and social care professions.
- Inform patients, carers and others of the nature of the clinical role.
- Contribute to the effectiveness of a clinical learning environment.
- Be a good role model

#### **2.3.2 The patient relationship**

- Demonstrate the ability to develop and maintain clinician – patient relationships which will foster informed patient choice and negotiated care decisions.
- Communicate effectively and appropriately with patients and carers even when communication is difficult
- Demonstrate the ability to work with the patient to make best therapeutic use of the clinician-patient encounter
- Perform a tailored and holistic assessment in order to develop an appropriate management plan
- Facilitate patient and/or carer involvement in management, planning and control of their own health and illness
- Appropriately and sensitively identify and utilise opportunities for patient and carer education.

### **2.3.3 Common core skills and knowledge when working with children, young people and families**

- Demonstrate effective communication and engagement with children, young people and families
- Demonstrate effective observation and judgement in children's and young people's development
- Recognise when to take appropriate action in safeguarding and promoting the welfare of the child
- Intervene appropriately when supporting transitions between stages of development and/or services
- Demonstrate effective multi-agency working through awareness of roles and responsibilities within other services
- Identify when to share information in a timely and accurate manner while respecting legislation on the control and confidentiality of information

### **2.3.4 History taking and consultation skills**

- Structure interviews so that the patient (carer) is encouraged to express their concerns, expectations and understanding, so that these can be appropriately addressed
- Elicit a patient history appropriate to the clinical situation, which may include, presenting complaint, history of the present illness, past medical history, social history, family history, medications, allergies, review of systems, risk factors and appropriate targeted history
- Identify relevant psychological and social factors, integrating these perspectives with the biomedical evidence to elucidate current problems.

### **2.3.5 Examination (general)**

- Perform a physical examination tailored to the needs of the patient and the demands of the clinical situation, including, as appropriate, neurological examination, musculoskeletal examination, blood pressure (BP) measurement and control, male and female uro-genital examination, breast examination, ophthalmic examination, oropharyngeal

examination cardiovascular examination, respiratory examination, abdominal examination and dermatological examination

- Perform a comprehensive mental state examination, tailored to the needs of the patient and the demands of the clinical situation, including as appropriate, assessment of appearance and behaviour, levels of consciousness, posture and motor behaviour, thoughts and perceptions, affect, speech and language, orientation, memory and higher cognitive function.

### **2.3.6 Interpreting evidence/determining the requirement for additional evidence**

- Interpret the findings from the consultation (history, physical examination and mental state examination) in order to determine the need for further investigation and, with the patient/carer, the appropriate direction of patient management
- Understand the indication for initial and follow-up investigations
- Select, interpret and act upon appropriate investigations
- Determine the relevance of screening tests for a given condition.

### **2.3.7 Clinical judgement in diagnosis and management**

- Formulate a differential diagnosis based on objective and subjective data
- Make use of clinical judgement to select the most likely diagnosis in relation to all information obtained
- Recognise when information/data is incomplete and work safely within these limitations
- Recognise key diagnostic errors and the issues relating to diagnosis in the face of incomplete data.
- Recognise when a clinical situation is beyond their competence and seek appropriate support.

### **2.3.8 Therapeutics and prescribing**

- Working under medical delegation clauses, determine and propose appropriate therapeutic interventions from the full range of available prescription medications used in the clinical setting

- Write accurate and legible prescriptions in out-patient, in-patient and primary care setting for review and signature by a supervising clinician.
- On commencing intravenous infusion, write accurate and legible prescriptions for appropriate fluid regimes for review and signature by a supervising clinician
- Use the British National Formulary (BNF) and local formularies appropriately and be familiar with the yellow card system for reporting side effects/drug interactions
- Recognise their responsibility for facilitating patient concordance for the drug regime being proposed by them and prescribed by their supervising clinician.

### **2.3.9 Clinical planning and procedures**

- Formulate and implement a management plan in collaboration with the patient, the carers and healthcare professionals
- Perform clinical procedures using knowledge of the indications, contraindications, complications and techniques
- Monitor and follow up changes in patient's condition and response to treatment, recognising indicators of patient's response.

### **2.3.10 Documentation and information management**

- Initiate and maintain accurate timely and relevant medical records
- Contribute to multi-professional records where appropriate.

### **2.3.11 Risk management**

- Recognise potential clinical risk situations and take appropriate action
- Recognise risks to themselves, the team, patients and others and takes appropriate action to eliminate/minimise danger
- Value the importance of clinical governance and participate as directed.

### **2.3.12 Teamwork**

- Value the roles fulfilled by other members of the health and social care team and communicate with them effectively

- Effectively manage patients at the interface of different specialties and agencies, including primary/secondary care, imaging and laboratory specialties
- Effectively and efficiently hand over responsibility to other health and social care professionals

### **2.3.13 Time/resource management**

- Prioritise workload using time and resources effectively
- Recognise the economic constraints to the NHS and seek to minimise waste.

### **2.3.14 Maintenance of good practice**

- Critically evaluate own practice to identify learning/developmental needs and identify and utilise learning opportunities
- Use evidence, guidelines and audit (including significant event analysis) to benefit patient care and improve professional practice.

### **2.3.15 Ethical and legal issues**

Identify and address ethical and legal issues, which may impact on patient care, carers and society. Such issues will include:

- ensuring patients' rights are protected (e.g. children's rights including Gillick competency: patients' right to participate in making decisions about their care)
- maintaining confidentiality
- obtaining informed consent
- providing appropriate care for vulnerable patients (including vulnerable adults, children and families in need)
- responding to complaints.

### **2.3.16 Equality and diversity**

- Recognise the importance of people's rights in accordance with legislation, policies and procedures
- Act in a way that:



- acknowledges and recognises people's expressed beliefs, preferences and choices
- respects diversity
- values people as individuals
- incorporates an understanding of one's own behaviour and its effect on others
  - Identify and take action when own or others' behaviour undermines equality and diversity.

### **2.3.17 Awareness of guiding principles and current developments in the NHS**

- Practice in a manner which is grounded in the underlying principles of the NHS as a patient centred service, free at the point of delivery
- Maintain an awareness of national and local guidelines / legal requirements, both generally and, in particular, as relevant to their area of practice
- Maintain an awareness of any new developments in the structure and function of the NHS and particularly in relation to their area of practice
- Demonstrate an understanding of change processes within the NHS and fulfil their broader professional role by participating in national and local consultation processes

### **2.3.18 Public health**

- Address issues and demonstrate techniques involved in studying the effect of diseases on communities and individuals including:
  - assessment of community needs in relation to how services are provided
  - recognition of genetic, environmental and social causes of, and influences on the prevention of illness and disease
  - application of the principles of promoting health and preventing disease.

### **2.3.20 Moving and Handling**

- Assess the risks to self, colleagues and the patient prior to moving and handling and act to minimise those risks by:
  - ensuring that there are sufficient trained staff available to carry out the action safely

- using appropriate manual handling techniques for the situation
- making proper use of any moving and handling aids provided.

### **Specification of core procedural skills**

This section is designed to be read in conjunction with the competences (2.3) and for the sake of brevity we do not repeat the vitally important skills of routine examination, communication with the patient, seeking informed consent, ensuring safety, avoiding infection etc.

#### **2.4.1 Cardiovascular system**

- Perform and interpret a 12 lead ECG
- Participate in cardiopulmonary resuscitation to the level expected in Immediate Life Support Training: including oxygen with mask, bag intubation, which medication to use and when, depending upon ECG reading.

#### **2.4.2 Respiratory system**

- Undertake respiratory function tests, including the performance of peak flow measurement
- Commence and manage nebulised therapy
- Commence and manage oxygen therapy
- Instruct patients in the use of devices for inhaled medication

#### **2.4.3 Gastrointestinal system**

- Insert a naso-gastric tube (tested in simulation)
- Undertake nutritional assessment

#### **2.4.4 Musculoskeletal system**

- Undertake appropriate strapping and splinting for common musculoskeletal injuries

#### **2.4.5 Eyes**

- Perform fluorescein dye examination of the cornea

- Remove loose foreign bodies from under lids

#### **2.4.6 Female reproductive system**

- Obtain a cervical smear, cultures for HVS etc

#### **2.4.7 Renal and genitourinary system**

- Undertake male and female urinary catheterisation
- Perform a urine dipstick test

#### **2.4.8 Skin**

- Undertake simple skin suturing
- Be competent in the use of local anaesthetics

#### **2.4.9 Diagnostics and therapeutics**

- Interpret written prescriptions accurately, seeking confirmation when the drug, dose or route of administration are unclear, or where the prescription as written is outside standard practice
- Draw up and give intramuscular, subcutaneous, intra-dermal and intravenous injections.
- Take a venous blood sample, using appropriate tubes for required tests
- Obtain an arterial blood gas (ABG) sample
- Undertake venous cannulation and set up an infusion and infusion pump
- Commence and manage a blood transfusion (in simulation)
- Measure body temperature
- Measure pulse rate
- Monitor oxygen saturation transcutaneously
- Take nose, throat and skin swabs
- Calculate dosage of insulin using a pre-prescribed sliding scale and administer

**Appendix 3 – Examples of the matrix of conditions (DOH 2012)**

**X Axis: Is the PA competent to undertake the diagnostic process?**

**YES:** Category 1 – The PA is able to identify a condition as a possibility within differential diagnoses and to take measures to confirm the diagnosis.

**NO:** Category 2 – The PA is aware of the condition, but does not necessarily have the knowledge or resources to make the diagnosis.

**Y Axis: Is the PA competent to take responsibility for management?**

**YES:** Category A – The PA is able to manage the uncomplicated condition without routine referral to others

**NO:** Category B – The PA participates in the management of the condition but does not take a lead role in determining the management strategy.

X Axis: Taking a Significant Role in the Diagnostic Process?

Y Axis: Taking Responsibility for Management?

<p><b>YES (1A)</b></p> <p>The PA is able to diagnose the condition in a patient who is presenting with the problem for the first time and will normally be able to manage it without regular or routine referral.</p>	<p><b>NO (2A)</b></p> <p>Once the condition has been diagnosed, either by their supervising doctor or a clinical specialist, the PA is able to manage the condition without routine referral.</p>
<p><b>YES (1B)</b></p> <p>The PA is able to identify the condition as a possible diagnosis: may not have the knowledge / resources to confirm the diagnosis or to manage the condition safely, but can take measures to avoid immediate deterioration and refer appropriately</p>	<p><b>NO (2B)</b></p> <p>The PA is able to undertake the day to day management of the patient and condition once the diagnosis and strategic management decisions have been made by another</p>

**Example: Cardiovascular conditions**

X Axis: Taking a significant role in the diagnostic process?

Y Axis: Taking responsibility for management?

<p><b>YES (1A)</b></p> <ul style="list-style-type: none"> <li>• Hypertension (essential, isolated systolic, iatrogenic)</li> <li>• Hypotension (orthostasis/postural, hypovolaemic shock)</li> <li>• Vascular diseases (Phlebitis/thrombopheliosis)</li> <li>• Hypothermia</li> </ul>	<p><b>NO (2A)</b></p> <ul style="list-style-type: none"> <li>• Vascular diseases (Giant cell arteritis)</li> <li>• Ischemic Heart Disease (angina pectoris), stable</li> </ul>
<p><b>NO (1B)</b></p> <ul style="list-style-type: none"> <li>• Hypertension (secondary, malignant/accelerated)</li> <li>• Hypotension (cardiogenic shock)</li> <li>• Conduction disorders (bundle branch block, premature beats, atrioventricular block, ventricular tachycardia, ventricular/altrial fibrillation/flutter)</li> <li>• Vascular diseases (chronic acute arterial occlusion, varicose veins, venous thrombosis, peripheral vascular disease, acute rheumatic fever, aortic aneurysm/dissection, arterial embolism/thrombosis.</li> <li>• Valvular Disease (Aortic/mitral stenosis/regurgitation, tricuspid/pulmonary stenosis insufficiency)</li> <li>• Cardia failure (ischaemic, valvular, hypertensive)</li> <li>• Ischaemic heart disease (acute myocardial infarction, angina pectoris – unstable, Prinzmetal's variant)</li> <li>• Other forms of heart disease (acute and subacute bacterial endocarditis, acute pericarditis,</li> </ul>	<p><b>NO (2B)</b></p> <ul style="list-style-type: none"> <li>• Cardiomyopathy (dilated, hypertrophic, restrictive)</li> <li>• Congenital heart disease (atrial septal defect, ventricular septal defect, coarction of aorta, patent ductus arteriosus, tetralogy of fallot)</li> <li>• Valvular disease (mitral valve prolapse)</li> </ul>

cardic tamponade, pericardial effusion)	
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**Example: Patient presenting with chest pain**

X Axis: Taking a significant role in the diagnostic process?

Y Axis: Taking responsibility for management?

<p><b>YES (1A)</b></p> <ul style="list-style-type: none"> <li>• Respiratory (bacterial pneumonia, viral pneumonia)</li> <li>• GI (Oesophagitis, Gastro-oesophageal reflux disease, dyspepsia)</li> <li>• Neurological (Herpes zoster (of chest wall))</li> </ul>	<p><b>NO (2A)</b></p> <ul style="list-style-type: none"> <li>• Cardiovascular</li> <li>• Angina Pectoris: stable</li> </ul>
<p><b>NO (1B)</b></p> <ul style="list-style-type: none"> <li>• Mental health (panic disorder)</li> <li>• CVS (acute myocardial infarction, angina pectoris unstable, Prinzmetal's variant)</li> <li>• Respiratory (pulmonary embolism, pleurisy)</li> <li>• GI (acute cholecystitis)</li> </ul>	<p><b>NO (2B)</b></p> <ul style="list-style-type: none"> <li>• Respiratory (fungal pneumonia, HIV related pneumonia)</li> </ul>

**Appendix 4** – Examples of conditions PAs should be able to manage and diagnose/refer appropriately (DOH 2012)

The Physician Assistant should be familiar with the following patient presentations and should be able to manage and diagnose / refer appropriately.

- Addiction
- Altered sensation (including loss of feeling in lower limbs)
- Anxiety: abnormal
- Appetite/weight: alteration
- Back pain
- Blood loss
- Breast problems (lump, pain, discharge, surface changes)
- Children: Failure to thrive
- Children: Developmental problems
- Children: Short stature
- Children: Unexplained injury
- Circulatory abnormalities of the limbs
- Collapse/reduced level of consciousness (including fits)
- Cough
- Cutaneous/subcutaneous swellings
- Disordered mood
- Disordered thinking
- Distension: abdominal
- ENT problems
- ENT Emergencies
- Eye problems
- Eye Emergencies
- Falls/faints (syncope)/dizzy turns
- Fertility / Infertility
- Fever
- GI disturbances including vomiting/altered bowel habit
- Head and neck lumps
- Headache

- Hypothermia
- Injury: Head & Neck
- Injury: Extremities
- Injury: Abdominal & Pelvic
- Injury: Thoracic
- Joint pain/swelling
- Mass: abdominal
- Memory loss
- Menstrual changes / problems
- Micturition abnormalities (including frequency, volume, colour and incontinence)
- Movement: loss of/abnormal (inc. inability to walk, shaking hands)
- Oedema
- Pain: abdominal
- Pain: chest (including heartburn)
- Pregnancy: problems in
- Prolapse
- Sciatic leg pain
- Scrotal and groin swellings / pain
- Sexual dysfunction
- Sexually transmitted infection: concerns about
- Shortness of breath
- Skin changes: colour, ulceration, pruritis, rashes
- Sleep disorder
- Speech disturbances
- Swallowing difficulties (dysphagia)
- Tiredness
- Visual disturbances
- Voice changes
- Weakness (both focal and general)





## CERTIFICATE OF ACHIEVEMENT

Alykhan Kassam

has completed the course

**Introduction to Good Clinical Practice (GCP) eLearning**

November 29, 2019

### **Modules Completed:**

Introduction to Research in the NHS and other settings

Good Clinical Practice and Standards in Research

Study Set-up and Responsibilities

Informed Consent

Data Collection and Documentation

Safety Reporting

Summary

This course is worth 4 CPD points.



## Appendix 6 – Evidence of Ethical Scrutiny & Approval (FREC Approval Letter)

Edge Hill  
University

Alykhan Kassam

28<sup>th</sup> June 2019

Dear Alykhan,

Thank you for submitting your research ethics application 'CPD requirements for Physician Associates' (FOHS 240) to the Faculty of Health & Social Care Research Ethics Committee.

I have pleasure in informing you that the Committee recommended that your study is granted Faculty of Health & Social Care research ethics approval, subject to the following conditions:

1. Ethical approval covers only the original study for which it is sought. If the study is extended, changed, and / or further use of samples or data is needed the Committee Administrator, Daniel Brown, must be contacted for advice as to whether additional ethical approval is required.
2. (NHS studies only) NHS Research governance processes must be adhered to. If required, an application must be made to the HRA for approval for the research to be conducted in the NHS. NHS R&D departments (in Trusts where data is being collected) may also need to be approached for Trust permission to proceed.
3. If the project requires HRA approval and/or NHS ethical approval, please forward evidence of the approval(s) to Daniel Brown ([browdan@edgehill.ac.uk](mailto:browdan@edgehill.ac.uk)) before commencing the study. FREC approval is subject to the receipt of evidence of appropriate external approvals.
4. The Principal Investigator is responsible for ensuring that all data are stored and ultimately disposed of securely in accordance with the Data Protection Act (1998) / General Data Protection Regulation (GDPR) (2018) and as detailed within the approved proposal.
5. The Principal Investigator is responsible for ensuring that an annual monitoring form and an end of study form, where appropriate, is sent to the Committee Administrator ([browdan@edgehill.ac.uk](mailto:browdan@edgehill.ac.uk)). The form will be sent to you at the appropriate time by the Committee Administrator.
6. Ethical approval for this research will expire on 01-10-2021. Any extension to this date will require additional approval from the committee.

The study documentation that has been reviewed and approved is detailed below:

<doc title>	<version no & date>
Faculty Research Proposal	n/a
Clinical Supervisor Questionnaire	<b>V1, 01-04-2019</b>
Consent Form for Clinical Supervisors – Interviews	<b>V1, 10-06-2019</b>
Consent Form for Physician Associates – Focus Groups	<b>V1, 10-06-2019</b>
Interview and Focus Group Schedule	<b>V1, 01-04-2019</b>
Letter of Invitation (Clinical Supervisor Version)	<b>V1, 01-04-2019</b>
Letter of Invitation (PA Version)	<b>V1, 01-04-2019</b>
PA Questionnaire	<b>V1, 01-04-2019</b>
PIS for Clinical Supervisors - Interviews	<b>V1, 10-06-2019</b>
PIS for Clinical Supervisors - Questionnaire	<b>V1, 10-06-2019</b>
PIS for Physicians Associates – Focus Groups	<b>V1, 10-06-2019</b>
PIS for Physicians Associates – Questionnaire	<b>V1, 10-06-2019</b>

Yours sincerely

Professor Mary O'Brien

Chair of Faculty of Health & Social Care Research Ethics Committee Edge Hill  
University  
St Helens Road  
Ormskirk

Lancashire  
L39 4QP

## Appendix 7 – Evidence of Ethical Scrutiny & Approval (HRA Approval Letter)



Mr. Alykhan Kassam  
[Redacted]

Email: [approvals@hra.nhs.uk](mailto:approvals@hra.nhs.uk)

01 July 2020

Dear Mr. Kassam

**HRA and Health and Care  
Research Wales (HCRW)  
Approval Letter**

**Study title:** Preparedness for Practice and CPD Requirements for Physician Associates  
**IRAS project ID:** [Redacted]  
**Sponsor:** Edge Hill University

I am pleased to confirm that [HRA and Health and Care Research Wales \(HCRW\) Approval](#) has been given for the above referenced study on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS [organisations](#) to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

**How should I work with participating NHS/HSC [organisations](#) in Northern Ireland and Scotland?**

HRA and HCRW Approval does not apply to NHS/HSC [organisations](#) within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating [organisations](#) in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating [centre](#) of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see [IRAS Help](#) for information on working with NHS/HSC [organisations](#) in Northern Ireland and Scotland.

**How should I work with participating non-NHS organisations?**

HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to [obtain local agreement](#) in accordance with their procedures.

**What are my notification responsibilities during the study?**

The "[After HRA Approval – guidance for sponsors and investigators](#)" document on the HRA website gives detailed guidance on reporting expectations for studies with HRA and HCRW Approval, including:

- Registration of Research
- Notifying amendments
- Notifying the end of the study

The [HRA website](#) also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

**Who should I contact for further information?**

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is [REDACTED]. Please quote this on all correspondence.

Yours sincerely,  
Gemma Oakes

Approvals Specialist

Email: [approvals@hra.nhs.uk](mailto:approvals@hra.nhs.uk)

Copy to: *Dr Simon Watmough*

## Appendix 8 – Data Management Plan

### Research Data Management (RDM) Plan

**Project title:** Exploring the Preparedness for Practice and CPD requirements of Physician Associates: A Mixed Methods Approach

**Principal researcher:** Alykhan Alyan Kassam

**Supervisors:** Dr Simon Watmough, Dr Jayne Garner & Dr Emma Pearson

**Institution:** Edge Hill University (EHU)

**Date completed:** 11/01/19

This Research Data Management (RDM) Plan has been produced in line with the Edge Hill University (EHU) Research Data Management Guidance, the EHU Research Data Management Policy and the Code of Practice for the Conduct of Research.

#### Data Collection

##### What data will you collect or create?

The proposed study has two participant types – physician associates (PAs) and clinical supervisors and/or NHS managers. Quantitative and qualitative data will be obtained from both participant types from an electronic questionnaire. The questionnaire data will be stored securely on SurveyMonkey, access to which is restricted using a password.

Qualitative data will be produced from focus groups which PAs will be invited to attend and from interviews which clinical supervisors and/or NHS managers will be invited to attend. The focus groups and interviews will be digitally audio recorded and will be transcribed by the principal researcher at the earliest opportunity. Paper-based notes may be made during the

focus groups and interviews; however, these will be anonymised and will be securely destroyed once transcription has taken place. Transcriptions will be anonymised and will be stored as Word documents on the university's secure network as well as on the principal researcher's OneDrive (a secure cloud storage platform) account. Both access to the university's secure network as well as access to the OneDrive account will be password protected, with the password known only to the principal researcher. The password for both will be changed at regular intervals.

Electronic consent forms will be distributed to participants, although some paper copies of consent forms will be available during focus groups and interviews for participants who did not provide consent electronically.

Dr Simon Watmough, the Director of Studies for this research project will act as the data guardian for all data which is collected during the study.

#### How will the data be collected or created?

Questionnaire data will be collected from an electronic questionnaire which will be emailed to participants alongside an information sheet and a consent form. The data produced from the questionnaire will be stored on SurveyMonkey, a password protected online tool which will be used to create the questionnaire. The anonymised, quantitative data produced from the electronic questionnaire will then be entered onto SPSS 25 software for statistical analysis. Access to the data which will be on the principal researcher's SPSS account, will be password protected, with the password only known to the principal researcher. The password will be changed at regular intervals throughout the study.

Qualitative data will be collected from digitally audio recorded focus groups (PAs) and interviews (clinical supervisors and/or NHS managers) which will be transcribed by the principal researcher at the earliest opportunity. The anonymised, transcribed data will be saved as Word documents (with an allocated version number) within structured folders on the university's secure network which is password protected. A copy of all the versions will be stored on the principal researcher's OneDrive account, which is also password protected. Qualitative data produced will then be entered onto NVivo 12 software following transcription for analysis. Access to the data which will be on the principal researcher's NVivo account will be password protected, with the password only known to the principal researcher. All passwords will be changed at regular intervals throughout the study.

## Documentation and Metadata

### What documentation and metadata will accompany the data?

An information sheet will accompany the data which will include the name and email address of the principal researcher, an outline of the study, the methodology of data collection and information as to how the data produced from the study will be used. The information sheet will be distributed to all participants who take part in the study. Consent forms will also accompany the data. Where possible, these will be stored securely electronically, with access password restricted. Paper-based notes may be made during the focus groups and interviews; however, these will be anonymised and will be securely destroyed once transcription has taken place.

An abstract, which contains details of who created the data, the project title, the date of creation and the conditions for which the data can be accessed will be stored in the EHU research data repository.



## Ethics and Legal Compliance

### How will you manage any ethical issues?

Ethical approval for the proposed study will be sought from Edge Hill University's Faculty of Health and Social Care Research Ethics Committee (FREC) as per university guidelines.

Following this, NHS ethics approval will also need to be sought as the participants of the study will be NHS employees.

Informed consent will be gained prior to data collection. Electronic consent forms will be sent to participants a minimum of 24 hours prior to data collection, via email. However, paper-based consent forms will also be made available to those attending focus groups and interviews, to allow them to provide consent, should they not had done so electronically, prior to attending the focus group or interview. Participants will be informed that all focus groups and interviews will remain confidential and the data will be anonymised at the transcription stage. Pseudonyms will be used where necessary to maintain participant anonymity.

Participants will be reminded that access to the data will be restricted to the principal researcher and the supervisory team.

Participants will be informed of their right to withdraw. Participants completing questionnaires and taking part in interviews will be reminded about their right to withdraw consent at any time until the date when analysis of the questionnaires or interviews will begin. This date will be communicated to participants on the information sheet. Participants taking part in focus groups will be reminded about their right to withdraw their consent at any time before the focus group ends. This is so that their responses do not affect the overall quality of the data produced, when transcribed.

## General Data Protection Regulation (GDPR)

All participants will be informed of the data sharing principles in line with GDPR. Participants will also be informed of the potential use of anonymised data which may be used for further research projects. Participants will be informed that as research is conducted in the public interest, they will not have open-ended rights over their personal data as per GDPR guidelines. However, participants will retain the right to object. The lead researcher will anonymise all data at the earliest opportunity. Any identifiable data will not be held for longer than necessary and will be deleted as soon as possible where practicable.

The information sheet provided to participants will include the following GDPR statement, using the recommended wording provided on the Health Research Authority's (HRA) website: <https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/data-protection-and-information-governance/gdpr-guidance/templates/transparency-wording-commercial-organisations-and-charities/>.

### **GDPR Participant Information**

*Edge Hill University is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly.*

*Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.*

*You can find out more about how we use your information*

*<https://www.edgehill.ac.uk/about/legal/privacy>.*

*Health and care research should serve the public interest, which means that we have to demonstrate that our research serves the interests of society as a whole. We do this by following the [UK Policy Framework for Health and Social Care Research](#).*

*We use personally-identifiable information to conduct research to improve health and care. As a Higher Education Institution, we have a legitimate interest in using information relating to your health and care for research studies, when you agree to take part in a research study. This means that we will use your data, collected in the course of a research study, in the ways needed to conduct and analyse the research study. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.*

*If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful you can complain to the Information Commissioner's Office (ICO).*

*Our Data Protection Officer can be contacted at [dataprotection@edgehill.ac.uk](mailto:dataprotection@edgehill.ac.uk).*

### **Audit**

*The principal researcher will collect information from you for this research study in accordance with our instructions.*

*The principal researcher will use your name and contact details to contact you about the research study, and make sure that relevant information about the study is recorded for your care, and to oversee the quality of the study. Individuals from Edge Hill University and regulatory organisations may look at your research records to check the accuracy of the research study. The only people in Edge Hill University who will have access to information that identifies you will be people who need to contact you to audit the data collection process. The people who analyse the information will not be able to identify you and will not be able to find out your name or contact details.*

*Edge Hill University will keep identifiable information about you from this study for 10 years after the study has finished.*

### **Data Sharing**

*When you agree to take part in a research study, the information about your health and care may be provided to researchers running other research studies in this organisation and in other organisations. These organisations may be universities, NHS organisations or companies involved in health and care research in this country or abroad. Your information will only be used by organisations and researchers to conduct research in accordance with the [UK Policy Framework for Health and Social Care Research](#).*

*This information will not identify you and will not be combined with other information in a way that could identify you. The information will only be used for the purpose of health and care research and cannot be used to contact you or to affect your care. It will not be used to make decisions about future services available to you, such as insurance.*

The data produced from the study will be owned by Edge Hill University. Intellectual Property Rights (IPR) issues will adhere to Edge Hill University's Intellectual Property Policy. There is no intention to supply the raw data produced to any third parties – Edge Hill University will be responsible for licensing any reuse of the data collected during this study.

## Storage and Backup

### How will the data be stored and backed up during the research?

The electronic data produced from the questionnaire will be securely stored on SurveyMonkey which requires a password to gain access to. At the earliest opportunity, the quantitative data produced will then be exported onto SPSS 25 software for statistical analysis, access to which is also password restricted. Digitally audio recorded focus groups and interviews will be uploaded to the university's secure network and each audio recording will be password protected. It is noted that the storage space required to store all files on the university's secure network is more than adequate for the requirements of this project. For interviews, each file will be saved under a participant pseudonym to maintain participant anonymity. Once a check has been performed to determine whether the audio recordings have saved successfully, the recordings will then be deleted from the audio recording device.

All focus groups and interviews will be transcribed at the earliest opportunity, and once an accuracy check has been performed, the audio recordings which have been saved on the network will be deleted. Any identifiable data such as names or places will be anonymised during the transcription process. The transcriptions will be saved as password protected Word documents on the principal researchers account within Edge Hill University's secure, encrypted network which is backed up regularly by IT Services at the university. The transcriptions may

also be saved onto the lead researcher's OneDrive account which is password protected. As previously mentioned, the password for the lead researcher's university account and OneDrive account will be changed at regular intervals throughout the study.

The lead researcher will take responsibility in ensuring that any paper-based material such as consent forms are taken from the room following all focus groups and interviews. Any paper-based consent forms or paper-based notes from focus groups or interviews will be kept in a sealed envelope in a locked filing cabinet throughout the study. Access to the filing cabinet will be limited to the principal researcher. The filing cabinet is located within the lead researcher's office at Edge Hill University and requires a pin code to gain access.

Any paper-based material which the lead researcher deems necessary to keep will be scanned and stored securely electronically. All paper-based material will then be destroyed in confidential waste. No data will be stored outside of Edge Hill University.

#### How will you manage access and security?

Access to the raw data will be restricted to the principal researcher. All data will be stored electronically in a secure platform which will be password protected. The password will be changed at regular intervals and will contain a mixture of upper and lowercase letters, numbers and special characters to increase the strength of the password. The electronic data will also be backed up regularly on a password protected hard drive.

Paper copies of any data such as consent forms or observational notes made during focus groups and interviews will be filed in a locked cabinet within a locked office at Edge Hill University. The principal researcher will remain the key-holder for the locked cabinet. All audio

recordings of focus groups and interviews will be securely destroyed once an accuracy check has been performed, following transcription.

## Selection and Preservation

### Which data are of long-term value and should be retained, shared, and/or preserved?

The anonymous data produced from the study may have future research value and could potentially be used to contribute to the formation of new knowledge. The anonymised data collected for the purposes of this study will be kept at Edge Hill University for 10 years and will be stored securely on the university's encrypted network. Once the principal researcher leaves Edge Hill University, Dr Simon Watmough (Director of Studies) will act as the data guardian. In addition, any research publications resulting from the data produced will be stored on the EHU research data repository.

### What is the long-term preservation plan for the dataset?

The data will be kept electronically at Edge Hill University for 10 years, in line with Edge Hill University's Research Data Management Policy. Any paper-based data will be scanned and stored as electronic data as this will assist with the preservation of data. Once scanned, all paper-based data will be destroyed securely. The data will be deposited in the EHU research data repository, thus ensuring that the data is kept secure and accessible. Any research publications resulting from the data produced will also be stored in the EHU research data repository.

## Data Sharing

### How will you share the data?

There is no intention for the raw data produced from the study to be shared with any third parties. However, participants will be informed that anonymised data may be shared with other researchers for future research projects. This is in line with Edge Hill University's Open Access Policy. Edge Hill University will make an informed decision if they wish to grant permission for third party researchers to use the anonymised data collected from this study. If data is shared in this instance, it will be shared through an encrypted platform.

### Are any restrictions on data sharing required?

The data will be stored by the principal researcher in line with Edge Hill University's Data Management Policy. The principal researcher will be responsible in gathering, handling and analysing all data. The anonymised data will be stored in the EHU research data repository and may be shared following the completion of the study at the discretion of Edge Hill University.

## Responsibilities and Resources

### Who will be responsible for data management?

For the duration of the 3-year study, the principal researcher will be responsible for data management including the implementation of the Research Data Management Plan and ensuring that the plan is reviewed and revised regularly. The principal researcher will be overseen by Dr Simon Watmough, Dr Jayne Garner & Dr Emma Pearson (supervisory team). Advice on data management may also be obtained from the Faculty of Health and Social Care Research Ethics Committee (FREC). Dr Simon Watmough (Director of Studies) will assume



responsibility for data management upon the researcher's PhD completion, however, Edge Hill University will own the IPR to the data.

#### What resources will you require to deliver your plan?

To allow for the data management plan to be delivered successfully, the principal researcher will require access to the university's network, OneDrive, NVivo 12 software, SPSS 25 software and the EHU research data repository. An allocated office which is accessed by a pin code as well as a lockable cabinet will also be required to store any paper-based data. All the above is currently provided by Edge Hill University at no cost. The principal researcher has attended training to develop skills in using the required software. Should any technical support be required in the future, the university has several technical support mechanisms in place which can be accessed by the principal researcher. The support of the principal researcher's supervisory team will also be required to ensure that the data management plan is successfully implemented.

## Appendix 9 – Letter of Invitation PA

Alykhan Kassam  
Faculty of Health and Social Care  
Edge Hill University  
St Helens Road, Ormskirk  
L39 4QP

Date

Dear Physician Associate,

I am emailing you to invite you to take part in a short questionnaire about the CPD requirements of physician associates (PAs). The questionnaire will also ask about how prepared you have felt to undertake the skills outlined in the Competence and Curriculum Framework for the Physician Associate (Department of Health, 2012).

There has been research into preparedness for practice and CPD requirements in recent years, certainly in medical education which has been widely published. However, there is still very little known about the preparedness for practice and CPD requirements of PAs. This innovative, exploratory project aims to propose meaningful recommendations for change to PA curriculum that are grounded in the perceptions of PAs and their clinical supervisors, as well as inform PA regulation and CPD requirements of PAs with the information garnered via this research.

An information sheet about the project is attached. It is important that you take time to read through the information sheet provided before considering whether to participate in the study.

Having read the information sheet, if you wish to participate in the study, please click on the link attached in this email to complete the consent form and to access the questionnaire. There are no identifying markers on the questionnaire so your responses will be anonymous and therefore confidential. Please note that the information collected from you may be used to support other research in the future – the research data may be shared anonymously with other researchers.

Thank you very much in advance for your participation. If you have any concerns or queries about the project then please do not hesitate to contact myself at [REDACTED]. Alternatively, you may wish to contact Dr Simon Watmough (Director of Studies) at: [REDACTED]. Our contact details are also listed at the end of the information sheet.

Best wishes,

Alykhan Kassam  
(Lead Researcher)

**CPD Requirements for Physician Associates**  
Version control: [created 01/04/2019; version 1]

**Participant Information Sheet for Physician Associates – Questionnaire**

**Study title**

CPD Requirements for Physician Associates

**Principal researcher**

The principal researcher is Mr Alykhan Kassam and can be contacted at (Email address removed). You may also wish to contact Dr Simon Watmough (Director of Studies) at (Email address removed)

**Invitation and purpose of the study**

You are being invited to take part in a doctoral (PhD) research study which seeks to determine the CPD requirements of physician associates (PAs). The study will also seek your views about the preparedness for practice and competence of PAs. There has been recent research interest into the preparedness for practice and CPD requirements of healthcare professionals. However, there is very little known about the preparedness for practice and CPD requirements of PAs, hence the need for more exploratory research in this area.

It is important that before you decide whether you wish to take part in the study, you understand why the research is being carried out and what it will involve. Please read the information that follows carefully and discuss it with others if you wish. Please contact the principal researcher (contact details above) if you would like more information or further clarification about the research study.

**Why have I been invited?**

You have been invited because you are a PA employed in the Northwest of England who completed their physician associate studies in England.

**What will I be asked to do?**

If you wish to take part, you will be required to complete an electronic questionnaire lasting approximately 20 minutes.

**Consent**

It is up to you to decide whether you wish to take part in the research study after reading this information sheet. Consent will be implied upon completion

of the questionnaire as these will be returned anonymously to the research team.

### **Can I withdraw consent?**

It is important to note that anonymous data cannot be withdrawn as the participant cannot be identified. Therefore, you will be unable to withdraw your data from the study once you have completed the questionnaire.

### **Data protection legislation & the lawful basis for processing personal data**

Health and care research should serve the public interest. Edge Hill University (the sponsor for this study) follows the [UK Policy Framework for Health and Social Care Research](#). The University is committed to ensuring compliance with current data protection legislation and confirms that all data collected is used fairly, stored safely and not disclosed to any other personal unlawfully. The University is a data controller, and in some instances, may be a data processor of this data. At Edge Hill, we are committed to respecting and protecting your personal information. To find ways in which you use your data, please see [edgehill.ac.uk/about/legal/privacy](http://edgehill.ac.uk/about/legal/privacy).

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer at [dataprotection@edgehill.ac.uk](mailto:dataprotection@edgehill.ac.uk), who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful, you can make a complaint to the Information Commissioner's Office (ICO).

### **Audit**

In the event of an audit, you will not be contacted as your data will be anonymised.

### **Data Sharing**

When you agree to take part in a research study, the information may be provided to researchers running other research studies in this organisation and in other organisations. These organisations may be universities, NHS organisations or companies involved in health and care research in this country or abroad. Your information will only be used by organisations and researchers to conduct research in accordance with the [UK Policy Framework for Health and Social Care Research](#). This information will not identify you and will not be combined with other information in a way that could identify you. The information will only be used for the purpose of health and care research, and cannot be used to contact you.

### **Will my participation be confidential?**

Access to the raw data will be restricted to the principal researcher. Any identifiable data will be stored electronically in a secure, password protected

platform. The electronic data will also be backed up regularly on a password protected hard drive.

It is important to note that there are limits of confidentiality. The research team has an obligation to act if a disclosure is made that suggests, either directly or indirectly, harm to the participant or to others, or criminal activity or bad practice. Should the research team discover any safeguarding or criminal disclosures within the free-text comments of the questionnaire, in which names of individuals or NHS Trusts are clearly identifiable, appropriate action will be taken and this will be shared with the relevant Trust at the earliest opportunity and may be subject to investigation. You are reminded that you remain under a contractual obligation, irrespective of providing consent to take part in the study.

### **What will happen to the results of the research study?**

The anonymous data produced from the study may have future research value and could potentially be used to contribute to the formation of new knowledge. The anonymous data collected for the purposes of this study will be kept at Edge Hill University for 10 years and will be stored securely on the university's encrypted network. Once the principal researcher leaves Edge Hill University, Dr Simon Watmough (Director of Studies) will act as the data guardian. In addition, any research publications resulting from the data produced will be stored on the EHU research data repository.

### **Who has reviewed the study?**

The study has been reviewed by the Faculty of Health and Social Care Research Ethics Committee at Edge Hill University.

### **What are the possible benefits of taking part?**

This is important research which will provide an evidence base to inform changes to PA curriculum, as well as inform PA regulation and CPD requirements of PAs with the information garnered via this research.

### **What are the possible disadvantages and risks of taking part?**

You may experience possible psychological effects when thinking about content of a sensitive, embarrassing or potentially upsetting nature in relation to preparedness for practice, competence and CPD requirements. In this case, you may wish to stop completing the questionnaire and talk to someone to access support. In addition to contacting the lead researcher (contact details above), you may wish to talk to someone independent about the research or you may wish to seek immediate support. Details of how you can talk to someone independent or how you can access third-party support are detailed below.

### **Is there someone independent I can talk to about the research?**

You may wish to talk to someone independent from the research team if you have any feedback, queries or concerns. In this instance, please contact Professor Clare Austin (Associate Dean for Research and Innovation, Faculty of Health and Social Care, Edge Hill University) on (phone number removed) or, at (Email address removed)

### **Support**

In the first instance, you may wish to contact the Counselling service within your local NHS Trust for support. You may then wish to seek further support if you experience distress resulting from your participation in the research. Samaritans offer confidential support to any person in distress. The service is offered 24 hours a day, 365 days a year. You can call 116 123 for free to contact Samaritans. Further information can be found at: [www.samaritans.org](http://www.samaritans.org)

### **CPD Requirements for Physician Associates**

IRAS ID: 274420

Version control: [created 01/06/2020; version 2]

## Edge Hill University

# Preparedness for Practice & CPD Requirements for Physician Associates (PA Questionnaire)

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### Page 1

#### Welcome

Thank you for choosing to take part in a research study about the CPD requirements of physician associates (PAs). This questionnaire will also seek your views about the preparedness to practice and competence of PAs.

#### Consent

It is up to you to decide whether you wish to take part in the research study after reading the information sheet. Your individual views and perceptions will be collected anonymously. The anonymised data may be included in publications in research journals or at academic conferences. It is important to note that anonymous data cannot be withdrawn as the participant cannot be identified.

#### Data Protection Legislation & The Lawful Basis For Processing Personal Data

The General Data Protection Regulation (GDPR) operates in parallel to other pieces of data protection legislation and updates, and expands people's rights to see, correct and, normally, delete their personal data that is held by an organisation. It therefore places additional legal responsibility on to the researcher.

Edge Hill University is committed to ensuring compliance with current data protection legislation and confirms that all data collected is used fairly, stored safely, and not disclosed to any other person unlawfully. The University is a data controller and, in some instances, may be a data processor of this data. To find ways in which your data may be used, please see: [edgehill.ac.uk/about/legal/privacy](http://edgehill.ac.uk/about/legal/privacy). |

## Page 2

1. Are you...

- Male?                       Female?                       Non-binary?  
 Prefer not to say?

2. Do you work in a... *Required*

- Teaching hospital?                       Non-teaching hospital?                       Primary healthcare setting?  
 Primary and secondary healthcare care setting (across integrated services)?

3. Where did you complete your PA studies? *Required*

- The University of Manchester                       University of Liverpool                       University of Central Lancashire (UCLan)  
 Other (please specify)

3.a. If you selected Other, please specify:

4. In which year did you graduate from your PA studies? *Required*

- 2018                       2019                       2020  
 Other (please specify)



4.a. If you selected Other, please specify:

5. Please indicate the age group you fit into

- <24                       25-29                       30-35  
 36-45                       46-55                       >55

6. Thinking about your PA training... *Required*

	Not at all well prepared	Not well prepared	Prepared	Quite well prepared	Very well prepared
In general, how well-prepared do you feel that you have been to work as a PA by your pre-qualification PA programme?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Page 3

Please indicate with a response in the relevant box how your PA course, including placements, prepared you for each of the competencies below. Please note, this an abridged version of competencies.

You can ~~can~~ find the full Competency Framework document here:

[https://www.fparcp.co.uk/webapp/data/media/58e235ff1a1be\\_CCF\\_for\\_the\\_physician\\_assistant\\_2012.pdf](https://www.fparcp.co.uk/webapp/data/media/58e235ff1a1be_CCF_for_the_physician_assistant_2012.pdf) for further clarification.

If you feel unable to comment on a particular competency, then please leave blank.

### 7. How well prepared were you to...

	Not at all well prepared	Not well prepared	Prepared	Quite well prepared	Very well prepared
Consistently behave with integrity and sensitivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognise and work within the limits of your professional competence and scope of practice and within the scope of practice of your supervising clinician	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Contribute to the effectiveness of a clinical learning environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate the ability to develop and maintain clinician – patient relationships which will foster informed patient choice and negotiated care decisions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Communicate effectively and appropriately with patients and carers, even when communication is difficult	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate the ability to work with the patient to make best therapeutic use of the clinician-patient encounter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a tailored and holistic assessment in order to develop an appropriate management plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate effective communication and engagement with children, young people and families	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Page 4

If you feel unable to comment on a particular competency, then please leave blank.

8. How well prepared were you to...

	Not at all well prepared	Not well prepared	Prepared	Quite well prepared	Very well prepared
Recognise when to take appropriate action in safeguarding and promoting the welfare of the child	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demonstrate effective multi-agency working through awareness of roles and responsibilities within other services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elicit a patient history appropriate to the clinical situation including: presenting complaint; history of the present illness; past medical, social and family history	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a physical cardiovascular, respiratory or abdominal examination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a physical neurological or ophthalmic examination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Perform a physical paediatric examination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform a mental state examination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interpret the findings from the consultation to determine the need for further investigation and, with the patient/carer, the appropriate direction of patient management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Page 5

If you feel unable to comment on a particular competency, then please leave blank.

### 9. How well prepared were you to...

	Not at all well prepared	Not well prepared	Prepared	Quite well prepared	Very well prepared
Select, interpret and act upon appropriate investigations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognise when a clinical situation is beyond their competence and seek appropriate support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work under medical delegation clauses, determine and propose appropriate therapeutic interventions from the full range of available prescription medications used in the clinical setting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formulate and implement a management plan in collaboration with the patient, the carers and healthcare professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Recognise risks to themselves, the team, patients and others and takes appropriate action to eliminate/ <del>minimise</del> danger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Effectively and efficiently hand over responsibility to other health and social care professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<del>Prioritise</del> workload using time and resources effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Critically evaluate own practice to identify learning/developmental needs and identify and <del>utilise</del> learning opportunities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you feel unable to comment on a particular competency, then please leave blank.

10. How well prepared were you to...

	Not at all well prepared	Not well prepared	Prepared	Quite well prepared	Very well prepared
Use evidence, guidelines and audit (including significant event analysis) to benefit patient care and improve professional practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identify and address ethical and legal issues, which may impact on patient care, carers and society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Act in a way that: respects diversity; acknowledges and recognises people's expressed beliefs and choices; incorporates an understanding of one's own behaviour and its effect on others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practice in a manner which is grounded in the underlying principles of the NHS as a patient centred service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Maintain an awareness of <del>any</del> new developments in the structure and function of the NHS and particularly in relation to their area of practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Address issues and demonstrate techniques involved in studying the effect of diseases on communities and individuals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assess the risks to self, colleagues and the patient prior to moving and handling and act to <del>minimise</del> those risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Page 7

Please indicate with a response in the relevant box how prepared you were for each of the clinical skills below when starting your first post after graduation.

If you feel unable to comment on a particular clinical skill, or if you feel that the clinical skill is not applicable to the healthcare setting you are working in, then please leave blank.

### 11. Thinking about key clinical skills, how well prepared were you to...

	Not at all well prepared	Not well prepared	Prepared	Quite well prepared	Very well prepared
Perform <del>venepuncture</del>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obtain and interpret ECGs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform cannulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obtain arterial blood gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Place urinary catheters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Perform lumbar puncture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insert nasogastric tubes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Page 8

12. Which of the following best prepared you to meet the competencies? *Required*

University

Placement

Both equally prepared  
me

13. Please let us know if you have any comments about how your university teaching could have better prepared you for clinical practice in relation to the competencies? In particular, are there any areas which you feel you needed more teaching on pre-qualification?

Your answer should be no more than 500 characters long.

14. Do you feel well supported to meet your CPD needs? *Required*

Yes

No

Not sure

14.a. Please expand on your answer

Your answer should be no more than 500 characters long.

15. List 3 CPD needs you feel have been met well. You may use the comment box below to expand on your answer.

Your answer should be no more than 500 characters long.

15.a. 1) *Required*

15.b. 2) *Required*

15.c. 3) *Required*

16. List 3 CPD needs you feel have not been met at all. You may use the comment box below to expand on your answer.

Your answer should be no more than 500 characters long.

16.a. 1) *Required*

16.b. 2) *Required*

16.c. 3) *Required*

17. Overall, do you think your CPD needs as a PA are being met? *Required*

Yes  No  Not sure

18. Any other comments about post-qualification CPD requirements for PAs?

Your answer should be no more than 500 characters long.

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Thank you for taking the time to complete this questionnaire.

---

**Participant Information Sheet for Physician Associates – Interviews**

**Study title**

CPD Requirements for Physician Associates

**Principal researcher**

The principal researcher is Mr Alykhan Kassam and can be contacted at (email address removed) You may also wish to contact Dr Simon Watmough (Director of Studies) at (email address removed)

**Invitation and purpose of the study**

You are being invited to take part in a doctoral (PhD) research study which seeks to determine the CPD requirements of physician associates (PAs). The study will also seek your views about the preparedness for practice and competence of PAs. There has been recent research interest into the preparedness for practice and CPD requirements of healthcare professionals. However, there is very little known about the preparedness for practice and CPD requirements of PAs, hence the need for more exploratory research in this area.

During this unprecedented time of challenge and uncertainty across the NHS workforce, brought about by the COVID-19 pandemic, this only strengthens the need for this crucial and much needed research for the PA profession.

It is important that before you decide whether you wish to take part in the study, you understand why the research is being carried out and what it will involve. Please read the information that follows carefully and discuss it with others if you wish. Please contact the principal researcher (contact details above) if you would like more information or further clarification about the research study.

**Why have I been invited?**

You have been invited because you are a PA employed in the Northwest of England who completed their physician associate studies in England.

**What will I be asked to do?**

If you wish to take part, you will be required to take part in one interview with the principal researcher, lasting approximately 45 minutes. Interviews can be held remotely, if suitable.

Please note, any clinical work you are currently undertaking for the NHS, particularly during the COVID-19 pandemic, must not be compromised due to your involvement in this study.

### **Consent**

It is up to you to decide whether you wish to take part in the research study after reading this information sheet. Verbal consent will be obtained for remote interviews, which can take place on a technological platform which you feel comfortable using.

### **Can I withdraw consent?**

The data collected from your interview can be withdrawn up to 7 days following the interview. If you wish to withdraw consent, this can be done so by contacting the principal researcher (contact details above).

### **Data protection legislation & the lawful basis for processing personal data**

Health and care research should serve the public interest. Edge Hill University (the sponsor for this study) follows the [UK Policy Framework for Health and Social Care Research](#). The University is committed to ensuring compliance with current data protection legislation and confirms that all data collected is used fairly, stored safely and not disclosed to any other personal unlawfully. The University is a data controller, and in some instances, may be a data processor of this data. At Edge Hill, we are committed to respecting and protecting your personal information. To find ways in which you use your data, please see [edgehill.ac.uk/about/legal/privacy](http://edgehill.ac.uk/about/legal/privacy).

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer at [dataprotection@edgehill.ac.uk](mailto:dataprotection@edgehill.ac.uk), who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful, you can make a complaint to the Information Commissioner's Office (ICO).

### **How will we use information about you?**

We will need to use information from you for this research project.

This information will include your name and contact details. People will use this information to do the research or to check your records to make sure that the research is being done properly.

People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

### **What are your choices about how your information is used?**

- You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.
- We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.
- If you agree to take part in this study, you will have the option to take part in future research using your data saved from this study. Any anonymised data produced will be stored on the EHU research data repository.

### **Where can you find out more about how your information is used?**

You can find out more about how we use your information

- at [www.hra.nhs.uk/information-about-patients/](http://www.hra.nhs.uk/information-about-patients/)
- our leaflet available from [www.hra.nhs.uk/patientdataandresearch](http://www.hra.nhs.uk/patientdataandresearch)
- by asking one of the research team
- by sending an email to [dataprotection@edgehill.ac.uk](mailto:dataprotection@edgehill.ac.uk), or
- by ringing us on 01695 575171.

### **Audit**

In the event of an audit, you will not be contacted as your data will be anonymised.

### **Data Sharing**

When you agree to take part in a research study, the information may be provided to researchers running other research studies in this organisation and in other organisations. These organisations may be universities, NHS organisations or companies involved in health and care research in this country or abroad. Your information will only be used by organisations and researchers to conduct research in accordance with the [UK Policy Framework for Health and Social Care Research](#). This information will not identify you and will not be combined with other information in a way that could identify you. The information will only be used for the purpose of health and care research, and cannot be used to contact you.

### **Will my participation be confidential?**

Access to the raw data will be restricted to the principal researcher. Any identifiable data will be stored electronically in a secure, password protected platform. The electronic data will also be backed up regularly on a password protected hard drive.

Paper copies of any data such as notes made during interviews, will be scanned and stored electronically on the University's secure network.

All interviews will be digitally audio recorded by the principal researcher, who will also transcribe the interviews at the earliest opportunity after the interview has taken place. Audio recordings will be retained securely on the University's network and will be destroyed following the completion of the research project.

Data will be anonymised during the transcription process. Only anonymised quotes will be published for research purposes.

However, it is important to note that there are limits of confidentiality. The research team has an obligation to act if a disclosure is made that suggests, either directly or indirectly, harm to the participant or to others, or criminal activity or bad practice.

#### **What will happen to the results of the research study?**

The anonymous data produced from the study may have future research value and could potentially be used to contribute to the formation of new knowledge. The anonymous data collected for the purposes of this study will be kept at Edge Hill University for 10 years and will be stored securely on the university's encrypted network. Once the principal researcher leaves Edge Hill University, Dr Simon Watmough (Director of Studies) will act as the data guardian. In addition, any research publications resulting from the data produced will be stored on the EHU research data repository.

#### **Who has reviewed the study?**

The study has been reviewed by the Faculty of Health and Social Care Research Ethics Committee at Edge Hill University.

#### **What are the possible benefits of taking part?**

This is important research which will provide an evidence base to inform changes to PA curriculum, as well as inform PA regulation and CPD requirements of PAs with the information garnered via this research.

#### **What are the possible disadvantages and risks of taking part?**

You may experience possible psychological effects when discussing content of a sensitive, embarrassing or potentially upsetting nature in relation to preparedness for practice, competence and CPD requirements. In this case, you may wish to stop the interview at any point. You may wish to resume the interview, only if you feel comfortable to do so. If necessary, you may wish to talk to someone to access support. In addition to contacting the lead researcher (contact details above), you may wish to talk to someone independent about the research or you may wish to seek immediate support. Details of how you

can talk to someone independent or how you can access third-party support are detailed below.

**Is there someone independent I can talk to about the research?**

You may wish to talk to someone independent from the research team if you have any feedback, queries or concerns. In this instance, please contact Professor Clare Austin (Associate Dean for Research and Innovation, Faculty of Health, Social Care and Medicine, Edge Hill University) on (phone number removed) or, at (email address removed)

**Support**

In the first instance, you may wish to contact the Counselling service within your local NHS Trust for support. You may then wish to seek further support if you experience distress resulting from your participation in the research. Samaritans offer confidential support to any person in distress. The service is offered 24 hours a day, 365 days a year. You can call 116 123 for free to contact Samaritans. Further information can be found at: [www.samaritans.org](http://www.samaritans.org)

**CPD Requirements for Physician Associates**

Version control: [created 22/06/2020; version 3]



## Appendix 13 – Consent form for PA interviews

### Title of Project: CPD Requirements for Physician Associates

### Name of Researcher: Alykhan Kassam

*Please note that consent forms will be sent electronically to participants for information only. Paper-based consent copies will be brought to focus groups for participants to sign immediately prior to the focus group.*

I \_\_\_\_\_, confirm by initialing the boxes below, that:

1.	I have read and understood the Participation Information Sheet for Physician Associates – Interviews (dated 22/06/2020; version 3) for the above project.	
2.	I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily where applicable.	
3.	I understand that this study involves participating in a focus group which will be audio recorded.	
4.	I agree to my words being used as quotes in publications/presentations and that these will be anonymised so I won't be identifiable.	
5.	I understand that my participation is voluntary and that I am free to leave the study at any time.	
6.	I understand that my consent can be withdrawn up to 7 days following the date of my interview as per the detail given in the Participation Information Sheet for Physician Associates – Interviews (dated 22/06/2020; version 3).	
7.	I understand that data collected during the study, may be reviewed by individuals from Edge Hill University, the Northwest Physician Associate Forum Committee (Manchester) or from regulatory authorities for audit and monitoring purposes, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my anonymised data.	
8.	I understand that this consent form will be stored as per the detail given in the Participation Information Sheet for Physician Associates – Interviews (dated 22/06/2020; version 3), which states that paper copies of consent forms will be scanned and stored electronically on the University's secure network.	

9.	I understand that the research team has an obligation to act if a disclosure is made that suggests, either directly, or indirectly, harm to patients or colleagues, or suggests criminal activity or bad practice. I understand this is irrespective of my consent and is due to my contractual obligation.	
10.	I understand that the information collected from me may be used to support other research in the future, and I agree for my research data to be shared anonymously with other researchers.	
11.	I agree to take part in the above study.	

Name of participant

Date

Signature

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name of person taking consent

Date

Signature

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**CPD Requirements for Physician Associates**

IRAS ID: 274420

Version control: [created 22/06/2020; version 3]

## Appendix 14 – Letter of Invitation Clinical Supervisor

Alykhan Kassam  
Faculty of Health and Social Care  
Edge Hill University  
St Helens Road, Ormskirk  
L39 4QP

Date

Dear Clinician,

I am emailing you to invite you to take part in a short questionnaire about the CPD requirements of physician associates (PAs). The questionnaire will also ask about how prepared you have determined the PAs you have worked with to be, in undertaking the skills outlined in the Competence and Curriculum Framework for the Physician Associate (Department of Health, 2012). We have sent similar questionnaires to first year PA graduates asking them to assess their own preparedness for practice.

There has been research into preparedness for practice and CPD requirements in recent years, certainly in medical education which has been widely published. However, there is still very little known about the preparedness for practice and CPD requirements of PAs. This innovative, exploratory project aims to propose meaningful recommendations for change to PA curriculum that are grounded in the perceptions of PAs and their clinical supervisors, as well as inform PA regulation and CPD requirements of PAs with the information garnered via this research.

An information sheet about the project is attached. It is important that you take time to read through the information sheet provided before considering whether to participate in the study.

Having read the information sheet, if you wish to participate in the study, please click on the link attached in this email to complete the consent form and to access the questionnaire. There are no identifying markers on the questionnaire so your responses will be anonymous and therefore confidential. Please note that the information collected from you may be used to support other research in the future – the research data may be shared anonymously with other researchers.

Thank you very much in advance for your participation. If you have any concerns or queries about the project then please do not hesitate to contact myself at: [24053457@edgehill.ac.uk](mailto:24053457@edgehill.ac.uk). Alternatively, you may wish to contact Dr Simon Watmough (Director of Studies) at: [simon.watmough@edgehill.ac.uk](mailto:simon.watmough@edgehill.ac.uk). Our contact details are also listed at the end of the information sheet.

Best wishes,

Alykhan Kassam

**CPD Requirements for Physician Associates**  
Version control: [created 01/04/2019; version 1]

### **Participant Information Sheet for Clinical Supervisors – Interviews**

#### **Study title**

CPD Requirements for Physician Associates

#### **Principal researcher**

The principal researcher is Mr Alykhan Kassam and can be contacted at (email address removed) You may also wish to contact Dr Simon Watmough (Director of Studies) at (email address removed)

#### **Invitation and purpose of the study**

You are being invited to take part in a doctoral (PhD) research study which seeks to determine the CPD requirements of physician associates (PAs). The study will also seek your views about the preparedness for practice and competence of PAs. There has been recent research interest into the preparedness for practice and CPD requirements of healthcare professionals. However, there is very little known about the preparedness for practice and CPD requirements of PAs, hence the need for more exploratory research in this area.

During this unprecedented time of challenge and uncertainty across the NHS workforce, brought about by the COVID-19 pandemic, this only strengthens the need for this crucial and much needed research for the PA profession.

It is important that before you decide whether you wish to take part in the study, you understand why the research is being carried out and what it will involve. Please read the information that follows carefully and discuss it with others if you wish. Please contact the principal researcher (contact details above) if you would like more information or further clarification about the research study.

#### **Why have I been invited?**

You have been invited because you the clinical supervisor of a PA employed in the Northwest of England, who completed their physician associate studies in England.

#### **What will I be asked to do?**

If you wish to take part, you will be required to take part in one interview with the principal researcher, lasting approximately 45 minutes.

Please note, any clinical work you are currently undertaking for the NHS, particularly during the COVID-19 pandemic, must not be compromised due to your involvement in this study.

### **Consent**

It is up to you to decide whether you wish to take part in the research study after reading this information sheet. Verbal consent will be obtained for telephone interviews.

### **Can I withdraw consent?**

The data collected from your interview can be withdrawn up to 7 days following the interview. If you wish to withdraw consent, this can be done so by contacting the principal researcher (contact details above).

### **Data protection legislation & the lawful basis for processing personal data**

Health and care research should serve the public interest. Edge Hill University (the sponsor for this study) follows the [UK Policy Framework for Health and Social Care Research](#). The University is committed to ensuring compliance with current data protection legislation and confirms that all data collected is used fairly, stored safely and not disclosed to any other personal unlawfully. The University is a data controller, and in some instances, may be a data processor of this data. At Edge Hill, we are committed to respecting and protecting your personal information. To find ways in which you use your data, please see [edgehill.ac.uk/about/legal/privacy](http://edgehill.ac.uk/about/legal/privacy).

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer at [dataprotection@edgehill.ac.uk](mailto:dataprotection@edgehill.ac.uk), who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful, you can make a complaint to the Information Commissioner's Office (ICO).

### **How will we use information about you?**

We will need to use information from you for this research project.

This information will include your name and contact details. People will use this information to do the research or to check your records to make sure that the research is being done properly.

People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

We will keep all information about you safe and secure.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

### **What are your choices about how your information is used?**

- You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.
- We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.
- If you agree to take part in this study, you will have the option to take part in future research using your data saved from this study. Any anonymised data produced will be stored on the EHU research data repository.

### **Where can you find out more about how your information is used?**

You can find out more about how we use your information

- at [www.hra.nhs.uk/information-about-patients/](http://www.hra.nhs.uk/information-about-patients/)
- our leaflet available from [www.hra.nhs.uk/patientdataandresearch](http://www.hra.nhs.uk/patientdataandresearch)
- by asking one of the research team
- by sending an email to [dataprotection@edgehill.ac.uk](mailto:dataprotection@edgehill.ac.uk), or
- by ringing us on 01695 575171.

### **Audit**

In the event of an audit, you will not be contacted as your data will be anonymised.

### **Data Sharing**

When you agree to take part in a research study, the information may be provided to researchers running other research studies in this organisation and in other organisations. These organisations may be universities, NHS organisations or companies involved in health and care research in this country or abroad. Your information will only be used by organisations and researchers to conduct research in accordance with the [UK Policy Framework for Health and Social Care Research](#). This information will not identify you and will not be combined with other information in a way that could identify you. The information will only be used for the purpose of health and care research, and cannot be used to contact you.

### **Will my participation be confidential?**

Access to the raw data will be restricted to the principal researcher. Any identifiable data will be stored electronically in a secure, password protected platform. The electronic data will also be backed up regularly on a password protected hard drive.

Paper copies of any data such as notes made during interviews, will be scanned and stored electronically on the University's secure network.

All interviews will be digitally audio recorded by the principal researcher, who will also transcribe the interviews at the earliest opportunity after the interview has taken place. Audio recordings will be retained securely on the University's network and will be destroyed following the completion of the research project.

Data will be anonymised during the transcription process. Only anonymised quotes will be published for research purposes.

However, it is important to note that there are limits of confidentiality. The research team has an obligation to act if a disclosure is made that suggests, either directly or indirectly, harm to the participant or to others, or criminal activity or bad practice.

#### **What will happen to the results of the research study?**

The anonymous data produced from the study may have future research value and could potentially be used to contribute to the formation of new knowledge. The anonymous data collected for the purposes of this study will be kept at Edge Hill University for 10 years and will be stored securely on the university's encrypted network. Once the principal researcher leaves Edge Hill University, Dr Simon Watmough (Director of Studies) will act as the data guardian. In addition, any research publications resulting from the data produced will be stored on the EHU research data repository.

#### **Who has reviewed the study?**

The study has been reviewed by the Faculty of Health and Social Care Research Ethics Committee at Edge Hill University.

#### **What are the possible benefits of taking part?**

This is important research which will provide an evidence base to inform changes to PA curriculum, as well as inform PA regulation and CPD requirements of PAs with the information garnered via this research.

#### **What are the possible disadvantages and risks of taking part?**

You may experience possible psychological effects when discussing content of a sensitive, embarrassing or potentially upsetting nature in relation to preparedness for practice, competence and CPD requirements. In this case, you may wish to stop the interview at any point. You may wish to resume the interview, only if you feel comfortable to do so. If necessary, you may wish to talk to someone to access support. In addition to contacting the lead researcher (contact details above), you may wish to talk to someone independent about the research or you may wish to seek immediate support. Details of how you

can talk to someone independent or how you can access third-party support are detailed below.

**Is there someone independent I can talk to about the research?**

You may wish to talk to someone independent from the research team if you have any feedback, queries or concerns. In this instance, please contact Professor Clare Austin (Associate Dean for Research and Innovation, Faculty of Health and Social Care, Edge Hill University) on (phone number removed) or, at (email address removed)

**Support**

In the first instance, you may wish to contact the Counselling service within your local NHS Trust for support. You may then wish to seek further support if you experience distress resulting from your participation in the research. Samaritans offer confidential support to any person in distress. The service is offered 24 hours a day, 365 days a year. You can call 116 123 for free to contact Samaritans. Further information can be found at: [www.samaritans.org](http://www.samaritans.org)

**CPD Requirements for Physician Associates**

IRAS ID: 274420

Version control: [created 01/06/2020; version 2]



## Appendix 16 – Consent form for Clinical Supervisors

### Title of Project: CPD Requirements for Physician Associates

### Name of Researcher: Alykhan Kassam

*Please note that consent forms will be sent electronically to participants for information only.*

I \_\_\_\_\_, confirm by initialing the boxes below, that:

1.	I have read and understood the Participation Information Sheet for Clinical Supervisors – Interviews (dated 01/06/2020; version 2) for the above project.	
2.	I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily where applicable.	
3.	I understand that this study involves participating in an interview which will be audio recorded.	
4.	I agree to my words being used as quotes in publications/presentations and that these will be anonymised so I won't be identifiable.	
5.	I understand that my participation is voluntary and that I am free to leave the study at any time.	
6.	I understand that my consent can be withdrawn up to 7 days following the date of my interview as per the detail given in the Participation Information Sheet for Clinical Supervisors – Interviews (dated 01/06/2020; version 2).	
7.	I understand that data collected during the study, may be reviewed by individuals from Edge Hill University, the Northwest Physician Associate Forum Committee (Manchester) or from regulatory authorities for audit and monitoring purposes, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my anonymised data.	
8.	I understand that this consent form will be stored as per the detail given in the Participation Information Sheet for Clinical Supervisors – Interviews (dated 01/06/2020; version 2), which states that paper copies of consent forms will be scanned and stored electronically on the University's secure network.	

9.	I understand that the research team has an obligation to act if a disclosure is made that suggests, either directly, or indirectly, harm to patients or colleagues, or suggests criminal activity or bad practice. I understand this is irrespective of my consent and is due to my contractual obligation.	
10.	I understand that the information collected from me may be used to support other research in the future, and I agree for my research data to be shared anonymously with other researchers.	
11.	I agree to take part in the above study.	

Name of participant

Date

Signature

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name of person taking consent

Date

Signature

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**CPD Requirements for Physician Associates**

IRAS ID: 274420

Version control: [created 01/06/2020; version 2]

## **Appendix 17 – Interview Schedule (Original)**

### **Interview Schedule (Original)**

Please note that the exact questions/themes to be explored in the interviews will only be determined once the Stage 1 (questionnaire) data has been collected. The analysis of the qualitative comments from the questionnaire will be used to produce a detailed interview guide to aid the lead researcher when conducting these. Hence, this document is a working draft and is subject to change once the questionnaire data has been collected.

Preamble: Thank you for kindly agreeing to talk to us about your experience as a [Physician Associate (PA)/clinical supervisor] (any names will be removed at transcription). We are particularly keen to learn more about CPD requirements, however, in order for this to be done effectively, we will be touching on aspects relating to preparedness for practice and competence. Thank you for completing the questionnaire and the consent form electronically.

\*Distribute consent forms for those who have not completed electronically.

Reminder of right to withdraw from study and that all data will be anonymised as soon as transcription is complete\*

#### **1) Some background information**

- a. Which setting/department are you working in?
- b. How are you finding your role as a PA/clinical supervisor?
- c. (Prompt – if appropriate) What challenges have you faced in your role so far?

#### **2) Thinking about preparedness for practice**

- a. How prepared were you to work on your first day as a qualified PA?  
Clinical supervisor: how prepared did you find your PA on their first day as a qualified PA? Prompt: willingness to learn, asking questions, fitting in with other team members, past experiences e.g. placements, university education

### **3) Thinking about competence**

a. Why do you feel more competent to perform certain skills?

Prompt: exposure on placement, specialist area of clinical supervisor, post-qualification training, CPD

### **4) Thinking about post-qualification training**

a. Are you attending or engaging with any post-qualification training? If so, where does this take place and what does this entail?

b. Are any of your training needs not being currently met?

c. What would you like more training on?

d. Clinical supervisor: how are you encouraging your PA to engage with post-qualification training?

Prompt for some examples

### **5) What do you understand the CPD requirements of a PA to be?**

Prompt: Competence Framework, minimum number of hours, recording CPD

### **6) What would you like in terms of post-qualification CPD?**

Clinical supervisor: What do you think would benefit your PA in terms of a post-qualification CPD programme? What would this look like?

Prompt: dedicated framework, established times, online CPD?

7) Is there anything you would change about working as a PA/clinical supervisor in relation to training or CPD?

8) Finally, what else would you like to add?

## Appendix 18 – Interview Schedule (Revised)

### Interview Schedule (Revised)

Please note that the exact questions/themes to be explored in the interviews will only be determined once the Stage 1 (questionnaire) data has been collected. The analysis of the qualitative comments from the questionnaire will be used to produce a detailed interview guide to aid the lead researcher when conducting these. **Following a review of the questionnaire data, any revised questions and prompts are in blue text and highlighted.**

Preamble: Thank you for kindly agreeing to talk to us about your experience as a [Physician Associate (PA)/clinical supervisor] (any names will be removed at transcription). We are particularly keen to learn more about CPD requirements, however, in order for this to be done effectively, we will be touching on aspects relating to preparedness for practice and competence. Thank you for completing the questionnaire and the consent form electronically.

\*Distribute consent forms for those who have not completed electronically.

Reminder of right to withdraw from study and that all data will be anonymised as soon as transcription is complete\*

#### 1) Some background information

- a. Which setting/department are you working in?
- b. How are you finding your role as a PA/clinical supervisor? **Impact of COVID-19?**
- c. (Prompt – if appropriate) What challenges have you faced in your role so far? **How well have other members of the team understood your role?**

#### 2) Thinking about preparedness for practice

- a. How prepared were you to work on your first day as a qualified PA?  
Clinical supervisor: how prepared did you find your PA on their first day as a qualified PA? Prompt: willingness to learn, asking questions, fitting in with other team members, past experiences

b. Did placement or university teaching best prepare you for practice and why?

### 3) Thinking about competence

a. Why do you feel more competent to perform certain skills?

b. How competent do you feel in perform certain skills relating to paediatrics?

Prompt: exposure on placement, specialist area of clinical supervisor, post-qualification training, CPD

### 4) Thinking about post-qualification training

a. Are you attending or engaging with any post-qualification training? If so, where does this take place and what does this entail?

b. Are any of your training needs not being currently met?

c. What would you like more training on?

d. Clinical supervisor: how are you encouraging your PA to engage with post-qualification training?

Prompt for some examples; ask about COVID-19 impact

### 5) What do you understand the CPD requirements of a PA to be?

Prompt: Competence Framework, minimum number of hours, recording CPD

### 6) When did you first learn about post-qualification CPD requirements?

Prompt: University, other peers, only when qualified

### 7) What would you like in terms of post-qualification CPD?

Clinical supervisor: What do you think would benefit your PA in terms of a post-qualification CPD programme? What would this look like?

Prompt: dedicated framework, established times, online CPD; virtual?

8) Is there anything you would change about working as a PA/clinical supervisor in relation to training or CPD?

9) Finally, what else would you like to add?

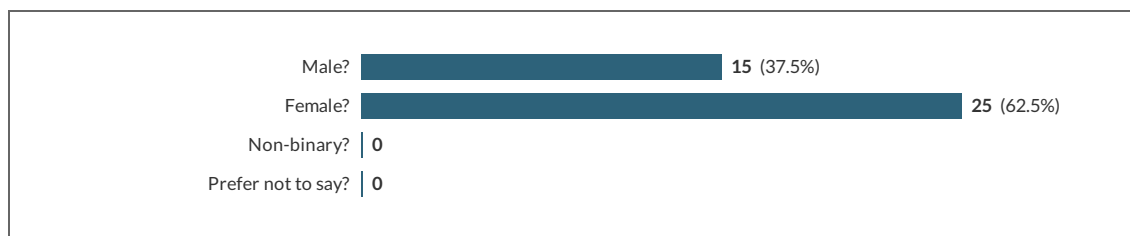
## Appendix 19 – PA Questionnaire Results

Additional figures which are not included in Chapter Four of this thesis:

### Question 1

**Figure 3:** Bar chart to show the gender profile of respondents

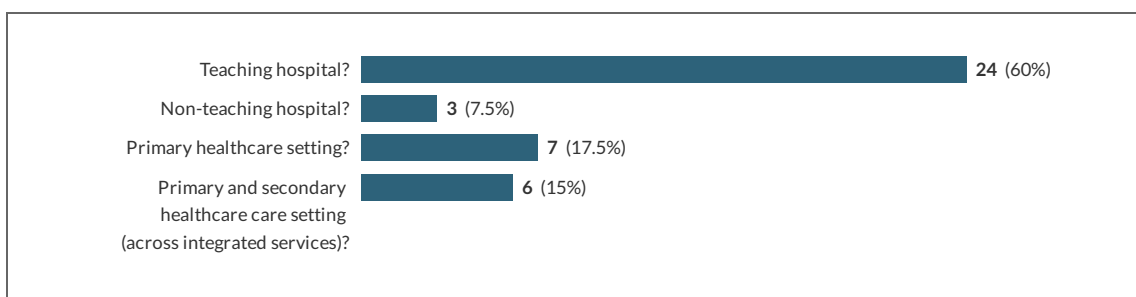
1 Are you...



### Question 2

**Figure 4:** Bar chart to indicate the workplace setting of respondents

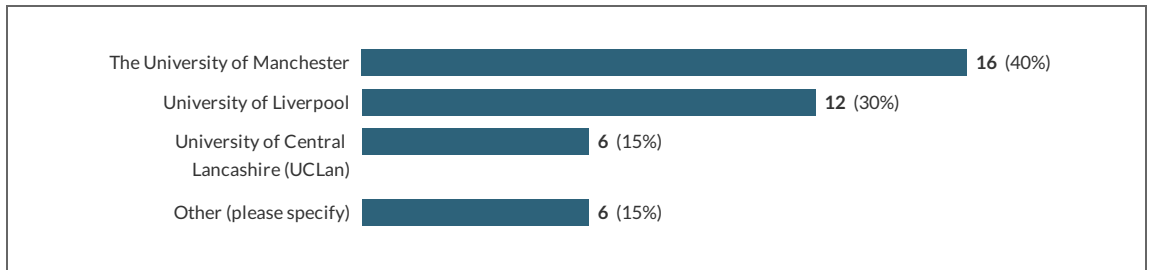
2 Do you work in a...



### Question 3

**Figure 5:** Bar chart to show which institution respondents completed their PA studies at

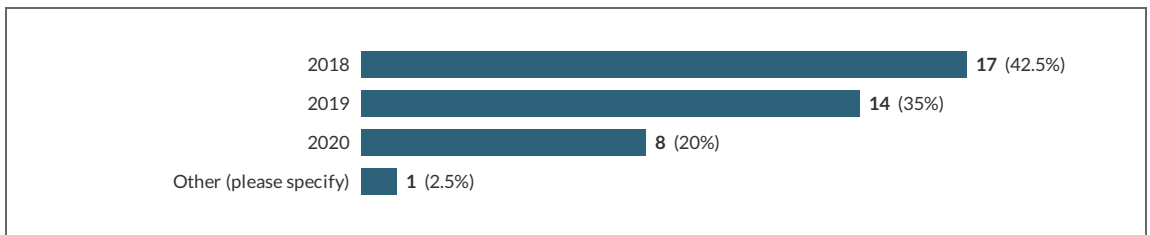
**3** Where did you complete your PA studies?



### Question 4

**Figure 6:** Bar chart to show the year in which respondents graduated from their PA studies

**4** In which year did you graduate from your PA studies?

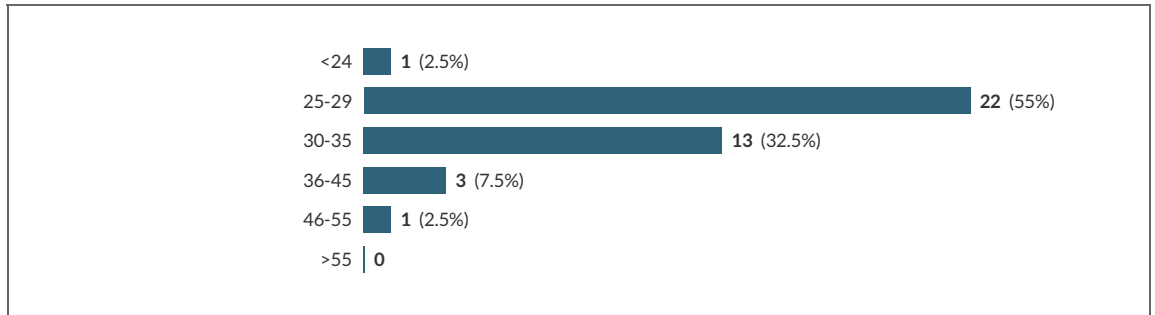




## Question 5

**Figure 7:** Bar chart to show the age profile of respondents

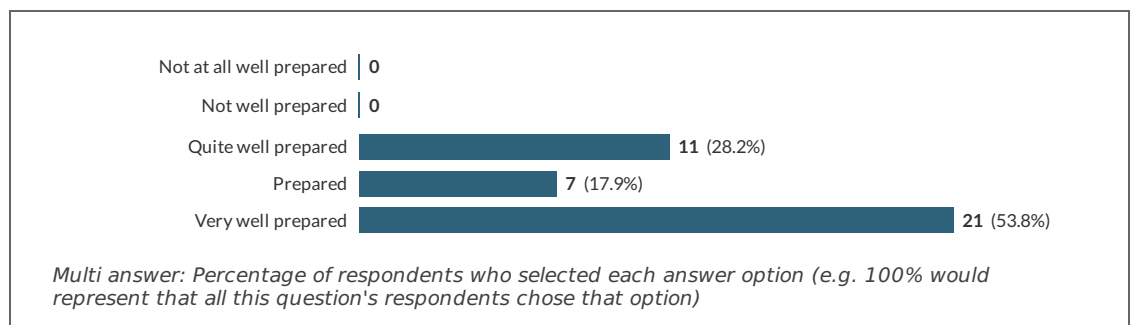
5 Please indicate the age group you fit into



## Question 7

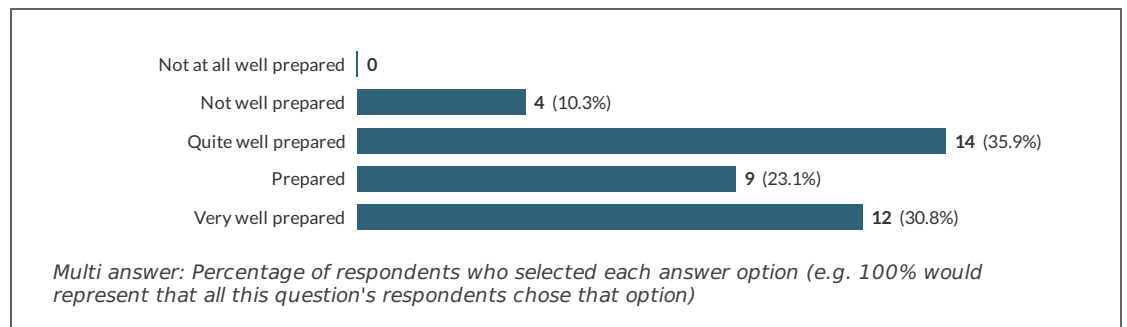
**Figure 9:** Bar chart to show how prepared respondents felt to consistently behave with integrity and sensitivity

7.1 Consistently behave with integrity and sensitivity



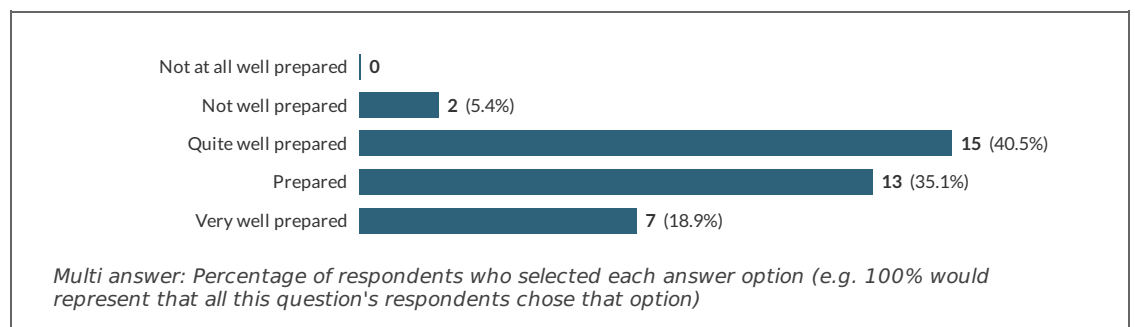
**Figure 10:** Bar chart to show how prepared respondents felt to recognise and work within the limits of their professional competence and scope of practice and within the scope of their supervising clinician

7.2 Recognise and work within the limits of your professional competence and scope of practice and within the scope of practice of your supervising clinician



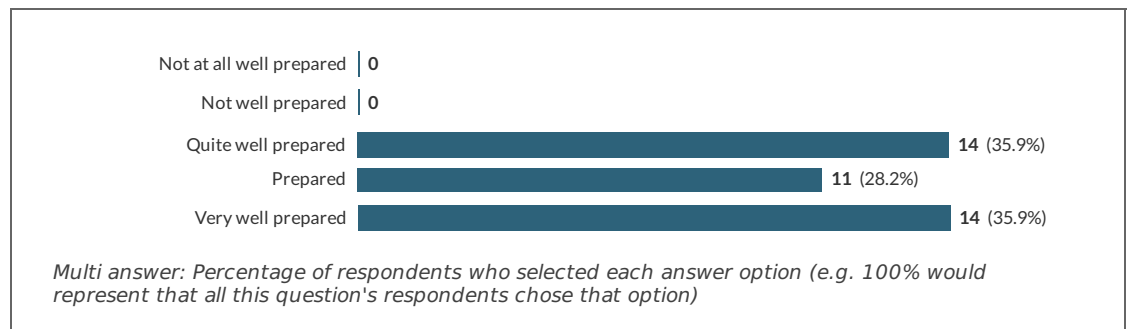
**Figure 11:** Bar chart to show how prepared respondents felt to contribute to the effectiveness of a clinical learning environment

7.3 Contribute to the effectiveness of a clinical learning environment



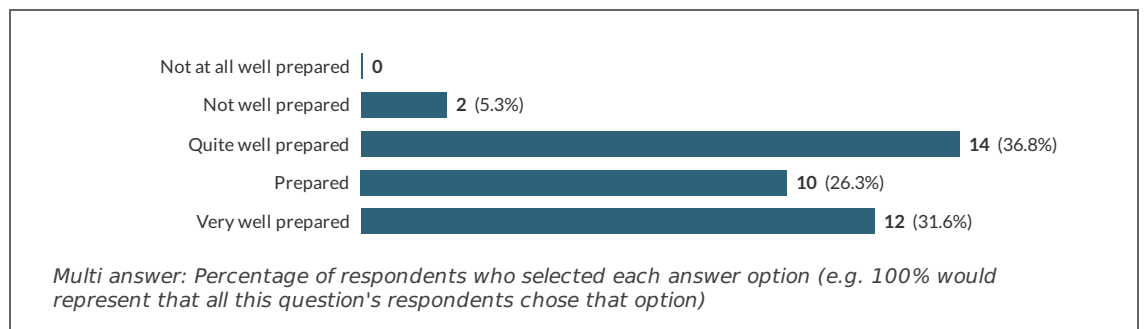
**Figure 12:** Bar chart to show how prepared respondents felt to demonstrate the ability to develop and maintain clinician-patient relationships which will foster informed patient choice and negotiated care decisions

7.4 Demonstrate the ability to develop and maintain clinician – patient relationships which will foster informed patient choice and negotiated care decisions



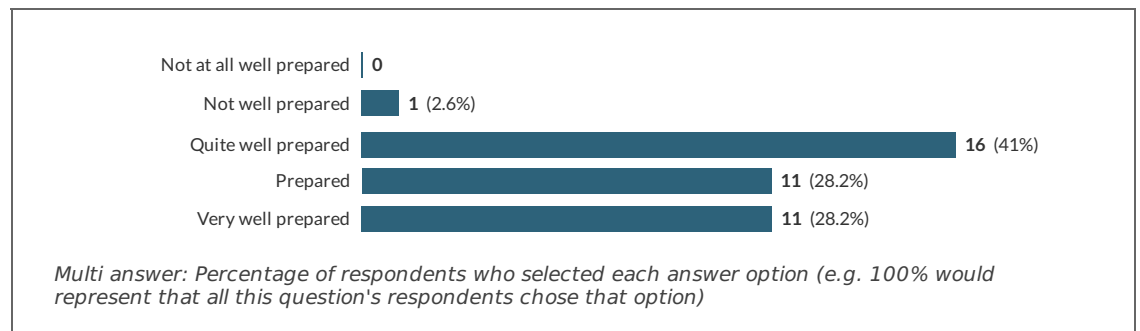
**Figure 13:** Bar chart to show how prepared respondents felt to communicate effectively and appropriately with patients and carers even when communication is difficult

7.5 Communicate effectively and appropriately with patients and carers even when communication is difficult



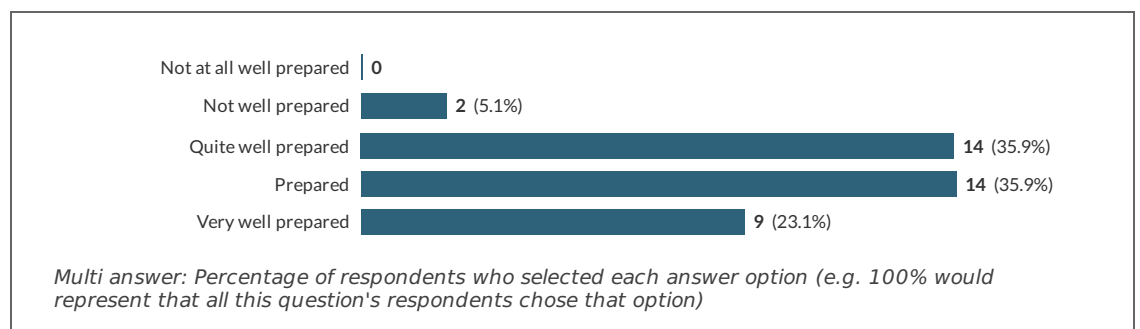
**Figure 14:** Bar chart to show how prepared respondents felt to demonstrate the ability to work with the patient to make best therapeutic use of the clinician-patient encounter

7.6 Demonstrate the ability to work with the patient to make best therapeutic use of the clinician-patient encounter



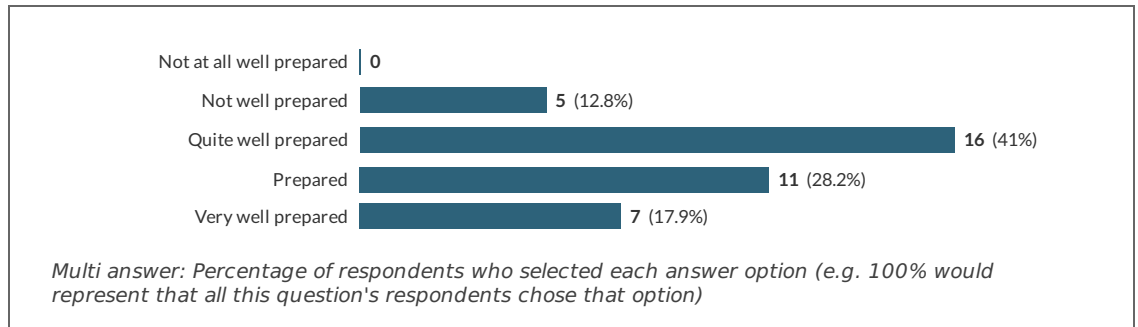
**Figure 15:** Bar chart to show how prepared respondents felt to perform a tailored and holistic assessment in order to develop an appropriate management plan

7.7 Perform a tailored and holistic assessment in order to develop an appropriate management plan



**Figure 16:** Bar chart to show how prepared respondents felt to demonstrate effective communication and engagement with children, young people and families

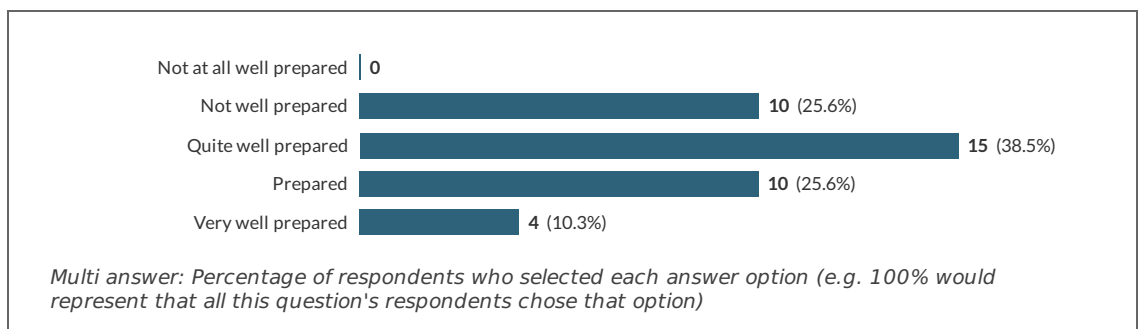
**7.8** Demonstrate effective communication and engagement with children, young people and families



**Question 8**

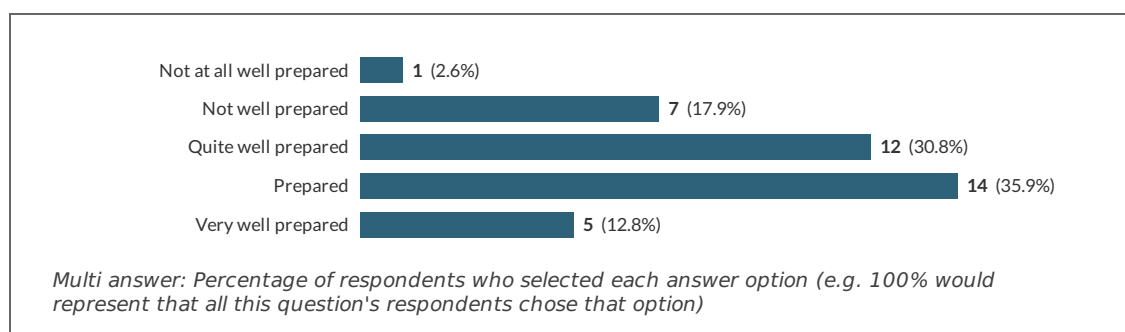
**Figure 17:** Bar chart to show how prepared respondents felt to recognise when to take appropriate action in safeguarding and promoting the welfare of the child

**8.1** Recognise when to take appropriate action in safeguarding and promoting the welfare of the child



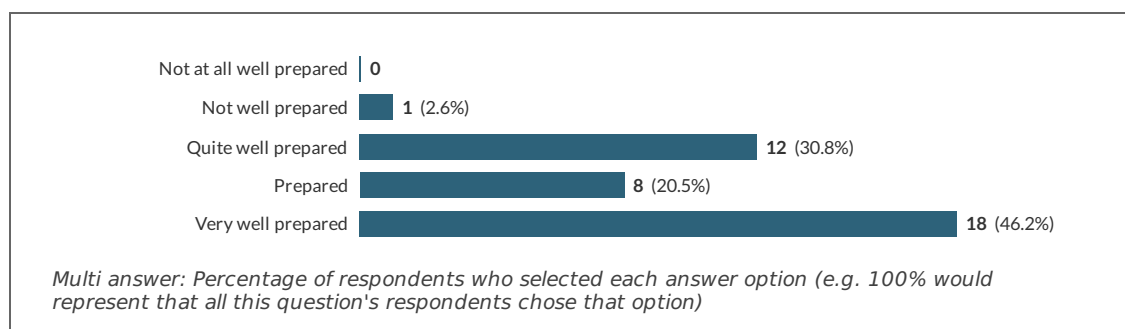
**Figure 18:** Bar chart to show how prepared respondents felt to demonstrate effective multi-agency working through awareness of roles and responsibilities within other services

8.2 Demonstrate effective multi-agency working through awareness of roles and responsibilities within other services



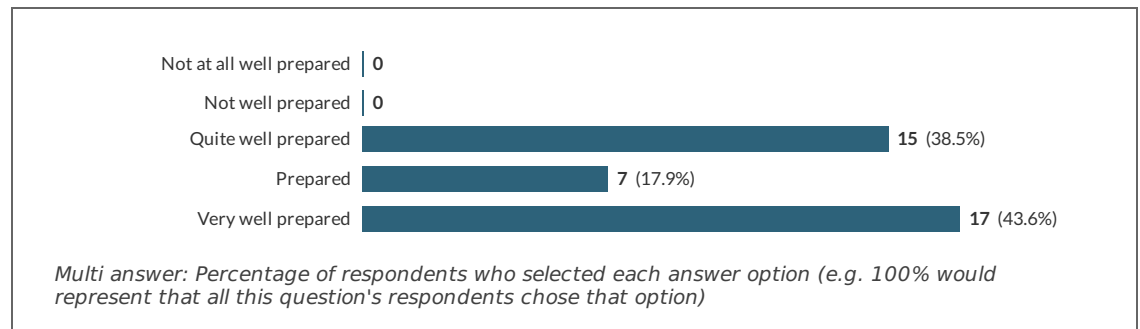
**Figure 19:** Bar chart to show how prepared respondents felt to elicit a patient history appropriate to the clinical situation including: presenting complaint; history of the present illness; past medical, social and family history

8.3 Elicit a patient history appropriate to the clinical situation including: presenting complaint; history of the present illness; past medical, social and family history



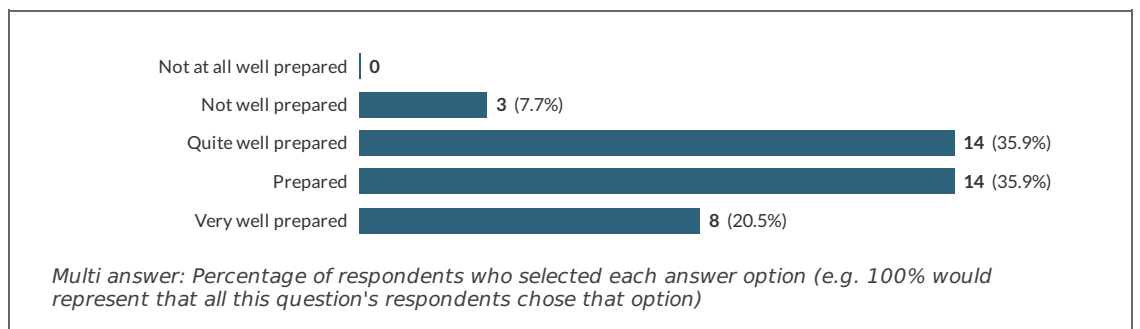
**Figure 20:** Bar chart to show how prepared respondents felt to perform a physical cardiovascular, respiratory or abdominal examination

8.4 Perform a physical cardiovascular, respiratory or abdominal examination



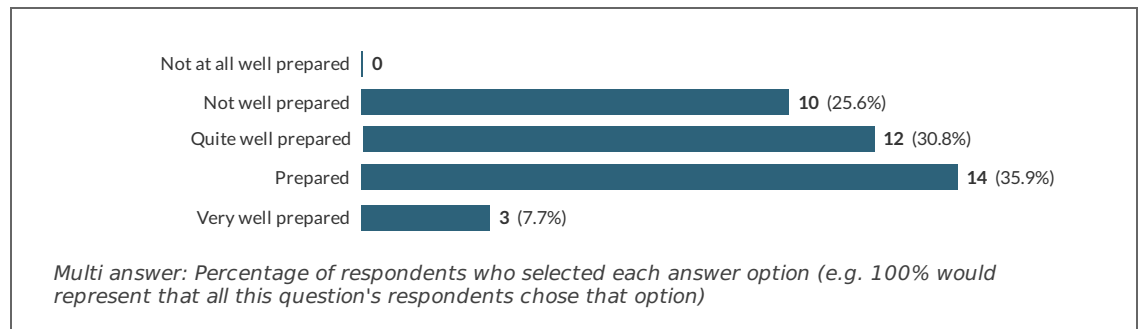
**Figure 21:** Bar chart to show how prepared respondents felt to perform a physical neurological or ophthalmic examination

8.5 Perform a physical neurological or ophthalmic examination



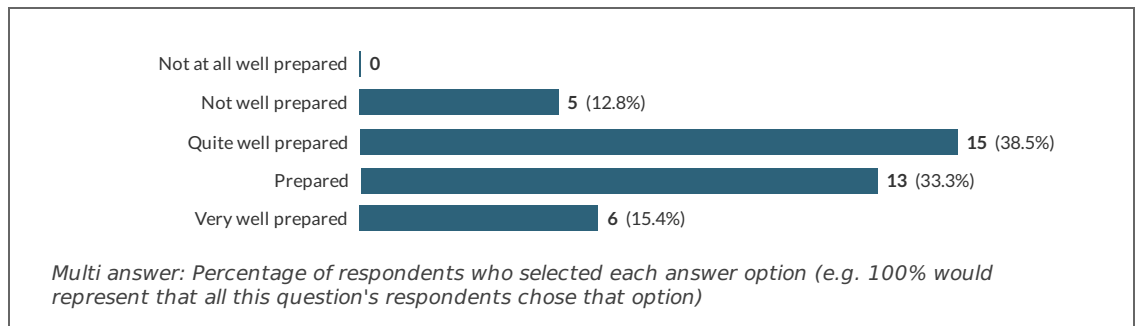
**Figure 22:** Bar chart to show how prepared respondents felt to perform a physical paediatric examination

8.6 Perform a physical paediatric examination



**Figure 23:** Bar chart to show how prepared respondents felt to perform a mental state examination

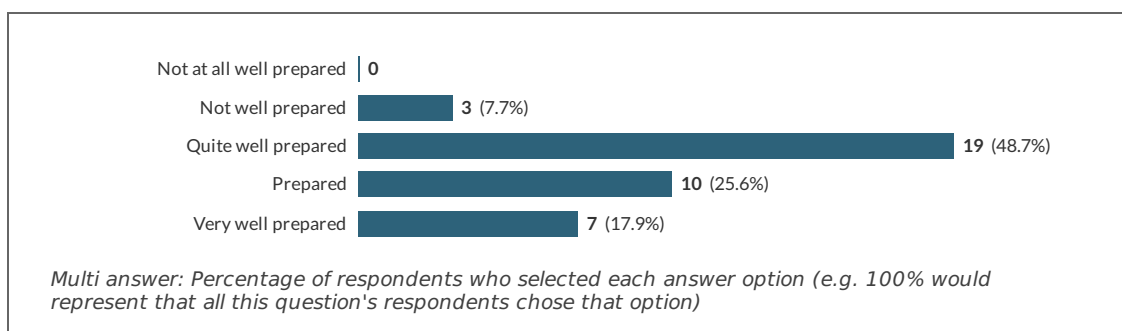
8.7 Perform a mental state examination





**Figure 24:** Bar chart to show how prepared respondents felt to interpret the findings from the consultation to determine the need for further investigation and, with the patient/carer, the appropriate direction of patient management

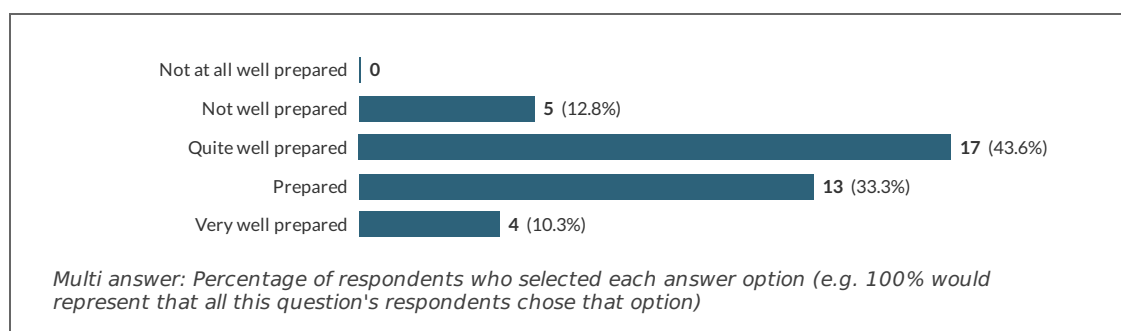
8.8 Interpret the findings from the consultation to determine the need for further investigation and, with the patient/carer, the appropriate direction of patient management



## Question 9

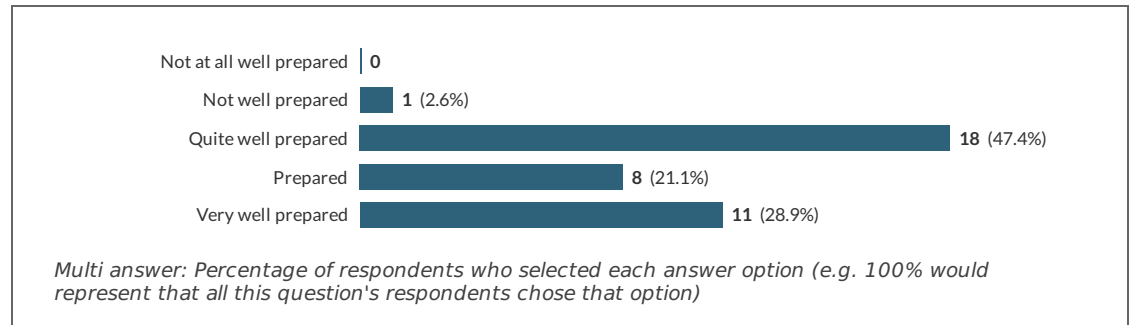
**Figure 25:** Bar chart to show how prepared respondents felt to select, interpret and act upon appropriate investigations

9.1 Select, interpret and act upon appropriate investigations



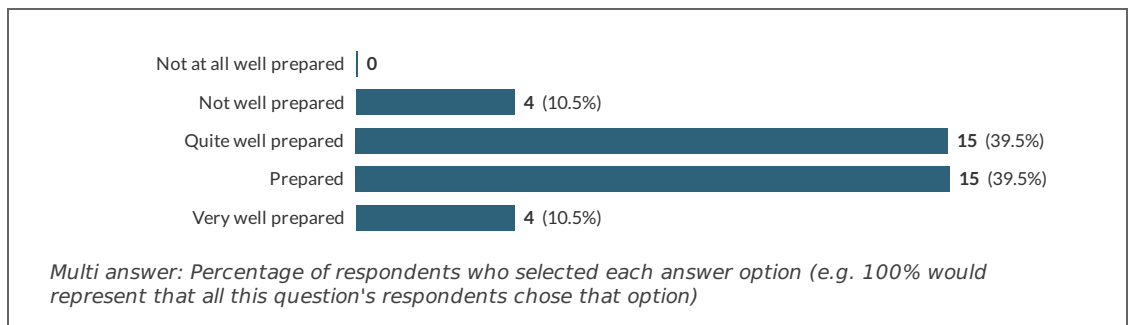
**Figure 26:** Bar chart to show how prepared respondents felt to recognise when a clinical situation is beyond their competence and seek appropriate support

9.2 Recognise when a clinical situation is beyond their competence and seek appropriate support



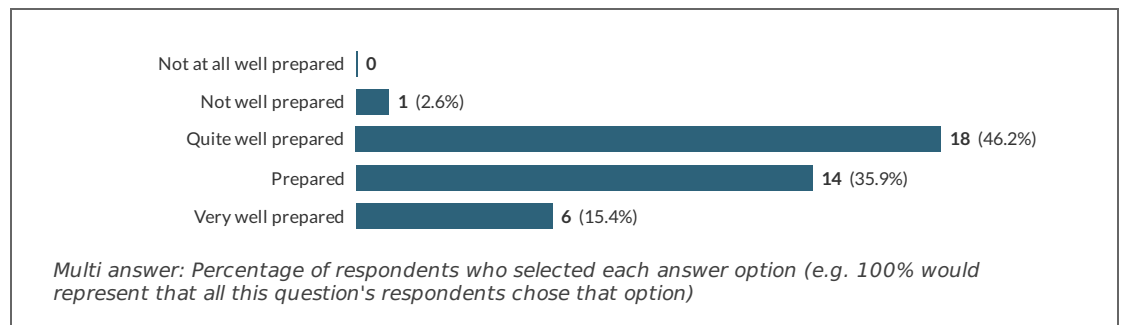
**Figure 27:** Bar chart to show how prepared respondents felt to work under medical delegation clauses, determine and propose appropriate therapeutic interventions from the full range of available prescription medications used in the clinical setting

9.3 Work under medical delegation clauses, determine and propose appropriate therapeutic interventions from the full range of available prescription medications used in the clinical setting



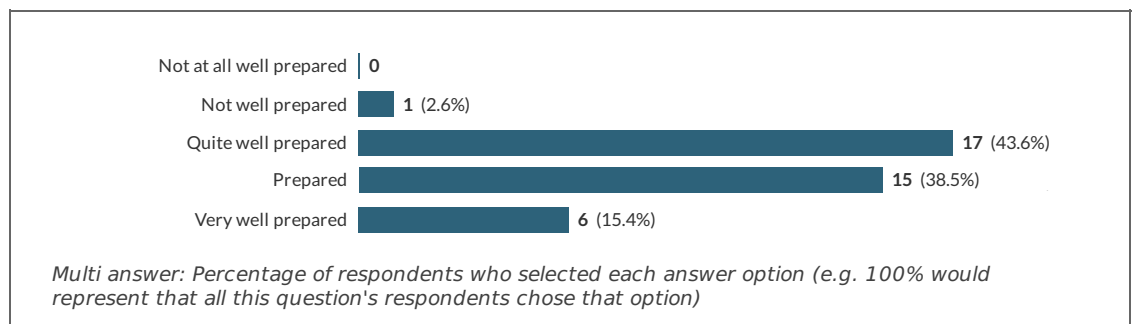
**Figure 28:** Bar chart to show how prepared respondents felt to formulate and implement a management plan in collaboration with the patient, the carers and healthcare professionals

9.4 Formulate and implement a management plan in collaboration with the patient, the carers and healthcare professionals



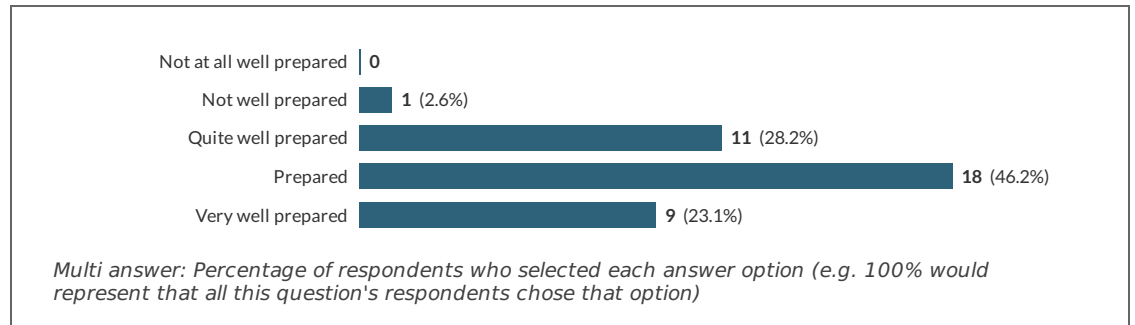
**Figure 29:** Bar chart to show how prepared respondents felt to recognise risks to themselves, the team, patients and others and takes appropriate action to eliminate/minimise danger

9.5 Recognise risks to themselves, the team, patients and others and takes appropriate action to eliminate/minimise danger



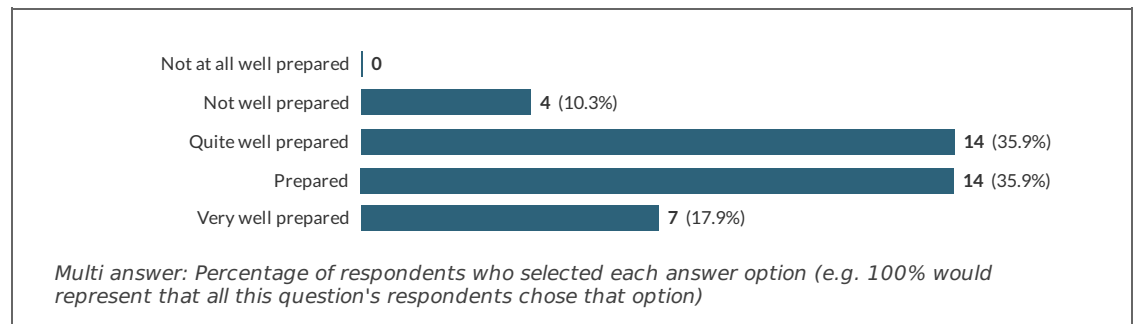
**Figure 30:** Bar chart to show how prepared respondents felt to effectively and efficiently hand over responsibility to other health and social care professionals

9.6 Effectively and efficiently hand over responsibility to other health and social care professionals



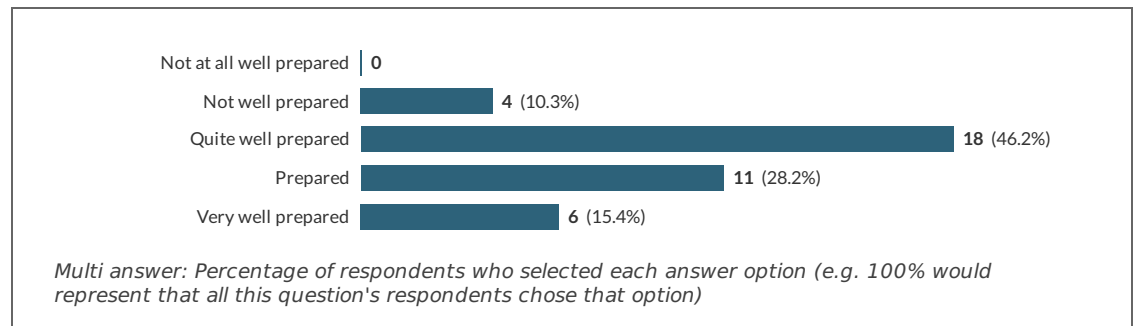
**Figure 31:** Bar chart to show how prepared respondents felt to prioritise workload using time and resources effectively

9.7 Prioritise workload using time and resources effectively



**Figure 32:** Bar chart to show how prepared respondents felt to critically evaluate own practice to identify learning/developmental needs and identify and utilise learning opportunities

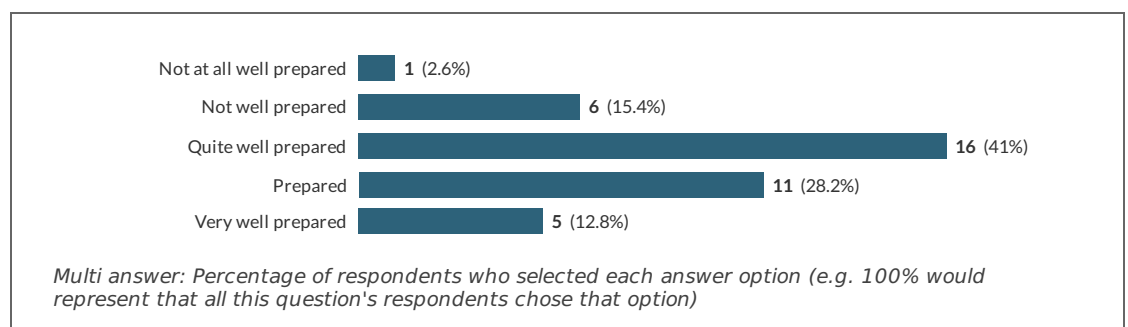
9.8 Critically evaluate own practice to identify learning/developmental needs and identify and utilise learning opportunities



## Question 10

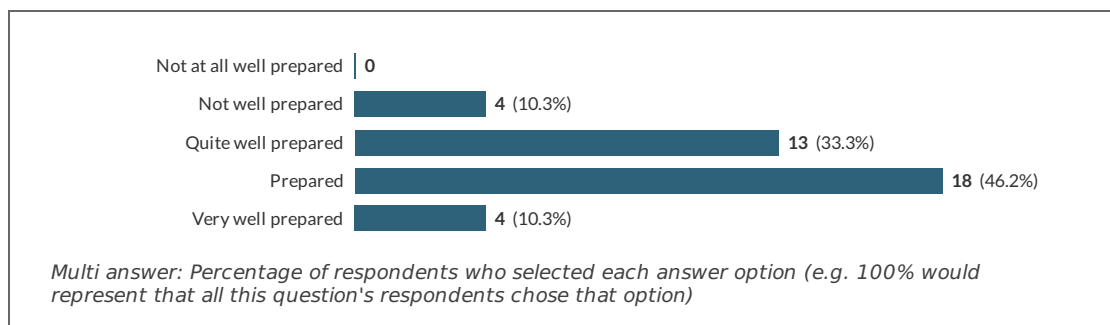
**Figure 33:** Bar chart to show how prepared respondents felt to use evidence, guidelines and audit (including significant event analysis) to benefit patient care and improve professional practice

10.1 Use evidence, guidelines and audit (including significant event analysis) to benefit patient care and improve professional practice



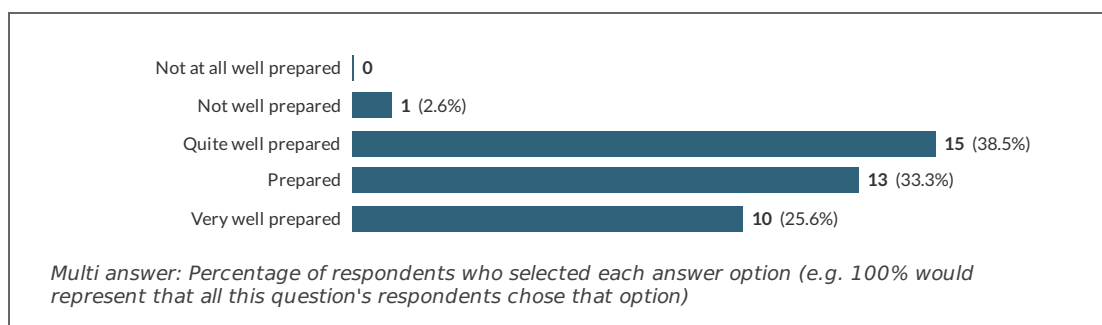
**Figure 34:** Bar chart to show how prepared respondents felt to identify and address ethical and legal issues, which may impact on patient care, carers and society

10.2 Identify and address ethical and legal issues, which may impact on patient care, carers and society



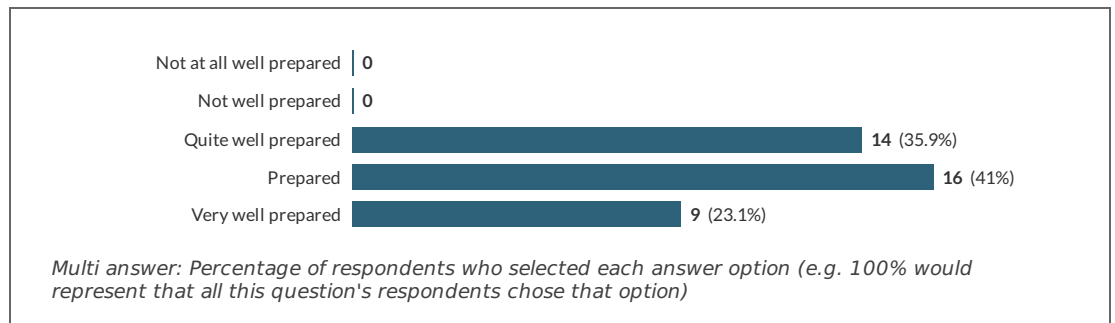
**Figure 35:** Bar chart to show how prepared respondents felt to act in a way that: respects diversity; acknowledges and recognised people's expressed beliefs and choices; incorporates an understanding of one's own behaviour and its effects on others

10.3 Act in a way that: respects diversity; acknowledges and recognises people's expressed beliefs and choices; incorporates an understanding of one's own behaviour and its effect on others



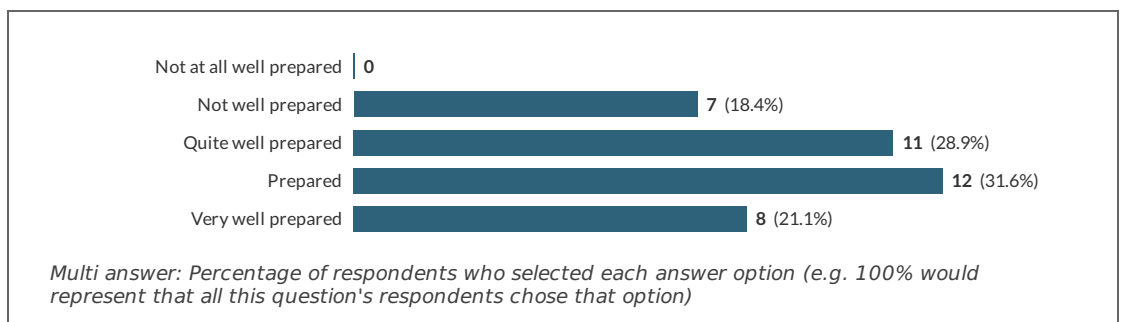
**Figure 36:** Bar chart to show how prepared respondents felt to practice in a manner which is grounded in the underlying principles of the NHS as a patient centred service

10.4 Practice in a manner which is grounded in the underlying principles of the NHS as a patient centred service



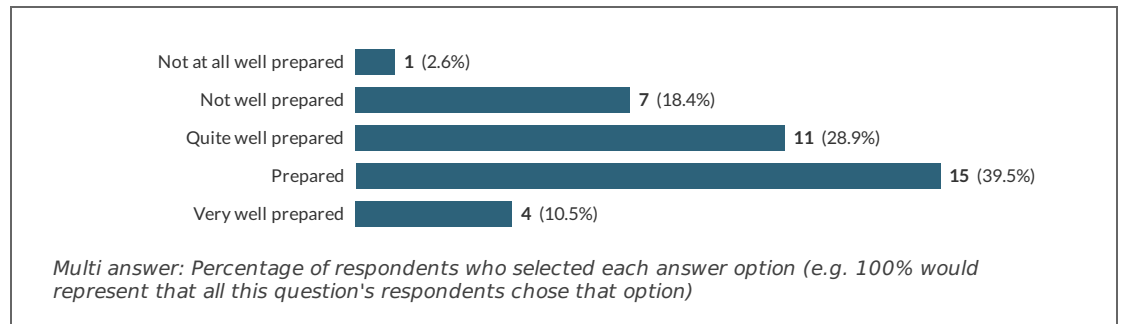
**Figure 37:** Bar chart to show how prepared respondents felt to maintain an awareness of any new developments in the structure and function of the NHS and particularly in relation to their area of practice

10.5 Maintain an awareness of any new developments in the structure and function of the NHS and particularly in relation to their area of practice



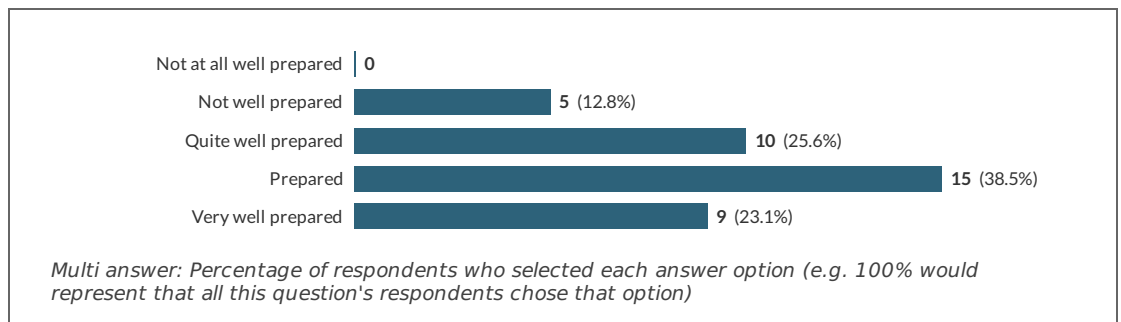
**Figure 38:** Bar chart to show how prepared respondents felt to address issues and demonstrate techniques involved in studying the effect of diseases on communities and individuals

10.6 Address issues and demonstrate techniques involved in studying the effect of diseases on communities and individuals



**Figure 39:** Bar chart to show how prepared respondents felt to assess the risks to self, colleagues and the patient prior to moving and handling and act to minimise those risks

10.7 Assess the risks to self, colleagues and the patient prior to moving and handling and act to minimise those risks

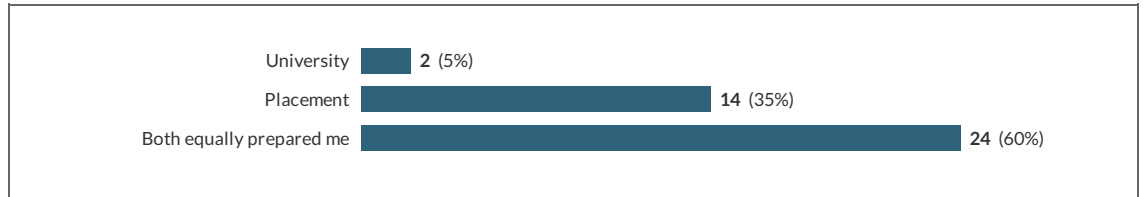




## Question 12

**Figure 47:** Bar chart to indicate what best prepared respondents to meet the competencies in the CCF

12 Which of the following best prepared you to meet the competencies?



**Appendix 20** – Poster presented at the Edge Hill University PGR Symposium (May 2019)

## CPD Requirements for Physician Associates (PAs)

Edge Hill University | Medical School

Alykhan Kassam, Dr Simon Watmough, Dr Jayne Garner & Dr Emma Pearson  
Email: kassama@edgehill.ac.uk

**BACKGROUND**

- PAs are a new profession, particularly in the North West and are currently unregulated <sup>[1]</sup> <sup>[2]</sup>
- PAs were introduced to tackle increasing demands on the NHS <sup>[3]</sup>
- Health Education England (HEE) have made a substantial investment in the training of 1000 PAs by 2020 <sup>[3]</sup>
- There has been a recent expansion of PA training in the North West <sup>[3]</sup>
- PAs are required to undertake 50 hours of CPD each year <sup>[4]</sup>, although their requirements are not exactly known

**RESEARCH AIM & OBJECTIVES**

To explore the training and early employment experience of PAs to inform their CPD requirements

- 1) Identify the level of competence PAs are rated to undertake the skills outlined in the Competence Framework <sup>[5]</sup>
- 2) Establish the factors which affect the preparedness and competence of PAs
- 3) Determine the CPD requirements for PAs

**DATA COLLECTION METHODS**

Literature review

Questionnaires with PAs & clinical supervisors

Interviews with PAs

Focus groups with clinical supervisors

**ANALYSIS**

Statistical

Using SPSS software

Thematic

Using NVivo Software

Triangulation

Between methods & participants

**POTENTIAL RESEARCH BENEFITS**

Benefit patients & healthcare teams

Inform changes to PA curriculum

Feed into PA regulation

Inform CPD requirements for PAs

**ACKNOWLEDGMENTS**

With thanks to the Health Education England Physician Associate Forum Committee (Manchester)

**REFERENCES**

[1] ROSS, N., PARLE, J., BEGG, P. and KUBNS, D., 2012. The case for the physician assistant. *Clinical Medicine*, 12 (3), pp. 200-206.

[2] ROYAL COLLEGE OF PHYSICIANS, 2018a. *Faculty of Physician Associates – quality health care across the NHS*. [online]. Available from: <http://www.rcpa.ac.uk/about-us/faculty>

[3] BRITISH MEDICAL ASSOCIATION, 2018. *Physician Associates in the UK*. [online]. Available from: <http://www.bma.org.uk/collective-voice/policy-and-research/education-training-and-workforce/physician-associates-in-the-uk>

[4] ROYAL COLLEGE OF PHYSICIANS, 2018b. *Continuing Professional Development guidance for Physician Associate*. [online]. Available from: <http://www.rcpa.ac.uk/about-us/faculty/Physician-Associate/Continuing-Professional-Development-Guidance-for-Physician-Associate.pdf>

[5] DEPARTMENT OF HEALTH, 2012. *The Competence and Curriculum Framework for the Physician Assistant*. [online]. Available from: [http://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/159675/01a-The\\_CCF\\_for\\_the\\_physician\\_aid.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/159675/01a-The_CCF_for_the_physician_aid.pdf)