NHS
Health Education England

Advancing pharmacy education and training: a review

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Contents

Foreword from Keith Ridge

The NHS has embarked on a journey to secure for patients and the public one of the safest, most effective and efficient healthcare systems in the world and the pharmacy workforce is central to this vision.

If we are to meet the challenges that this presents, it will be essential to equip the workforce with the right skills and competences to enable people to succeed. NHS England, NHS Improvement and Health Education England have for some years been leading a co-ordinated approach to medicines optimisation, ensuring its integration as a cross-cutting priority for sustainability and transformation partnerships (STPs) and integrated care systems (ICS), underpinned by the right skills and knowledge which pharmacy professionals are increasingly asked to contribute in multidisciplinary teams across secondary and primary care.

This approach will continue under the NHS *Long term plan*, which presents new opportunities for pharmacy professionals; working with patients and, within a multi-professional team environment, widening their contribution to frontline care and making the most of their clinical skills, including, but also beyond, medicines optimisation (NHS UK, 2019). All health professionals will be asked to focus not only on treating illness, but on preventing it. For pharmacists this will include detecting disease and making sure people are not over-prescribed medicines, through more careful initiation, monitoring and review, or offering alternative interventions, such as exercise or mental health support. Importantly, the public will become more reliant on community pharmacists as the first port of call for suspected minor illnesses, so pharmacists will need to be able to confidently differentiate between minor disease and major disease, such as sepsis.

To free pharmacists for more clinical care, pharmacy technicians will need to take on even more of what pharmacists used to do, as well as take on some aspects of clinical care themselves. Both pharmacists and pharmacy technicians will need to be able to deliver patient-centred care, working closely with patients in a manner underpinned by shared decision-making.

To help ensure the success of these initiatives, the NHS pharmacy workforce will need to continue to meet the highest professional standards, underpinned by a rigorous, more clinically-focused, career-long framework of training and education. This requirement led NHS England, NHS Improvement and Health Education England to commission a review of pharmacy education and training. The pharmacy deans at Health Education England have worked together, with the policy team, to reflect on the current arrangements for pharmacy training and education and consider the levers for change. Recommendations have been made, based on an analysis of existing evidence and reflecting best practice.

The status of the current workforce has been analysed in detail over the last two years and the results of those studies have informed this review. The pharmacy workforce comprises pharmacy technicians and pharmacists, as well as support staff. Each role is vital and this report considers how best to create a robust career pathway for everyone, enabling people to achieve their full potential, while making the best use of skills and, importantly, meeting the demands of the healthcare system, which include an increased requirement to use data, and in due course genomics, to drive both population level and personalised improvements in practice and care.

During the review the team has welcomed the views of stakeholders, which have been incorporated into this report. Most pressingly, stakeholders told us that to benefit patients, a robust training and education pathway will need to help encourage the retention of staff, which is a recognised priority for the NHS in England.

The recommendations set out in this review will require long-term commitment and collaboration across the profession. However, the benefits are clear: a pharmacy workforce that is well placed to serve patients by playing a key clinical role in the ever-complex arena of 21st century healthcare.

Thank you to all those who have contributed and we recommend this report to Health Education England to take forward implementation.

Keith Ridge, Chief Pharmaceutical Office, NHS England

Reflections from the pharmacy deans

In his foreword to this review, Keith Ridge, highlighted the importance of a pharmacy workforce that is '*well placed to serve patients by playing a key clinical role in the ever-complex arena of 21st century healthcare'*.

As the NHS changes to reflect the future needs of patients and the wider public, we are aware of the need for a new era in clinical pharmacy practice. These changes are happening at pace and scale and for many this represents a departure from long established and well understood roles. Health Education England recognised that these changes necessitated a review of the education and training of pharmacy professionals, through each stage of their professional journey, from initial education and training to senior and consultant pharmacy posts.

Over the last year, the pharmacy deans at Health Education England have responded to the challenge by undertaking a wide-ranging assessment of the existing pharmacy training and education landscape. We have analysed published evidence and data, reflected on examples of good practice and gathered critical insights from stakeholders.

We are pleased to now present the review, which seeks to:

- identify the gaps and weaknesses in the current model of education and training for the pharmacy workforce;
- explore the evidence-based case for the changes that are needed to help transform provision to address the current shortfall in the NHS workforce, increase uptake and extend roles;
- present a comprehensive set of recommendations.

We are enormously grateful to everyone who has contributed to this review, including the authors, contributors and reviewers of each chapter, stakeholder groups who provided valuable feedback, giving up valuable time to contribute to discussions, and the HEE policy team who have supported us throughout.

We now look forward to the next steps in this process, which are to share our recommendations with the professions and wider stakeholders, as well as carrying out further detailed work to prepare for the complex tasks of the implementation. It is likely that recommendations will be taken forward incrementally, depending on their complexity, but we must maintain momentum and take this chance to create the changes necessary to support the public, our patients and their carers.

Trevor Beswick, Ros Cheeseman, Christopher Cutts and Helen Porter
January 2019

Executive summary

The NHS is facing a number of unprecedented and complex challenges, which not only impact on care delivery but on sustainability that relates to funding, advances in treatment and changes in patient diseases and preferences (Care Quality Commission, Public Health England and NHS Improvement, 2014). However, of growing concern is the availability of a workforce with the right skills to deliver the service now, while developing talent to deliver future service requirements.

Across NHS trusts there is a shortage of more than 100,000 staff; all groups are affected, including doctors, nurses and allied health professionals. Based on current trends, it has been predicted that the gap between staff needed and the number available could reach almost 250,000 by 2030. In 2017/18, NHS trusts spent £5.5 bn on temporary staff to cover vacancies and other short-term absences, accounting to over 10 percent of total pay costs (The Health Foundation; Nuffield Trust; King's Fund, 2018).

The reasons for the shortages are multifactorial and include fragmentation of responsibility for the workforce at a national level; poor workforce planning; cuts in funding for training places; restructured immigration policies exacerbated by Brexit and high numbers of doctors and nurses leaving their jobs (The Health Foundation; Nuffield Trust; King's Fund, 2018).

There is evidence to suggest current workforce shortages are taking a significant toll on staff; specifically over discrimination and inequalities in pay and career progression (The Health Foundation; Nuffield Trust; King's Fund, 2018). Currently, the impact that workforce shortages are having on patient care are unknown but if they continue they can only result in deteriorating quality and longer waiting times for treatment, which ultimately will lead to poor outcomes (The Health Foundation; Nuffield Trust; King's Fund, 2018).

The NHS *Long term plan* sets out the ambitions of the NHS over the next ten years in a number of priority areas (NHS UK, 2019). One of the priority areas being a strategy for workforce transformation, which is recognised as a key enabler to delivering high-quality care that offers value for money.

Evidence shows that unsafe medication practices and medicines errors are a leading cause of injury and avoidable harm in healthcare systems across the world (WHO, 2018). The pharmacy profession has been integral in leading the medicines safety agenda through a collaborative, patient-centred approach that has seen an extension to their role across different care settings to improve patient experience and outcomes. Based on this success, with strong systems leadership, the profession is ideally placed to support the workforce reforms necessary to manage the existing shortfalls, while developing talent to extend roles to transform future service provision and deliver high-quality care. And there is now evidence that as a result of the shortage in other professions, particularly medical, pharmacy professionals are stepping into this space to provide complex care.

The evidence-based recommendations within this review are intended to support the HEE Executive to:

(1) agree to the educational and financial case to reform pharmacy education and training;

and

(2) identify what those recommended education and training reforms should be.

This approach will ensure the proposed reforms are evidence-based, cost-effective and financially sustainable over time, as well as being future focused in order to meet the needs of the future workforce, the NHS and patients and the wider public.

The purpose of this review document is to set out the current landscape of pharmacy training, to review the key challenges and issues, including the case for change and make recommendations. This review considers the major reform changes required to pharmacy education, while recognising the need for workforce transformation for the current workforce.

This review focuses on the pharmacy workforce, rather than the wider workforce agenda and medicines optimisation. Many, if not all, health professions work with medicines in the NHS, so while the education, training and support of the wider NHS workforce in the safe and effective use of medicines is essential, it is not the scope of this review.

In phase one of this review work, we have not reviewed the education and training of the non-registered pharmacy workforce, such as medicines counter assistants in community pharmacy and assistant technical officers (ATOs) in hospital pharmacy. These elements of the workforce are essential for the delivery of medicines optimisation and the support of registered pharmacy professionals. We expect to undertake this review in the second phase, later in 2019, as the new apprenticeship model becomes clearer.

We have divided this review into chapters, reflecting the different career stages for pharmacy professionals:

- Initial education and training of pharmacy technicians
- Post-registration training for pharmacy technicians
- Initial education and training and pre-registration for pharmacists
- Early careers (foundation) for pharmacists
- Post foundation / advanced clinical practice for pharmacists
- Consultant practice for pharmacists
- Specific areas: technical services for the whole pharmacy team

The information presented in each section has been prepared by teams led by specific work leads (pharmacy deans and pharmacy education experts) to ensure the recommendations are supported by evidence that has been evaluated.

Colleagues in the profession, the NHS and arms-length bodies have reviewed each section.

The case for change

The case for change – patients, the population and medicines optimisation

The safety of patients and the wider population is of paramount importance to all who work in the NHS. The NHS has embarked on a journey to become one of the safest healthcare systems in the world (NHS England, 2017). At present it is estimated that 237 million medication errors occur in the NHS in England annually, with 66 million of these estimated to be clinically significant (Elliott et al, 2018). The cost to the NHS of definitely avoidable medication harm is £98 million per annum and causes 712 deaths per year (Elliott et al, 2018).

The World Health Organization has issued its third global safety challenge to reduce avoidable harm from medicines by 50 percent, by the year 2022 (World Health Organization, 2017). There has been a commitment from both the NHS and the Secretary of State to meet this global challenge (DHSC, 2018).

A short-life working group was convened by the Department of Health and Social Care and their report was published at the beginning of 2018 (DHSC, 2018). It highlighted a number of key issues that must be addressed to reduce the harm caused by inappropriate use of medicines. These included better collaboration between healthcare professionals, increased inclusion of patients in a shared

decision-making process, as well as improved practices relating to systems and medicines themselves.

Pharmacy professionals will have a key role to play in supporting and implementing the changes to improve patient and medication safety. However, in order to achieve this, significant changes are needed to the education, training and support for pharmacy at all levels, to deliver a competent, resilient, patient-facing clinical pharmacy workforce.

By 2025 there will be 12.4 million people over the age of 65 in England and Wales, with 2.81 million of them living with a degree of disability (Guzman-Castillo et al, 2017). The multi-morbidity that is associated with the aging population will place even more strain on the NHS and its staff.

Multi-morbidity is also associated with both appropriate and problematic polypharmacy. At present, patients over the age of 85 take an average of 12 different medicines per day and without intervention this is expected to rise. Polypharmacy is an independent risk factor for falls, hospital admissions and frailty. Addressing the high rates of polypharmacy will require pharmacy professionals to be confident and competent to address deprescribing. Public and patient views on this will be key to developing shared decision-making where treatments are stopped, or not initiated in the first place, depending on individual patient needs.

Furthermore, there is an urgency to address antimicrobial resistance. The review on antimicrobial resistance (O'Neill J, 2016) concluded that by 2050 there will be an estimated 10 million deaths each year worldwide if we do not act now, making this a priority for the NHS and the pharmacy profession. Although good progress is being made in reducing the volume of antibiotic prescribing, more must be done to achieve the national target of a 50 percent reduction in inappropriate prescribing by 2021 (Global and Public Health Group, 2017). The Chief Pharmaceutical Officer is the senior responsible officer for delivery of this target, reinforcing the case that pharmacy teams have a vital role to play.

The case for change – the NHS

The cost of medicines in the NHS is £17 billion per annum and is due to reach £20 billion by 2020 (NHS England, 2018a). The Medicines Value Programme (MVP) aims to improve patient outcomes and ensure that the NHS obtains the best value from medicines across health and social care, in line with the principles of the *Five year forward view* (FYFV) (NHS England et al, 2014). The NHS needs to enable patients to access medicines that are clinically effective, evidence-based and at as low a price as possible. It also needs to ensure that medicines are used as safely as possible and patients are supported to take them as intended. (*The Medicines Value Programme is further explored in Chapter 5 of this review.*)

The pharmacy professional leadership body, the Royal Pharmaceutical Society (RPS), states that a clinical pharmacy service can:

- work with GP colleagues to provide better care to patients - a pharmacist working in a GP practice can save up to £208,000 per annum across ten GPs;
- reduce medicines risk by supporting patients when they transfer between different care settings. Sixty percent of patients have three or more medicines changed during their hospital stay. It has been reported that between 30 percent and 70 percent of patients have either an error or an unintentional change to their medicines when their care is transferred.
- review and support care home patients, if clinical medication reviews were delivered across all care homes in England, the savings that could be made are estimated at £135 million (£65 million from medicines being stopped, started or changed). This could provide estimated savings of approximately £3 million per sustainability and transformation partnership (STP) (RPS, 2017).

Better use of clinical pharmacists is core to achieving the goals set out in the *General practice forward view* (NHS England, 2016). Evidence submitted to the Carter transformation programme shows that investment of £1 into clinical pharmacy teams saves £5 in overall healthcare costs through the reduction in waste (NHS Employers, 2016; Department of Health, 2016). This resonates with the concept of 'population health'. Using medicines to improve outcomes, by preventing and treating illness, is a key component of population health.

All of these strategies rely on using pharmacy professionals in patient-facing roles to deliver better, safer and more cost-effective care. Therefore, there is a growing demand to have increased numbers of appropriately skilled and knowledgeable pharmacy professionals working in a range of settings, including a number of new or less well-established settings (ie, GP practices and care homes).

As well as delivering better patient care, these enhanced roles for pharmacy professionals alleviate some of the pressures felt by other professional groups. There are now many examples, with the shortage in other professions particularly medical, where pharmacy professionals are stepping into this space to provide complex care. Pressures include those that result from a combination of increased demand for their services, as well as difficulties with recruitment and retention.

Alongside the pressures currently faced by the NHS, there are ever-increasing opportunities and challenges presented by technological advances. Genomics, personalised medicines and advanced therapy medicinal products (ATMPs) are ushering in an exciting new era in the treatment of a wide number of conditions.

This increasing complexity and cost needs to be managed in a manner that allows the entire population to attain the greatest benefit. Pharmacy professionals need to be in a position to steer these developments and drive them from theory to practice.

The Pharmacy Integration Fund (PhIF) (NHS England, 2018c) is providing the resource to deliver some of the required pharmacy professionals in the first instance; however, a more sustainable model is needed.

The case for change – the pharmacy profession

As highlighted above, there is an increasing reliance on pharmacy professionals to support the goals of the *Five year forward view;* to close the gaps in health and wellbeing, care and quality, as well as funding and efficiency (NHS England et al, 2014). The needs of the NHS are ushering in a new era in clinical pharmacy practice and the changes are happening at pace. For many this represents a departure from long established and well understood roles.

This necessitates a review of the education and training of pharmacy professionals through each stage of their professional journey, from undergraduate and pre-registration to senior and consultant pharmacy posts. Processes are required that enable each and every professional to reach their full potential and deliver the highest level of care for patients and the population at large.

Pharmacy professionals are increasingly undertaking roles and activities that were previously carried out by other healthcare professionals. These roles and activities range from medication reviews in primary care settings and pharmacist-led chronic disease and specialist clinics in all settings, to the independent management of undifferentiated caseloads in both GP practices and secondary care emergency departments in advanced clinical practice or similar patient-facing roles.

As the safety of patients and the public is our primary concern there is a need to have robust systems that provide assurance as to the level of competence of these individuals. It is important to be able to reassure and demonstrate to patients and the public that pharmacy professionals taking on enhanced roles have been trained to the same standard as the professionals whose roles they are now filling.

While recognising the importance of multi-professional standards, it is also important to retain and highlight the unique selling point of pharmacy professionals.

The pharmacy workforce

The pharmacy workforce consists of two registered professional groups; pharmacists and pharmacy technicians, as well as an unregistered workforce.

The traditional, predominant sectors of employment were community pharmacies and acute and specialist hospitals, with a small proportion working in primary care (usually in clinical commissioning groups (CCGs) (or equivalent), industry, secure environments, British Forces or academia.

In recent years there has been a massive surge in the number of posts available for pharmacy professionals to work in patient-facing clinical roles in GP practices and, more recently, in care homes. Alongside this, pharmacists have increasingly been taking up advanced practitioner and advanced clinical practitioner (ACP) roles in urgent (Wright et al, 2018) and emergency care centres (Hughes et al, 2017; Aiello,2017), with ambulance services and NHS 111 call handling centres (Whettam, 2018), with evidence-based impact.

Pharmacy technicians are also affected by the increased pressure resulting from the advent of more patient-facing clinical pharmacy roles (for example, in GP practices and care homes) as well as roles that support the shortages in other healthcare professional groups (for example, pharmacy technicians administering medicines on hospital inpatient wards and in secure environments). At present, around 800 pharmacy technicians are being trained in the NHS every year.

These initiatives have a positive impact on both patients and the profession, but they create a significantly increased demand for adequately trained, experienced clinical pharmacists.

It is clear that a new programme of work is required to gain a more current and accurate understanding of the pharmacy workforce. This work is described in the methodology section.

The case for change – education and training needs

'Health Education England (HEE) exists for one reason only: to support the delivery of excellent healthcare and health improvement to the patients and public of England by ensuring that the workforce of today and tomorrow has the right numbers, skills, values and behaviours, at the right time and in the right place.' (HEE, 2018e)

As described above, there is an ever-increasing demand for clinical pharmacists and pharmacy technicians to deliver medicines optimisation, both at an individual patient and population level. This involves using the traditional skills of the pharmacy team, alongside a number of additional skills relating to diagnosing, treating and the long-term management of conditions. This requires a significant amount of training and upskilling to manage the ever-growing complexity and to assure patient safety.

This situation was recognised in the commissioning of all the PhIF initiatives. All of the programmes were supported by robust educational packages, including core skills, such as independent prescribing qualifications and agreed supervision requirements (NHS England, 2018c).

While the numbers of professionals undertaking the PhIF initiatives are significant, it represents an upskilling of only a small percentage of the profession over a finite time period.

There is a very limited agreed standard approach to postgraduate development for pharmacy professionals (Wright and Morgan, 2011) but new models are emerging in some aspects of practice (Hughes et al, 2017), including early career training (Bradley, 2017, Whyte et al, 2017). Commissioning of other education and training for pharmacy professionals is highly variable and dependent on regional arrangements and the sector of work.

The current models deliver too few trained individuals, with a high degree of variability in the level of competence achieved at the end of training. Professionals are trained to work in one sector of practice only, with little focus on transferability and sustainability of the overall workforce. As well as these limitations, the current

models in general are not sustainable, with many regions having reduced or removed funding for postgraduate training for pharmacy professionals.

As well as current training focusing on one sector of practice only, most of the development opportunities for pharmacy professionals occur in a professional silo with limited multiprofessional offerings. There are a range of existing training opportunities available across all the healthcare professions and better use should be made of these to deliver multiprofessional training, resulting in both improved efficiency, as well better educational outcomes for learners. Recent work has shown models can be developed to allow multi-sector development to enable pharmacists to develop as advanced clinical practitioners (ACPs) but this work remains quite local and not national at this stage (Aiello et al, 2017; Hughes et al, 2017). This evidence base is critical to future reformed education and training models.

There is also a need to modernise some aspects of the current system, such as updating frameworks and developing the education and training workforce (Wright and Morgan, 2011). (*The need for more generalisable development frameworks is further explored in Chapters 5 and 6*.)

In general, there is also a lack of quality management systems surrounding the training offered to pharmacy professionals (Jee, Schafheutle and Noyce, 2018; Schafheutle et al, 2017), which contributes to the variable output seen from the opportunities that are currently available.

The pharmacy workforce currently lacks the appropriate sustainable development beyond the pre-registration year to be able to robustly demonstrate a clear route of development that is: appropriate for pharmacy professionals; recognisable across professions; and that fulfils patients' expectations regarding governance for the healthcare professionals delivering their care. For the higher level services that pharmacists and pharmacy are increasingly delivering, the workforce development programme needs to develop in a coherent and consistent format. Responses to Modernising Pharmacy Careers 2 (MEE, 2012) and the recent HEE workforce strategy consultation (HEE, 2017c) showed a real desire from pharmacy professionals and leaders to create long-term sustainable career pathways. (*Successful approaches to work-based training, in tandem with university-based education is further explored in Chapter 5*.)

Methodology

The Pharmacy Education and Training Review project team has been led by four regional pharmacy deans and members of the policy team within HEE. The project was supported by the Policy and Regulation Team and administrative staff across the four regions in HEE.

Pharmacy deans led on discrete areas of work in their domain of expertise, including:

- pre- and post-registration pharmacy technician education and training;
- pharmacist undergraduate and pre-registration training;
- foundation training;
- and post-foundation practice.

The project team considered the full range of perspectives that have a direct influence on pharmacy education and training models: educational, financial, legislative, population needs and current and future service delivery. The review has been underpinned by an extensive mix of evidence gathering from a variety of sources and methods. This included literature reviews and desktop research, stakeholder engagement events and commissioned research projects. The workforce planning work programme (*mentioned on page 15 below*) is also part of this workplan.

In carrying out this review, the project team recognised the need to involve other individuals and organisations to shape our thinking and onward journey. Each strand of work sought the views of stakeholders and experts: for example, regulators, employers, education providers and pharmacy professionals. The review team worked with stakeholders in order to achieve consensus across pharmacy, as well as the wider health system, before developing recommendations for potential reforms.

By collating the various workstreams, the team has produced a report that we believe is greater than the sum of its parts. Through synthesising the evidence, carrying out comparative examinations of it, completing a thorough options appraisal and testing thinking with stakeholders, we are able to present an up-to-date picture of pharmacy education and training and recommendations for reform.

The review is intended to inform a decision-making process by HEE's Executive Team on the appropriate next steps. Recommendations stemming from the review will be evaluated against patient care pathways and outcomes to ensure any reform proposals have patient care at their centre.

This review is interdependent on some areas of work that are happening across HEE and the wider pharmacy sector. Additional interdependencies include:

- Medicines value programme
- Advanced clinical practitioner (ACP) work
- CPPE contractual review
- Department of Health changes to superintendents and responsible pharmacists
- practice
- Apprenticeships work
- Salary replacement work
- Mental health programme
- Topol review (https://www.hee.nhs.uk/our-work/topol-review)
- Department of Health and Social Care changes to regulation.

Planned and commissioned work

As part of the review, HEE commissioned several pieces of work. These included a foundation pharmacist role analysis (co-commissioned by HEE and RPS); a financial analysis of pharmacy education and training; and learner engagement and patient and public involvement (PPI) focus groups. Collectively, these ensure the review captures robust up-to-date evidence from multiple and impartial angles.

The foundation pharmacists' role analysis included desktop research, comparison with foundation training programmes in other professions, as well as a series of interviews and focus groups with foundation pharmacists, more experienced pharmacists, and pharmacists with experience in overseeing education and training. These qualitative data sets were analysed and used to build an understanding of the skill attributes of foundation pharmacists.

HEE has started a new programme of work to gain a more current and accurate understanding of the pharmacy workforce and expects to report by late 2019. The work will include the drawing together of existing intelligence, such as recent surveys and other reports and horizon scanning of developments in pharmacy. It will consider what shape the pharmacy workforce might need to take to provide high-quality services in the future and highlight possible actions, including how the pharmacy workforce may need to work differently in the future. The resulting intelligence from this programme of work will allow for informed decisions to be made on the training and development of the pharmacy workforce, and in turn, improve the quality of patient care.

The financial analysis examined the current funding arrangements across the existing pharmacist and pharmacy technician education and training structures across England. This included costs incurred by HEE and costs to the system for a pharmacist / pharmacy technician to undertake the current array of education and training pathways pre- and post-registration. Through data mining and modelling, our economics specialists were able to present the current costs to train pharmacy professionals, and assess the changes in cost in respect of the reform proposals.

The learner engagement work involved a number of focus groups with individuals across the spectrum of pharmacist and pharmacy technician, pre- and post-registration education and training. The groups included students/apprentices, pre-registration trainees, those recently qualified, and those who have undertaken post-registration training, such as clinical diplomas and accuracy checking qualifications.

Two focus groups were carried out with members of HEE's Patient Advisory Forum. Participants gave the lay perspective on some of the potential reform proposals for pharmacy education and training. Not being well versed in pharmacy education and training, participants were briefed on current education and training models across pharmacy. The project team were then able to test whether some of the options for reform were appropriate, when considering their implications for patient care and service provision.

The funding review and the results of the patient focus group work will be made available as individual documents during early 2019.

Consultations

Pharmacy roundtable event (October 2018)

A roundtable event was held on 11 October 2018, enabling the project team to engage with senior stakeholders representing professional, regulatory and government bodies and NHS organisations. The purpose of the roundtable was to share ideas and thinking, as part of our policy development process. Furthermore, the event was used to identify mutual thoughts and ideas, as well as any major concerns or gaps with the emerging thinking and direction of travel. The project team also recognised the importance of consulting with key stakeholders early on in the review process.

The project team benefited from hearing comments on some of the challenges that face pharmacy, and the need to consider these in relation to education and training. Discussions raised the importance of an adequate supply of the future workforce, as well as ensuring pharmacy technicians, pharmacists and the wider pharmacy team are included when considering supply and demand.

Much emphasis was placed on the initial education and training (IET) for pharmacists and pharmacy technicians, as well as the importance of ensuring placement quality has more consistency, and that the needs and expectations for future practice are met during IET. Opportunities for mobility within pharmacy were considered, ie, how best to facilitate the transition from pharmacy technician to pharmacist, as well as how those in wider pharmacy support roles could transition into the role of pharmacy technician. Points were raised about the need for clarification over the notion of ‘integration’ in education and training, ensuring placements and education are intertwined and not delineated with little interplay.

Discussions took place about the appropriate point for pharmacists to undertake qualifications in prescribing and how there can be meaningful developmental pathways post-registration into areas of advanced practice and consulting.

Some participants also commented on the need for role clarity for pharmacy technicians, given developments in pharmacy service provision and the ability for pharmacy technicians to train in areas such as social care and primary care.

The discussions were engaging and fruitful and helped to steer the latter parts of the review process.

Each chapter in this review will outline the case for change and outline a set of recommendations for the different career stages within the pharmacy professions, presenting evidence from current pharmacy education models, which can help to inform future models and support the recommendations set out.

Summary of recommendations

Initial education and training of pharmacy technicians

Recommendations
1. Work with NHS England and NHS Improvement to support the growth of the workforce to meet service demands through: • undertaking a workforce intelligence study to understand the changing landscape of the pharmacy technicians' workforce; • supporting employers in accessing the pharmacy technician apprenticeship scheme; • supporting growth of the workforce and meeting demand by increasing the number of pre-registration trainee pharmacy technicians in training.
2. Work with partners to increase the quality of the learning environment through existing educational infrastructures.
3. Identify how the new qualification could be used to support growth of a pharmacy technician workforce educated in primary care, with cross-sector learning experience.

Early career (post-registration) pharmacy technician training

Recommendations
1. Work with partners to explore future opportunities for pharmacy technicians to practise in order to advance their education and training, enabling them to contribute to future service development and workforce capacity, within all HEE workforce plans.
2. Work with professional organisations to ensure entry into the profession requires the use of professional development frameworks and incorporates educational and clinical supervision for individuals on the development pathway.
3. Develop multiprofessional clinical syllabi, to include clinical pharmacy technicians requirements, alongside other professions.
4. Following the introduction of the new IET qualification, work with employers and professional bodies to ensure that the legacy workforce and newly qualified pharmacy technicians complete a post-registration programme to attain competence in a range of key medicines optimisation activities.

Initial education and training of pharmacists

Recommendations
1. Work with the GPhC to explore future options to develop and test integrated models of initial education and training (IET) for pharmacists, following the outcome of the GPhC's consultation. Review HEE funded pre-registration pharmacist training programmes as part of this work.
2. Work with NHS England and NHS Improvement to review the commissioning arrangements for pre-registration pharmacists and develop a reformed funding model that is responsive to regulatory reform and service needs.
3. Work with employers, education providers, professional and regulatory bodies to ensure trainee pharmacists are clinically competent at the point of registration and beyond and are equipped with the appropriate soft and hard skills to meet the objectives of the *Long term plan* and the NHS.
4. Work with employers, education providers, professional and regulatory bodies to enable the HEE quality framework to be applied across pharmacy practice settings, providing a clinical learning environment (across professions in relation to medicines).
5. Continue to roll out robust quality measures including: a. national recruitment with Oriel; b. improving the quality of education supervision; c. improving the rigour by which trainees are assessed throughout their training programme, ie, formative versus summative, including collaborative working with the regulator.

Early career (foundation) pharmacist training

It is proposed that a national approach to vocational foundation pharmacist training could be built on the following principles**:**

- **Principle 1:** a national training programme aligned to a national curriculum (ideally UK), with a career framework, including detailed syllabus, as well as an assessment strategy and a national certificate of completion. The programme would be underpinned by appropriate quality assurance, management and control processes, informed by the experience gained from pilots, as well as lessons learned from medicine and dentistry.
- **Principle 2**: a programme based on experiential learning, with a common approach to assessment. The learning would be provided through a range of platforms and providers, promoting and including multi-professional learning. It would also be supported by robust clinical (practice) and educational supervision.
- **Principle 3:** a programme supported by an efficient and flexible quality assured educational infrastructure, appropriately deployed at national, regional and local levels to include regional/local leadership, e-portfolio, trainee tracking, robust clinical and educational supervision, with trainees requiring additional support (TRAS) systems.
- **Principle 4:** a programme that prepares pharmacists to work across patient-facing areas, including new areas developed through the PhIF and the NHS *Long term plan*, such as general practice, integrated urgent care and care homes.
- **Principle 5:** a programme that is supported and endorsed by early career pharmacists, employers, commissioners and professional bodies.
- **Principle 6:** a programme that is appropriately funded at national, regional, local and individual levels, which provides a reasonable balance of funding from education commissioners, employers and the individual.

Recommendations
1. Work with employers, education providers, professional and regulatory bodies to develop and design a national vocational foundation training programme for pharmacists. This would initially be based on the principles set out in the body of this review, will build on the GPhC consultation and review of initial education and training, and be phased accordingly.
2. Create an England-wide working group to develop an implementation plan for piloting and testing the national vocational foundation training programme for pharmacists. Ensure close working with UK health education colleagues to ensure UK alignment.
3. Work with NHS England and NHS Improvement to create a sustainable funding model for foundation pharmacist training.

Post-foundation and advanced clinical practice

Recommendations
1. Work with partners to scope credentialing for the RPS advanced pharmacy framework for equivalence with the HEE ACP framework.
2. Continue to work with the ACP programme to develop multi-professional clinical syllabi, to include ACP pharmacist requirements, alongside other non-medical professions.
3. Along with other professions, simplify the terminology for pharmacists operating at higher levels of post-foundation practice and make it consistent, in order to: • provide clarity for patients and their carers about the levels of care that can be expected from professionals; provide consistency across the NHS for professionals about the level of practice associated with titles and descriptors; • prevent any confusion between ACP and other levels of practice.
4. Work with the proposed UK Pharmacy Postgraduate Training Board (PPTB) to oversee, with HEE's full involvement, the frameworks and processes for higher levels of pharmacy practice.
5. Work with employers ensuring these changes use professional development frameworks and incorporate educational and clinical supervision for individuals on the development pathway.

Consultant pharmacists

Recommendations
1. Support the development and publication of new guidance that clearly sets out the role and expectation of consultant pharmacists, including working with key stakeholders (RPS, NHSI, NHSE) to create a post approval process that is fit for purpose.
2. Work with partners, including the RPS, to scope the development of a robust credentialing process for consultant pharmacists.
3. Work with stakeholders to consider a development programme suitable for all types of leadership roles, including consultant pharmacists, to widen participation and succession planning into consultant posts.

Technical services

Recommendations
1. Work with the apprenticeship programme team to explore the science manufacturing technician (SMT) apprenticeship in light of the changes to the initial education and training of pharmacy technicians, while working with stakeholders and partners to increase exposure to technical services within the new qualification for pharmacy technicians.
2. Work with employers to make better use of the wider workforce, such as assistant technical officers (ATOs), through improved training opportunities.
3. Work with employers to increase the number of technical services staff undertaking core (such as Technical Specialist Education and Training Aseptic Processing Programme) and higher level qualifications (such as pharmaceutical technology and quality assurance (PTQA)) to ensure succession planning for senior specialist, quality assurance and QP staff.

Chapter 1
Initial education and training of pharmacy technicians

1.1 Overview of existing training landscape

The pharmacy technician workforce is essential and has been recognised as such through various national policies and White Papers. An appropriately trained and skilled pharmacy technician workforce can contribute to the required skill mix and the proposed service transformation in community and hospital pharmacy to ensure the *Medicines value programme*, (NHS England, 2018a) *Five year forward view* (NHS England et al, 2014) and *Community pharmacy forward view* (Pharmacy Voice, PSNC, RPS, 2016) become a reality.

Appropriate pharmacy technician education and training is fundamental to underpin the transformation and upskilling of a large pharmacy technician workforce who can then support the infrastructure changes required, as pharmacists take on enhanced roles as advanced clinical practitioners, as well as providing advanced pharmacy services across sectors (Schafheutle et al, 2017).

The current training needed to become a pharmacy technician consists of two years consecutive work-based experience, under the direction of a pharmacist (this could be delegated to a senior pharmacy technician or GP practice partner in some places) to whom the trainee is directly accountable for at least 14 hours per week. During these two years, both a General Pharmaceutical Council (GPhC) approved competency-based qualification (currently NVQ L3 Diploma in Pharmacy Skills) and an accredited knowledge-based qualification are completed.

In 2017, the GPhC revised the *Standards for the education and training of pharmacy technicians* (IET) (GPhC, 2018b). These new standards ensure that at the point of registration, pharmacy technicians will have the knowledge and skills at the right level for current and future workforce requirements.

To support the timely access to fit-for-purpose education programmes, HEE commissioned *Skills for Health* to facilitate the collaborative development of a new qualification to meet the new IET standards (http://www.skillsforhealth.org.uk/)

The future initial training of pharmacy technicians will involve a single patient-centric qualification, reflecting the IET and requirements of a blended skills and knowledge course. It will provide the core skills and knowledge required to be a Day 1 pharmacy technician, irrespective of their working environment, that is, there will be no optional units. The qualification is being developed to be transferable across home countries and across a range of funding models, including the apprenticeship model. A separate trailblazer group is currently developing a pharmacy technician apprenticeship standard, in line with the new IET standards and the associated emerging qualification.

It is expected that sector-specific skills will be provided post-registration. However, there are some concerns about the impact this will have on non-clinical pharmacy hospital services, such as the future workforce supply for technical services (*further details will be provided in Chapter* 7: *Technical services*). Community education leads have also expressed concern that they may not be able to deliver all the training required within the community sector without cross-sector placements being provided, for example, medicines reconciliation.

Once the approval process has been completed the qualification will then be available for education providers to develop their syllabus and plan their programme by January 2019, for delivery from September 2019. It is envisaged that current providers will continue to offer the new qualification and new providers will also come on board.

Pre-registration trainee pharmacy technicians in NHS acute trusts, mental health trusts and Health and Justice services are either funded by HEE (partially or fully) or funded by the employer. Funding for course fees can currently be accessed by all sectors, through the advanced apprenticeship scheme (which is based on the old IET standards).

In community pharmacy, employers fund the salary component, education provision and workplace support for training pharmacy technicians. Employers can access advanced apprenticeship funding if their wage bill makes drawing the levy beneficial, which means uptake is variable. The recent community pharmacy workforce survey showed that apprenticeships are accessed for funding pre-registration trainee pharmacy technicians in community pharmacy across England. Acknowledging the self-reporting, this may have been open to interpretation, but could be up to 30 percent for community pharmacy pre-registration pharmacy technicians (HEE, 2018j).

1.1.1 Current workforce numbers

Figures provided by the GPhC show that as of 26 August 2018, there were 23,418 pharmacy technicians on the register in Great Britain; there are just fewer than 20,000 in England (GPhC, 2018f). Table 1 shows the data provided by the GPhC for the numbers of joiners and leavers on the pharmacy technician register each year (GPhC, 2018f).

Table 1: Numbers of pharmacy technicians - joiners and leavers

Year	Joiners	Leavers
2013	1405	1556
2014	1166	1719
2015	1129	1704
2016	1140	1660
2017	1054	1796

Source: GPhC, 2018f

It should be noted that the number of pharmacy technicians leaving the profession is greater than the number joining, at a time when demand is growing. In 2013, approximately 53 percent of pharmacy technicians are in the community sector, 39 percent in hospitals, six percent in primary care, two percent other (GPhC, 2014). However, the latest HEE community pharmacy workforce survey suggests this has dropped to 35 percent in community pharmacy (5699 WTE out of 19,506 on the register) (HEE, 2018j). The last analysis of the GPhC's register in 2013 found that the profession is overwhelmingly female, with women representing more than 90 percent of pharmacy technicians on the register (GPhC, 2014).

1.2 Key issues, challenges and factors

1.2.1 Supply of pharmacy technicians

To ensure an adequate supply of well-trained pharmacy technicians, it is important that the NHS continues to support, train and retain pre-registration trainee pharmacy technicians.

Historically, the quality of training and the retention rates have been good in the NHS. Employers report (anecdotally) a difficulty in recruiting to Band 4 and 5 posts in NHS, community pharmacy and education sectors. The destination after training was completed for NHS pharmacy technicians who were newly qualified in 2017, showed that 77 percent of commissioned/non-commissioned pre-registration trainee pharmacy technicians were retained within the NHS (NHS PEDC, 2018). The highest retention rates were shown to be in Yorkshire and Humber (92 percent) and the North West (91 percent).

Training numbers have been lower than demand within the healthcare system, for example, in Yorkshire and Humber alone, in 2017 the estimated demand for NHS pre-registration trainee pharmacy technicians was 57 and HEE commissioned numbers have been historically set at 37. Therefore for Cohort 2018-2020, HEE have increased the commissioned number to 47. However, it is estimated that this will still fall below the workforce needs for trained pharmacy technicians.

The community pharmacy workforce survey showed that the FTE vacancy rate among pharmacy technicians was 3.5 percent and 3.3 percent on a headcount basis (HEE, 2018j). London region had a much higher rate than seen in the rest of the country, at 8.7 percent, peaking at 10.6 percent in south London. Despite this relatively low vacancy rate, when community pharmacy contractors were asked how easy or difficult it was to fill vacancies for pharmacy technicians, the responses indicated that this role is considered one of the most difficult to recruit for, with 42 percent saying it was either fairly or very difficult.

It is worth noting that historically there was a pool of pharmacy technicians being trained in community pharmacy who would leave their training base sector for work in the acute setting. Anecdotal evidence suggests this is due to structured career and pay bandings in the acute sector.

The pharmacy technician profession is relatively new; with professional registration and the protected title only occurring in 2011. Previous to this the role was vocational. Education for pharmacy technicians has been available for many decades. However, post-registration the role has been evolving, with new workforce demands emerging in, for example, care homes, primary care, and mental health, although these sectors have not traditionally contributed to creating the supply pipeline, for a number of reasons.

1.2.2 The impact of the new initial education and training (IET) standards for pharmacy technicians on pharmacy technical services

The new IET standards for pharmacy technicians are designed to provide the core skills and knowledge required to be a Day 1 pharmacy technician, irrespective of their working environment (GPhC, 2018b).

The standards are intended to apply across all sectors, and were approved by the GPhC in 2017. The new qualification (based on this new set of standards) will include knowledge on '*Apply pharmaceutical principles to the safe and effective formulation, preparation and packaging of medicines and products'.* However, the qualification will not provide the required competence to work in an aseptic or manufacturing environment.

The new qualification will form the baseline knowledge and additional skills may be further developed in-house or at foundation practice career stage, where individuals may develop specialist practice, using the current Skills for Health national occupational standard aseptic training units, to enable career development for technical services. Additionally, a new science manufacturing technician (SMT) apprenticeship (SIAS, 2018) has been developed with NHS representation, initially for manufacturing companies, including the pharmaceutical industry. This apprenticeship may also be used to develop a new non-GPhC registered workforce to address an identified workforce gap. A knowledge qualification has been developed, for use with this apprenticeship, to support the development of staff working in NHS pharmacy aseptic services.

The NHS Pharmaceutical QA Committee (PQAC) have stated that the SMT apprenticeship should be suitable to train staff for careers in units that hold manufacturing licences from the Medicines and Health products Regulatory Agency (MRHA), but it is not suitable to fulfil the entire needs of the approximate 180 **unlicensed** aseptic units across the country, as GPhC registrants are required.

The PQAC has also highlighted the importance of maintaining a well-trained pool of pharmacy technicians to oversee governance and assurance processes, as it has become harder over the years to attract pharmacists to careers in technical services. This situation has been alleviated, in part, by extending the role of pharmacy technicians, through accredited training.

Hence the SMT apprenticeship may be suitable for some technical staff, but employers will still need to use pharmacy technicians in aseptic services Section 10 units in order to realise their full potential. Workplaces need to be supported to

determine their workforce needs going forward, as hospitals can still train pharmacy technicians, who then can specialise in technical services. Employers will need to give consideration as to how they can attract pharmacy technicians to technical services.

Until fairly recently, a post-registration specialism in technical services was available nationally, as a distance learning BTEC Professional Diploma Aseptic Services Level 4. However, it was withdrawn due to lack of employer awareness, difficulty in funding and thus low demand. Consideration should also be given to the available routes to accessing appropriate CPD provision, to make technical services an attractive career option for pharmacy technicians, and underpin delivery for patients.

1.2.3 Educational infrastructure and training quality

The current initial education and training (GPhC, 2018b) of pharmacy technicians involves work-based training to achieve the NVQ L3 Diploma in Pharmacy Skills. To support this training many employers will have staff who have been trained to be NVQ assessors and internal quality verifiers. It is too early to comment on the infrastructure required by employers to support the new IET qualification; however, work-based educational supervisors will be essential in providing a high-quality training environment.

A recent study identified differences between the work-based experiences of pre-registration trainee pharmacy technicians in hospital and community pharmacy; perceptions on 'apprentices' versus 'employees' may define how their training is managed by employers. There is a need to '*ensure training is structured and delivered in a suitable and equitable manner across sectors'* (Schafheutle et al, 2017). Just as there has been work undertaken in upskilling pre-registration pharmacist tutors, there needs to be similar investment in the development of educational supervisor and mentor training to support pre-registration trainee pharmacy technician training. This will help to provide an enhanced training experience for students, while supporting the implementation of the HEE quality framework across all sectors (HEE, 2018c).

1.2.4 Apprenticeships

Apprenticeships are a key way for people to learn on the job, both for new starters to the NHS and for existing members of staff; allowing learners the opportunity to gain a qualification and apply their learning while continuing to earn a salary. Apprenticeships are also a key Government and HEE priority (HEE, 2018h). With the introduction of the apprenticeship levy (Gov.uk, 2018) and associated reforms in 2017, HEE has continued to work with employers, government bodies and trade unions to continue the progression of the apprenticeship agenda in the NHS.

The recent community pharmacy workforce survey showed that apprenticeships accounted for 30 percent of all pre-registration trainee pharmacy technicians in community pharmacy across England (HEE, 2018j). Similar data for hospitals is not known and is difficult to access. As the apprenticeship levy is the only source of national funding to support the training and development of pre-registration trainee pharmacy technicians in community pharmacy, and potentially the only future

funding for hospitals, work needs to be undertaken to encourage and support apprenticeship uptake by employers (HEE, 2018j).

An apprentice must be in paid employment and the apprenticeship funding cannot be used to pay the trainee's salary costs. If salary contributions by HEE are withdrawn or reduced and additional funding cannot be found by employers, then this will have an impact on the future workforce and, therefore, service delivery. One option to help maintain workforce numbers is to fund a trainee post using funding from a vacancy; however, this will not increase the workforce and could impact on the quality of training provided. If the trainee is an apprentice they must spend at least 20 percent of their time on 'off-the-job training' to attract the funding. This time cost may not be attractive to employers and, as a result, many employers may decide not to follow the apprenticeship route. Also, once the apprentice has completed their apprenticeship training, a substantive post will need to be created to free up the apprenticeship training post.

A challenge for employers is how to increase the workforce to meet current demand and to support the expected additional demand due to transformation projects, while under financial constraints. One option is to create parity with funding models being proposed in other professions that are switching to an apprenticeship model, for example, nursing apprenticeships.

Apprenticeships alone will not address the gap in workforce development requirements. Investment is required to provide sustainability in this ever-decreasing part of the pharmacy workforce. The uptake of apprenticeships may be improved by providing funded support to trainees in other ways, for example, standardising education/clinical supervision and supporting the logistics of cross-sector placements.

1.3 The case for change

1.3.1 Carter review

A key recommendation from the Carter review (NHS Employers, 2016) was for NHS trusts to change the way they approach delivery of hospital pharmacy services. Through hospital pharmacy transformation programmes, NHS trusts are reviewing the skill mix within their existing pharmacy workforce to support this and to ensure consistent, high-quality and sustainable hospital pharmacy services. Pharmacy technicians are recognised as vital to the success of the Carter review recommendations.

1.3.2 Five year forward view

The *Five year forward view* (NHS England et al, 2014) sets out the requirement to review and adapt healthcare roles to support the local health community. Pharmacy teams in all sectors are reviewing current roles and skill mix; considering how they can participate in services, such as urgent care, working alongside GPs and other service providers (for example, care homes) and improving public health.

Implementing the new qualification for pharmacy technicians, based on the new IET standards, and supporting training within primary care, will help to develop a transferable, flexible workforce, capable of working across sectors.

1.3.3 Apprenticeship levy and Government targets for apprentices

Since April 2017, employers with a pay bill in excess of £3,000,000 are subject to a national apprenticeship levy of 0.5 percent of their pay bill. The levy can be claimed back by employers to cover the costs of an apprentice's training, assessment and certification. As a result of the levy, development budgets used to support training of healthcare staff have been significantly reduced in NHS trusts.

The government has made a commitment to deliver millions of apprenticeships in England by 2020 and the public sector, including the NHS, is expected to play a key role in helping to meet this commitment, by expanding the number of apprenticeships it delivers. From April 2017, all public sector organisations with more than 250 employees are expected to meet a target of new apprenticeship starts in each financial year. The target is set at 2.3 percent of headcount and is measured as an average across the reporting period 2017/18 to 2020/21 inclusive.

In order to meet the target and get the maximum benefit from the apprenticeship levy, NHS and other provider organisations need to use apprenticeships to grow and develop a workforce with the skills needed for the future.

1.3.4 Interdependencies within other areas of HEE policy and work

Talent for care and widening participation
The HEE *Talent for care* national strategic framework outlines the strategies to develop and make the most of staff at all levels, with a particular emphasis on improving opportunities for the support workforce (AFC Bands 1 - 4) (Smith, 2014). Apprenticeships are a vital component of this framework.

Rebalancing medicines legislation and pharmacy regulation
The Rebalancing Medicines Legislation and Pharmacy Regulation Programme Board reviews relevant pharmacy legislation and regulation to ensure it:

- provides safety for users of pharmacy services;
- reduces any unnecessary legislation;
- allows innovation and development of pharmacy practice.

The board advises ministers on the development of policy. It will also oversee policy delivery to help ensure that the Rebalancing Medicines Legislation and Pharmacy Regulation Programme meets its objectives. The impact on the role of pharmacy technicians remains unclear at the time of this review.

1.4 The future landscape and recommendations

The Pharmacy Integration Fund (PhIF) (NHS England, 2018c) is committed to supporting the new models of care outlined by the NHS *Five year forward view.* These changes provide an opportunity for the knowledge and skills of a pharmacy technician to be used in managing the pharmacy supply function and medicines optimisation across primary care, including new areas, such as care homes and GP surgeries. To date, the PhIF pilots have been successful and to ensure continued success, a consistent supply of pharmacy technicians, with the right knowledge and skills is essential.

The community pharmacy workforce survey shows that there is a reduction in the training of pharmacy technicians nationally. NHS Pharmacy Education and Development Committee (PEDC) destination reports also confirm a reduction in initial training places over the past five years (NHS PEDC, 2018). This information, coupled with the reported shortage of Band 5 medicines management pharmacy technicians in the acute sector, provides evidence that a new workforce supply solution and education pathway needs to be developed and implemented. This will ensure a sustainable pipeline of pharmacy technicians that are competent and confident to deliver the *Five year forward view*, Carter review and PhIF objectives for integrated care models across the NHS.

As stated in Section 1 above (*Overview of existing training landscape)*, plans are in place to create a new qualification that will meet the GPhC new IET standards. Work needs to be undertaken to identify how this qualification could be used to support growth of a pharmacy technician workforce that is educated across primary and secondary care settings to support integrated healthcare systems. This cross-sector education and training will provide an appropriately skilled workforce. Role clarity is required for pharmacy technicians so that regulatory standards can be

designed to meet current and future practice needs. It is also important to put effective plans in place to ensure the appropriate use of the whole pharmacy team, to enable pharmacists, particularly in the community sector, to take on extended, clinical roles.

1.4.1 Recommendations for reform

The recommendations set out below are evidence-based, reflecting the key issues outlined above and the critical factors explained in the case for change.

1. Work with NHS England and NHS Improvement to support the growth of the workforce to meet service demands through:
   - undertaking a workforce intelligence study to understand the changing landscape of the pharmacy technicians' workforce;
   - supporting employers in accessing the pharmacy technician apprenticeship scheme;
   - supporting growth of the workforce and meeting demand by increasing the number of pre-registration trainee pharmacy technicians in training.

2. Work with partners to increase the quality of the learning environment through existing educational infrastructures.

3. Identify how the new qualification could be used to support growth of a pharmacy technician workforce educated in primary care, with cross-sector learning experience.

Chapter 2
Early career (post-registration) pharmacy technician training

Pharmacy technicians are integral to the pharmacy workforce and the delivery of effective and safe medicines use, supporting self-management of illness and healthy living. They have been a registered profession in their own right for some time and as such have great capacity to continue to take on wider roles with greater professional responsibility and accountability.

Over the past 20 years post-registration education, training and credentialing has supported these higher level roles, for example, accuracy checking of dispensed items, medicines reconciliation, technical services experts, senior roles and services and management. However, a wider range of higher level roles are becoming the norm, particularly in primary (clinical commissioning group (CCG) and domiciliary services) and secondary care settings.

The NHS Pharmacy Integration Fund (PhIF) has created increased but limited access to management and leadership training, accuracy checking, credentialing and training for medicines optimisation work in care homes. However, uptake has been variable and is time limited.

A new GPhC initial education and training (IET) syllabus will be implemented in 2019/20, which will introduce the fundamentals of medicines optimisation practice. However, the new workforce will not start as registered practitioners until 2022, and there is an urgent need for upskilling of the existing workforce across all sectors.

This need for post-registration development will continue and will be an essential part of delivering pharmacy workforce transformation. Pharmacy technicians will need to develop the competence and confidence to work as more autonomous practitioners in all settings, with a focus on responsibility for operational and people management in conjunction with clinical responsibilities.

A detailed consideration of what post-registration development for pharmacy technicians should look like and how it should be delivered will be further considered post implementation of the new IET qualification in 2019 and following the Department of Health and Social Care Rebalancing Medicines Legislation and Pharmacy Regulation Programme Board work (Gov.uk, 2017), which has the potential to increase the role of pharmacy technicians, as part of its remit is to review the need for pharmacist supervision of a range of activities.

However, here we set out recommendations to coalesce current work, thinking and evidence in order to develop post-registration training for pharmacy technicians.

2.1 Overview of existing training landscape

2.1.1 Background

Pharmacy technicians may undertake a wide range of training pathways post-registration. There is variation across sectors in the training experience of pharmacy technicians from pre-registration through to post-registration (Schafheutle et al, 2017; UEA, 2016) and there is no standardised, structured career pathway. In most larger community pharmacy organisations providing NHS services and secondary care pharmacy there are people employed in education roles to support pharmacy teams to develop. The Centre for Pharmacy Postgraduate Education (CPPE) and other providers deliver learning programmes and workshops to upskill pharmacy technicians in specific areas of practice. It is generally accepted that all pharmacy technicians will advance by completing an accuracy checking pharmacy technician (ACPT) qualification but this is often the glass ceiling for many, particularly in community pharmacy.

In the NHS, one of the points in the job statement of the Agenda for Change (AfC) PT Higher level national job profile (Band 5) is the attainment of an ACPT qualification. There are also locally commissioned training programmes to train pharmacy technicians to become competent in tasks that support medicines optimisation, for example, medicines reconciliation and clinical prioritisation. These skills will be incorporated into the IET for pharmacy technicians, so there will be a significant legacy workforce who will need to upskill to maintain proficiency in these core technical and clinical areas.

Post-registration training for pharmacy technicians in England is difficult to quantify because it is usually provided internally by employers, rather than via further education colleges (FECs), higher education institutions (HEIs) or credentialed qualifications.

During the Modernising Pharmacy Careers (MPC) Workstream 2 (MEE, 2012), the development of post-registration pharmacy technician training was reviewed. However, this did not translate into a structured career path for pharmacy technicians. The most notable, tangible outcome of this work was acknowledgement that consultation skills were required by all patient-facing members of the pharmacy team. Subsequently, consultation skills have become a fundamental building block for delivery of clinical services and establishing this training as a key component of early career practice is a work in progress.

2.1.2 Current pharmacy technician workforce numbers

The GPhC registers just over 1000 pharmacy technicians nationally each year (the range has been 1054 to 1405 over the past five years). This translates to approximately 1000 pharmacy technicians who will practise in England in their early career. We know that there is a net loss from the profession year on year and that there are a significant proportion of people on the pharmacy technician register who are approaching retirement age.

The GPhC register does not provide granularity in terms of role or work pattern of pharmacy technicians; however, it is known that part-time working is a substantial trait in pharmacy. The changing shape of family dynamics and the fact that people are living longer means that carer responsibilities are increasingly a factor for consideration in workforce planning. The pharmacy technician register comprises a majority of women, and 58 percent of carers are women (PJ, 2012 and Carers UK, 2015) so pharmacy technician workforce numbers are likely to be significantly affected by national health and social care budgets and policy. This, coupled with the previously identified issue of reduced budgets and salary support for training, makes it vitally important to retain talent within the profession.

2.1.3 Current finances, funding and pilots

There is a mixed model of funding for the existing early career training support for pharmacy technicians across England. There is variation in the approach to post-registration training, as well as regional and sectoral differences and inequality.

Funding falls broadly under these arrangements:

- HEE local office funding for accuracy checking and medicines optimisation, with wide variation, from full funding to zero funding.
- Employer/individual funding for the clinical pharmacy diploma programme at FECs and HEIs.
- Employer, individual and PhIF funding for NHS Leadership Academy programmes.
- Early career post-registration training via pilots from other providers (for example, CPPE).
- Employer educational infrastructure in terms of education and training pharmacy technician posts, educational supervision (facilitators) and internal training.

2.2 Recommendations for reform

In this section we have assumed that, once reformed IET programmes that encompass core skills are well established and delivered at scale, pharmacy technicians in the future will arrive at the start of this stage of their professional career with:

- Level 3 qualification; and
- a robust post-registration training experience, that includes accuracy checking status, possibly with additional medicines optimisation skills training, such as the ability to perform medicines reconciliation, competency in consultation skills and an appreciation of clinical governance, as well as the basics of digital literacy, research/audit and clinical informatics.

The recommendations set out below are based on the following principles:

- The NHS should actively support the development of pharmacy technicians beyond early career training towards higher levels of practice and advanced clinical pharmacy technician status, in all sectors.

- Professional development frameworks should be used to support post-registration practice. The framework and credentialing process for pharmacy technicians should be consistent with HEE frameworks for other professional groups who undertake clinical practice.
- HEE processes should enable pharmacy technicians to progress towards advanced practice with appropriate levels of clinical and educational supervision and access to training programmes, in all sectors.

The recommendations reflect the key issues outlined above and provide an overview of the early career post-registration skills that all pharmacy technicians will require in the future.

1. Work with partners to explore future opportunities for pharmacy technicians to practise in order to advance their education and training, enabling them to contribute to future service development and workforce capacity, within all HEE workforce plans.

2. Work with professional organisations to ensure entry into the profession requires the use of professional development frameworks and incorporates educational and clinical supervision for individuals on the development pathway.

3. Develop multiprofessional clinical syllabi, to include clinical pharmacy technician requirements, alongside other non-medical professions.

4. Following the introduction of the new IET qualification, work with employers and professional bodies to ensure that the legacy workforce and newly qualified pharmacy technicians complete a post-registration programme to attain competence in a range of key medicines optimisation activities.

Chapter 3
Initial education and training of pharmacists

3.1 Overview of existing training landscape

Background
The most common route to registration as a pharmacist in the UK is completion of a four-year MPharm degree (or one-year Overseas Pharmacists' Assessment Programme for non-EU trained pharmacists) followed by 52 weeks of supervised and assessed pre-registration training in employment and successful completion of the General Pharmaceutical Council's (GPhC) Registration Assessment.

There are variations to this route in England, including:

- The University of Bradford provide a five-year MPharm programme (often referred to as a 'sandwich course') during which trainees complete the 52 weeks of pre-registration employment training as two six-month blocks during their third and fifth years of study.

- A growing number of universities are developing five-year MPharm programmes, which incorporate pre-registration training. These programmes have the advantage for international students of removing the need to seek a Tier 2 visa to undertake pre-registration training upon graduation.

- A small number of universities offer a '2+2' undergraduate programme, where the first two years are completed at the overseas campus of the university and the final two years are completed at the home campus in the UK.

The GPhC has recently issued a national consultation on new initial education and training standards for pharmacists. This consultation will be HEE's opportunity to influence the future training of pharmacists. This section builds the case for our recommendations and contribution to this consultation.

3.1.1 Key features of undergraduate pharmacy education

- There are 31 universities (across the UK) that have GPhC accreditation to deliver a four-year MPharm degree (GPhC, 2018d). Of these, three are accredited to deliver integrated MPharm degrees (incorporating pre-registration training).

- The GPhC requires MPharm degrees to integrate science and practice and equip students with the theoretical knowledge, professional behaviours and clinical skills required to become a pharmacist.

- Ten standards are outlined by the GPhC that determine the content and quality of the initial education and training of pharmacists (GPhC, 2011).

- The entry requirements for a GPhC-accredited MPharm degree are set by the individual university.

- Universities may accept A-levels or equivalent qualifications, including qualifications gained outside of the UK.

3.1.2 Key features of pre-registration training for pharmacists in England

- It takes at least 52 weeks to reach the required level of professional competence.

- This may be completed in one training block as a postgraduate (currently the most common route) or arranged as two 26-week blocks, or one 52-week placement within the MPharm degree.

- Pre-registration trainee pharmacists are employed predominantly in either acute hospitals (NHS employers) or community pharmacies (NHS contractors), with initiatives promoting cross-sector training (including general practice) and a small number of joint places within the pharmaceutical industry (GSK, 2018).

- The numbers in training are determined by:
  - numbers of HEE commissions
    and
  - numbers of trainees determined by community pharmacy contractors (with access to the NHS England grant through the Community Pharmacy Contract framework).

  This results in around 2800 pre-registration trainee pharmacists being trained each year.

- Trainees are entitled to three attempts at the GPhC's registration assessment.

- The GPhC imposes limits on the time allowed to complete and pass pre-registration training following graduation. Usually, registration must be completed within eight years of starting study for the MPharm.

- The trainee's employer makes a declaration when they apply to the GPhC for approval to provide pre-registration pharmacist training. Commitments made include providing the necessary support and resources to meet the requirement of pre-registration training (GPhC, 2018g).

3.1.3 Pre-registration tutors

- Pre-registration trainee pharmacists are supervised by a GPhC-approved pre-registration tutor, who must be a pharmacist.

- The pre-registration tutor is responsible for reviewing their trainee's progress towards meeting GPhC defined performance standards. There are three formal appraisals over the year and a final one for 'signing off' the trainee as fit to

become a pharmacist at the end of their training year, as well as signing them as ready to proceed to the registration assessment.

- Tutors must meet all requirements of the GPhC pre-registration training tutor suitability policy. The fundamental requirements of this are that they must:
  - be a pharmacist in Part 1 of the GPhC register;
  - have been practising for at least three years in the sector of pharmacy in which they wish to tutor.

In addition, all tutors should have a clear understanding of their responsibilities and involvement in a supervisory role so that they can support their pre-registration trainee throughout their training.

GPhC *Guidance on tutoring for pre-registration pharmacist tutors* (GPhC, 2018a) and the *Pharmacist pre-registration. Tutor development resource* (GPhC, 2018e) are available to support the role.

3.1.4 Supplementary pre-registration pharmacist training programmes

Trainees may have access to supplementary pre-registration training, provided by the NHS, their community pharmacy employing organisation, or another provider.

- Regional NHS training programmes accessed by trainees primarily working in hospital settings are commissioned and provided by HEE at no cost to the trainee (there are examples whereby HEE acts as the education organiser and/or the commissioner of this training).

- There are examples of HEE-funded training programmes that use online learning environments.

- There are significant cost differences between the training programmes commissioned by HEE across the regions.

- Large multiple community pharmacy organisations generally provide (in-house) training programmes at no cost to their trainees.

- Community pharmacy contractors may arrange for their trainees to attend training programmes provided by private organisations, either funded by the employer or by the trainee themselves.

- A proportion of trainees within community pharmacy will not have access to a training programme and some of these trainees may fund their own training through private organisations.

- CPPE provides resources to support pre-registration trainees.

- The Royal Pharmaceutical Society (RPS), commercial organisations and higher educational institutions also provide additional self-funded support, including practice registration assessments, which can be accessed by all trainees.

- There is variation in some of the key areas of content and delivery of training programmes, including: teaching and learning methods; assessment strategies; and the level of patient, carer and public involvement in training.

3.1.5 Assessment of pre-registration pharmacist training

There are four main documents and frameworks that guide the assessment of pre-registration pharmacist training, which are:

- The standards for the initial education and training of pharmacists.
  These provide the outcomes for the initial five years of education and training of pharmacists, as defined by the GPhC. In practice these guide the delivery of undergraduate training delivered by universities and have minimal/variable impact on pre-registration training.

- The GPhC pre-registration performance standards.
  Trainees collect evidence to show they have met all 76 standards by the end of their training.

- The GPhC registration assessment framework (syllabus).
  Knowledge is tested in the registration assessment.

- The pre-registration pharmacist professional attributes framework
  This consists of nine attributes with behavioural indicators.

3.1.6 Current arrangements for pre-registration pharmacist training in England

HEE commissions training places across England from NHS hospital trusts; for some places there is an element of cross-sectoral training. Training posts will be funded between 75 percent and 100 percent of salary costs. The current salary for a pre-registration trainee pharmacist employed within the NHS is between £23,023 to £27,628, depending on their eligibility for the Agenda for Change High Cost Area Supplement.

- There are 789 commissioned places across England in 2018/19.

- HEE funds education and training to support commissioned training places. This includes the provision of regional training programmes or in-house delivery by HEE staff, including e-learning support.

- Recruitment to all training places is via the National Recruitment Scheme.

- The process is recognised as leading good practice across HEE for recruitment, in terms of equality, impact and diversity assessments.

- Providers of training places commit to complying with the HEE education quality framework and trainees complete an end of training survey, for example, the National Education and Training Survey (NETS).

- There is a supporting infrastructure for the delivery of training, for example, regional pre-registration advisory groups programme boards and tutor networks.

NHS England funds further pre-registration training places. A grant (Drug Tariff Part XIII) is payable to community pharmacy contractors who provide pre-registration training to pharmacy graduates. The current grant is £18,440 per annum.

- Community pharmacy contractors determine the salary that is paid to trainees, resulting in significant variation nationally.

- Recruitment may be via the National Recruitment Scheme, however this is not mandatory. Contractors can use their own recruitment processes and procedures.

- There is no limit to the number of pre-registration pharmacist grants that can be awarded. Any contractor can apply for one if they meet GPhC tutor suitability requirements and their premises is approved by the GPhC.

- Although declarations are made when an application is submitted to provide pre-registration pharmacist training, there is minimal, if any, independent regulation or quality assurance of pre-registration pharmacist training in the community pharmacy sector.

- Community pharmacy contractors who employ pre-registration pharmacist trainees via the National Recruitment Scheme commit to complying with the HEE education quality framework. HEE Regional teams have put in place a variety of approaches to support this, for example, community pharmacy quality champions.

- To date, only a very small number of trainees based in community pharmacy have received and completed the National Education and Training Survey.

3.1.7 Trainee and tutor experience of current pre-registration training provision

Surveys of tutors were carried out by the GPhC in 2014 and 2015 and the key findings were (GPhC, 2016a):

- Most responders were from multiple community pharmacy employers and the NHS hospital sector.

- Around three-quarters of tutors who responded reported having access to sufficient support from their employing organisation during the training year.

- Most tutors reported having access to a pre-registration pharmacist training programme (for their trainees) provided by the NHS, their community pharmacy employing organisation or another provider.

- Tutors who had access to a pre-registration pharmacist training programme (for their trainees) provided by the NHS, their community pharmacy employing

organisation, or another provider, were more likely to agree or strongly agree that as a tutor they had access to sufficient support.

- When comparing the findings of the tutor surveys with the ratings of quality provided by pre-registration trainee pharmacists who were also surveyed, there was a large gap between how trainees rated the quality of their training in comparison to the perceptions of tutors. Trainees perceived their training less favourably than tutors did.

- The widest gaps between tutor and trainee survey findings related to their perceived quality of educational supervision, perceived quality of the support provided, and perceived coverage of the GPhC registration assessment framework (syllabus).

In 2012/13, 2013/14 and 2014/15, the GPhC commissioned pre-registration trainee exit surveys. The key findings from these surveys were:

- Consistently, around 80 percent of trainees who responded were satisfied with their training.

- Satisfaction rates were higher among hospital trainees, compared to their community pharmacy counterparts.

- Satisfaction rates were higher in Scotland and Wales compared to England.

- Dissatisfied trainees were concentrated in England and particularly so in London.

- Common concerns among dissatisfied trainees were poor tutoring, a lack of supervision and lack of study time.

- The profile of unsuccessful candidates in the GPhC registration assessment and dissatisfied trainees identified through GPhC trainee surveys is similar.

Research has shown that there is significant variation in trainees' experiences within and across sectors, which influences their professional socialisation and readiness to enter practice. Hospital-based trainees receive support from a range of pharmacists and other healthcare professionals, overseen by a tutor, while community-based trainees often have access to and support from a much smaller team (Jee, Schafheutle and Noyce, 2017).

3.1.8 Trainee performance in the registration assessment

The GPhC have published the learning from the registration assessment in the period 2010 to 2018 (GPhC, 2018c). The key findings were:

- There is a marked difference in performance in the registration assessment by ethnicity. For some ethnic groups, pass ranges have been consistently in the 80-95 percent bracket, whereas for others the bracket is 50-69 percent. Performance of Black-African candidates tends to be low.

- Scottish and Welsh trained candidates outperform English ones consistently (in Scotland there is a selective, centrally funded, pre-registration training scheme covering commissioned training places in all sectors of practice; in Wales selection also predominates).

- Hospital-trained candidates out-performed community trained candidates throughout the period 2010-2018.

3.2 Developments in the initial education and training of pharmacists since 2011

3.2.1 Modernising Pharmacy Careers (MPC) Workstream 1

Significant work was undertaken in 2011, in collaboration with stakeholders, to identify the changes required to initial education and training in order to ensure those registering as pharmacists are better equipped for the diversity of clinical, patient-facing, cross-sector roles they will be required to undertake as they enter healthcare practice (Smith and Darracott, 2011).

The proposals for reforms in the Modernising Pharmacy Careers (MPC) workstream for the initial education and training of pharmacists were (Smith and Darracott, 2011):

- a single five-year period of teaching, learning and assessment leading to graduation and registration;

- that universities and employers should be jointly responsible for the delivery of a five-year integrated programme, including joint 'sign-off' of satisfactory completion of training;

- that all schools of pharmacy working with employers should adopt the principles of integration and assess the merit in the principle of a spiral curriculum. (In a spiral curriculum, topics, themes and subjects are revisited on a number of occasions throughout the course, with increasing levels of difficulty, and the major practice placements provide opportunities to be assessed in the workplace.)

- that the five-year MPharm programme should be eligible for at least 12 months' funding as a clinical subject, in addition to the existing funding as a science-based subject;

- that the current 12-month work-based placement should be divided into two major placement periods of six months each;

- the preferred option for dispersed practice placements being a six-month placement at the beginning of Year 4 and a six-month placement at the end of Year 5 of the five-year programme, after which students proceed directly into registered practice;

- a single application process for the major practice placement(s), with the full involvement of employers locally in the process of selection;

- that pharmacy should be integrated into local infrastructure established to manage quality in major practice placements;

- that a 'pharmacy dean' should be responsible for signing off satisfactory completion of assessments in work-based placements and should be accountable to the regulator for that function;

- that there should be an urgent review of the academic workforce, including opportunities for pharmacists to undertake PhD and postdoctoral research, with access to support grants specifically for pharmacists.

Since the work undertaken as part of MPC Workstream 1 a number of regional and national projects have been organised in an attempt to deliver improvements to the initial education and training of pharmacists, based on the proposals outlined above.

3.2.2 GP-based training (Pharmacy Integration Fund (PhIF))

In February 2015 the RPS and the Royal College of General Practitioners (RCGP) issued a joint statement (RPS, RCGB, 2015) expressing a desire for a closer working relationship between the professions, with particular focus on promoting the uptake of general practice-based pharmacists to ease the workforce pressures on general practice. This aligns to the ambitions of the *Five year forward view* (CQC; PHE; NHSI, 2014) and the *General practice forward view* (NHSE, 2016).

In response to this, pilots were commenced in which pre-registration trainees working in community pharmacy undertook an extended placement in a GP practice (Shamim and McEwen-Smith, 2015). These pilots aimed to provide an understanding of how these practices operate and therefore help to create a workforce with an enhanced understanding across healthcare interfaces.

Following these pilots the PhIF is supporting about 125 pre-registration training places in 2019/20 in both community and hospital pharmacy sectors, which will include an extended period working within GP practices. Additional funds are available for appropriate project support, including a national lead and four regional leads.

3.2.3 National recruitment scheme

In 2015, HEE held a series of task and finish groups to consider the core elements of pre-registration pharmacist training under the Pharmacy Education Reform programme. A key project was the development of a national pre-registration pharmacist recruitment scheme.

This scheme, managed via the ORIEL IT platform, was introduced in England and Wales in 2017. It was a mandatory scheme for all HEE-commissioned posts and optional for community pharmacy places funded by NHS England. A total of 2991 places were available through the scheme for pre-registration pharmacist training in 2018/19 and 2581 applications were received. All of the hospital places and 62 percent of community pharmacy places who opted into the scheme were filled via this process (HEE, 2018b).

The key features of the national recruitment scheme are:

- it uses a professional attributes framework (PAF) and national job description;

- it uses evidence-based selection methods (multiple mini interviews, situational judgement test and numeracy assessment). These methods are mapped to the PAF.

As demonstrated through its evaluation, this is a scheme with high levels of acceptability to both applicants and interviewers (HEE, 2018g).

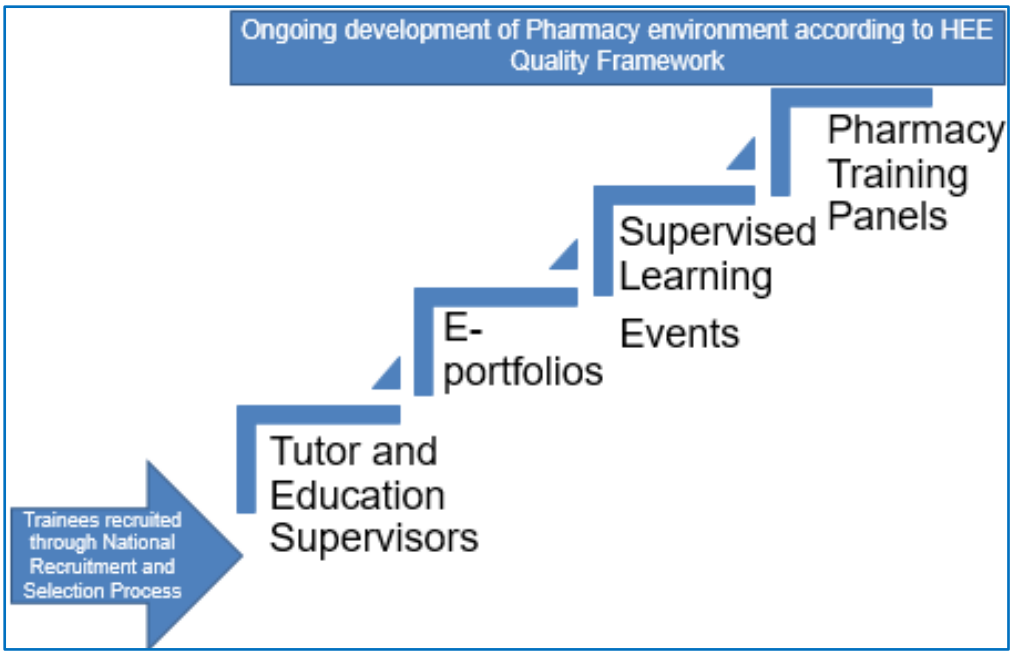
- HEE is continuing to work with community pharmacy representatives and employers to identify actions that will positively impact on application numbers and fill-rates for this sector. The impact of national recruitment on the hospital sector needs to be monitored too, due to concerns about retention.

- Evaluation is ongoing to gain a greater understanding of participation factors, the programme itself and the subsequent decision-making about the offers of training places, to identify the key influences and relevant interventions for better outcomes (HEE, 2018b).

3.2.4 HEE quality framework

Aligned to the HEE quality framework has been the vision for enhanced quality in the educational supervision and assessment of pre-registration pharmacist trainees. Projects have been initiated in key areas as outlined in Figure 1.

Figure 1: Ongoing development of pre-registration pharmacist training environment, in line with HEE quality framework



Tutor and education supervisor training and support
Pilots were delivered across England in 2016/17 and were the first step in building a link between the education supervisor expertise across HEE and addressing the tutor training development need identified for pharmacy tutors.

An evaluation of these pilots has been carried out and recommendations made for further developments in this area (HEE, 2018i). It is clear all education supervisors need initial and ongoing training.

Pharmacy training panels and e-portfolio
Pharmacist trainees have traditionally collated evidence for performance assessment through a paper-based portfolio, with the only people having access to this being the trainee and the tutor. The relatively recent availability of electronic portfolios (e-portfolios) provides an opportunity to improve the process of evidence collation and progress monitoring. Additionally, it enables education leads within the same organisation to monitor trainee progress and tutor expectations, thereby providing an additional level of quality management.

E-portfolios also allow independent assessment of trainee performance, through the use of competency review panels. These are recognised within other healthcare professions as necessary to ensure standardisation with respect to expectations for

performance assessment (Doll and Wright, 2017). In 2017/18 e-portfolios and pharmacy competency panels were tested nationally on a sample of pre-registration trainees and an evaluation report is available (Doll and Wright, 2017).

National Education and Training Survey (NETS)
Pilots have been undertaken to integrate pharmacy into HEE quality infrastructure. In 2017/18 a proportion of pharmacy trainees took part in the National Education and Training Survey. In 2018/19 all pre-registration pharmacist trainees will be invited to complete this survey.

3.2.5 Summary of achievements since MPC Workstream 1 in 2011

Some progress has been made as a result of the proposals made in MPC Workstream 1 and a summary of these are set out in Table 2 below.

Table 2: Summary of achievements since MPC Workstream 1

MPC Workstream 1 proposal	Current reality
Integrated MPharm.	Examples now exist, delivered by a small number of HEIs, but mainly designed and marketed to the international student market.
Joint responsibility for the delivery of a five-year integrated programme, including joint sign-off on completion of training.	No progress made. GPhC are about to consult on the changes.
Employer engagement with HEI to deliver spiral curriculum.	Although the GPhC standards for the initial education and training of pharmacists include the 52 weeks of pre-registration employer-based training, there are only isolated examples of employer engagement to deliver a spiral curriculum across the initial five years of pharmacist training.
HEIs to access 12 months of clinical funding.	No progress made in this area.
Two 26-week placements.	There is one example of a HEI who delivers the initial education and training of pharmacists by this model.
Single application process for major placements.	Significant process has been made in this area through the development of the national recruitment scheme.
Pharmacy part of local quality infrastructure.	Significant steps have been taken to integrate pharmacy into the HEE quality infrastructure.
Visits as part of the initial education and training to wider practice areas.	Good examples of cross-sector training are emerging.
Pharmacy dean accountable to the regulator, to sign off work-based assessments.	Although small scale work-based assessment pilots have been carried out, pharmacy dean sign off has not been widely implemented.
Access to clinical academic career funding	This is now available via the National Institute for Health Research.

3.2.6 Comparison with developments in Scotland

The NHS pre-registration pharmacist scheme (PRPS) was launched in 2006 by the Scottish Government. The scheme is rooted in a 2004 report on pre-registration training by the National Pharmaceutical Forum, which highlighted inconsistency in the quality of training provision in the pre-registration year as an area of concern, and recommended the involvement of NHS Education for Scotland (NES) in the management of pre-registration training. The purpose of the PRPS is to ensure that every pre-registration pharmacist commissioned by the NHS in Scotland receives support and a high-quality training opportunity and experience, regardless of practice setting.

Before the introduction of the PRPS, NES Pharmacy historically co-ordinated and organised the recruitment of pre-registration pharmacists for the hospital sector within Scotland. NES Pharmacy supported pre-registration training in all sectors of practice, through the provision of direct learning events and distance learning resources, and facilitated cross-sector experience for pre-registration trainees as part of their training programme.

With the introduction of the PRPS, the NES Pharmacy remit for pre-registration pharmacists expanded towards the development and management of an educational infrastructure for all pre-registration pharmacists and their tutors in Scotland. The main components of the scheme are: a centralised recruitment process, a standardised training programme and quality assurance processes. The places in the scheme are commissioned by NES and currently the number of graduates from Scottish Schools of Pharmacy with MPharm degrees exceed the places available. Those who are unable to secure a place seek alternative training schemes offering pre-registration in Scotland (which are separate from NES) or pre-registration training in the other home countries.

3.3 Next steps and proposals for further reform

The proposals put forward here as a result of this review of the initial education and training of pharmacists include recognising the elements of MPC Workstream 1, which remain appropriate. The proposals also identify where further developments and adjustments are needed to reflect wider changes taking place across the NHS and within education practice and policy.

Recommendations for reform

The recommendations set out below are evidence-based, reflecting the key issues outlined above and the critical factors explained in the case for change.

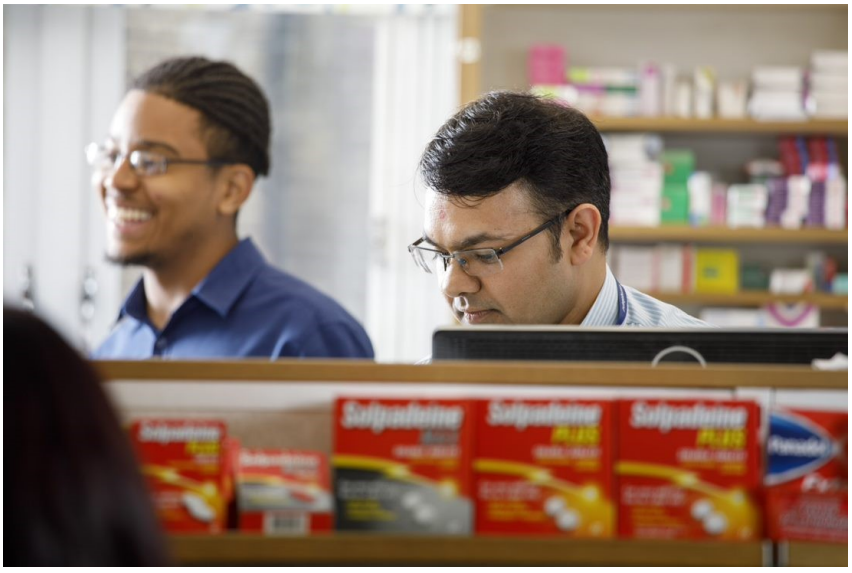
1. Work with the GPhC to explore future options to develop and test integrated models of initial education and training (IET) for pharmacists, following the outcome of the GPhC's consultation. Review HEE funded pre-registration pharmacist training programmes as part of this work.

2. Work with NHS England and NHS Improvement to review the commissioning arrangements for pre-registration pharmacists and develop a reformed funding model that is responsive to regulatory reform and service needs.

3. Work with employers, education providers, professional and regulatory bodies to ensure trainee pharmacists are clinically competent at the point of registration and beyond and are equipped with the appropriate soft and hard skills to meet the objectives of the *Long term plan* and the NHS.

4. Work with employers, education providers, professional and regulatory bodies to enable the HEE quality framework to be applied across pharmacy practice settings, providing a clinical learning environment (across professions in relation to medicines).

5. Continue to roll out robust quality measures including:
   a. national recruitment with Oriel;
   b. improving the quality of education supervision;
   c. improving the rigour by which trainees are assessed throughout their training programme, ie, formative versus summative, including collaborative working with the regulator.



Chapter 4
Early career (foundation) pharmacist training

4.1 Overview of existing training landscape

4.1.1 Background

There has never been a defined programme for national foundation (early career) pharmacist training in England. Training pathways vary both geographically and across sectors (MEE, 2012) and there is no clearly defined end point. Many pharmacists have no formal foundation training; this is particularly the case in community pharmacy (Magola, 2018). Moreover, foundation training is generally unavailable in any sector of practice outside of hospital or community pharmacy, such as general practice and care homes, mainly due to the lack of an organised training infrastructure (HEE, 2018k).

In the 1990s, a model for foundation training in hospital pharmacy was established, with almost all hospital pharmacists completing a formal higher education institution qualification (often known as 'the Diploma'). While this has been the bedrock of post-registration training in hospital pharmacy and has been previously linked to career progression, there is a realisation this model has significant limitations (RPS, 2015; Mills et al, 2008) and is not sustainable due to the overlap with undergraduate training and the limitations to show application to practice, which often does not reflect the complexity of current practice. Also, it does not feed into experiential learning and preparation for advance practice, as it creates a culture of spoon-feeding (MEE, 2012). Because of these limitations it does not provide the outcomes needed by the wider NHS.

An early attempt at developing post-registration pharmacist training was the focus of Modernising Pharmacy Careers (MPC) Workstream 2 (MEE, 2012). However, there has been limited progress in the implementation of its recommendations. Workstream 1 also focused on identifying how to deliver an integrated five-year undergraduate programme, but national government policy at the time prevented further implementation of this approach (Smith and Darracott, 2011).

Since 2011 however, there has been some development in the MPharm programme, as well as work to reform the pre-registration pharmacist recruitment and experience, alongside significant evolution in pharmacist roles in general practice (Mann et al, 2018; Bush et al, 2017), care homes (PJ, 2018a) and integrated urgent care settings (Whettam, 2018). The profession and pharmacy employers are seeing an unprecedented increased demand for clinical pharmacy provision (NHS England, 2018a).

This increased demand for pharmacists is clearly articulated within the *Next steps on the five year forward view* document (NHS England, 2017) with more detail provided in the NHS *Long term plan* (NHS UK, 2019). Chapter 7 of the *Five year forward view*

sets out how the NHS should aim to get better value out of the medicines prescribed for patients. Optimising medicines for patients is a key enabler for achieving greater efficiency and making real savings, achieved through deprescribing, reducing waste and managing polypharmacy, as well as optimising treatment. The intention is that patients are prescribed the medicines they need and want, in order to achieve the best health outcomes for all. Clinical pharmacists are seen as a key enabler to delivering medicines optimisation (NHS England, 2018a).

4.1.2 Current foundation pharmacist workforce numbers

The GPhC registers 2600 pharmacists nationally each year (the range has been 2500 to 2900 over the past five years). Of these registered pharmacists about 80 percent will practise in England in their early career years, ie, 2100 per year. Approximately 71 percent of the pharmacist workforce work in the community sector, 21 percent in hospitals, seven percent in primary care, three percent in academia, four percent in industry, and the remainder (four percent) work in areas, such as prison or the armed forces (this adds up to over 100 percent due to some portfolio working).

The current landscape of foundation training in England is described in Table 3 (data accessed on file from pharmacy deans).There are some small scale pilots in some parts of the country, with CPPE offering some support for one year to very small independent pharmacies *(see Section 4.1.5 below, regarding Pharmacy Integration Fund (PhIF) workforce programmes*). There are several models that are currently being piloted in London by the London and the South East HEE Team and nationally by CPPE. HEE can learn from these pilots, and reports have been requested. It can be extrapolated that about a third of pharmacists are in some form of foundation training (funded through a range of routes).

Table 3: Current landscape of foundation training in England, including pilots

Sector	Current 'formal' model	Current numbers	Initiatives/pilots	Numbers
Hospital, including mental health	HEI qualification, funding variable	600 to 700	South-east London pilot (others planned)	12
Community	None, other than CPD/revalidation	2000 to 2300	CPPE pilot and south-east London pilot	60 to 80
General practice (CCG)	None	0	NHS scheme filled this space	300 to 400 (but not the first three years in practice)
Care homes	Not possible	0	Could expect some in new scheme to fill	Unknown at this stage
IUC	Not possible	0	Not appropriate	0

4.1.3 Current funding

There is a mixed model of funding for the existing foundation training support for pharmacists across England. There is variation in the approach to foundation training, as well as regional and sectoral differences and inequality. Funding falls broadly under these arrangements:

- HEE local office funding for clinical pharmacy diploma programmes at local HEIs, with wide variation from full funding to zero funding.
- Employer funding for clinical pharmacy diplomas programmes at local HEIs.
- Individual funding for clinical pharmacy diplomas programmes at HEIs.
- A mix of employer and individual funding.
- Foundation training via pilots from other providers (for example, CPPE).
- Employer educational infrastructure in terms of education and training pharmacist posts, educational supervision (foundation tutors) and internal training.

These figures do not reflect the infrastructure costs, training costs, travel expenses and time lost to service due to pharmacists being away from service delivery.

Independent prescribing
In some areas of England the integration of independent prescribing training is undertaken at Year 3 post-registration. Routinely this is supported by workforce transformation or upskilling funding routes. The GPhC is planning to make changes to the independent prescribing training standards and there is an opportunity to incorporate these into any future model of foundation training.

Other current costs of upskilling and redeployment training (including the Pharmacy Integration Fund)
The programmes of training commissioned by the Pharmacy Integration Fund (PhIF) and the *General practice forward view* for general practice and care homes, have to some extent provided clinical pharmacy training for many foundation stage community pharmacists (NHS England, 2018c). Learning from these programmes will be helpful, especially in terms of dealing with large, geographically spread cohorts (CPPE, 2018a and 2018b; Bradley, 2017; Mann et al, 2018). But also challenges have been identified, including lack of education infrastructure, understanding what tasks a foundation pharmacist can undertake, and the fact that salary support appears to be essential in general practice. These programmes have invested £4500 to £7500 in training an individual pharmacist (but not salary support) and contain many of the components that could be included in a national foundation training approach. It is reasonable to suggest that if we fail to deliver a new national foundation training programme, then the NHS should expect further large scale investments, such as those developed under the PhIF. It is also reasonable to suggest that failing to deliver a national foundation training programme would result in a failure to meet the policy imperatives due to an ongoing clinical pharmacy workforce shortage.

4.2 The case for change

We are experiencing a period of rapid and seismic change in working locations of the pharmacists.

There is a growing expectation that England's 7500 GP practices should have access to patient-facing clinical pharmacists (NHS England, 2016). Also that clinical pharmacy needs to be deployed across England's 12,800 residential care and 4,700 nursing homes for adults and older people comprising 460,000 residential care home and nursing home beds (Care Quality Commission, 2017). In addition, there are new patient-facing roles for pharmacists in emergency departments, integrated urgent care centres (via the telephone) and domiciliary care, and development in advanced clinical practitioner and consultant pharmacist roles. We also need to be mindful of the growing role pharmacists will play with advancing technology, advanced therapy medicinal products (ATMPs) and personalised medicine (genomics).

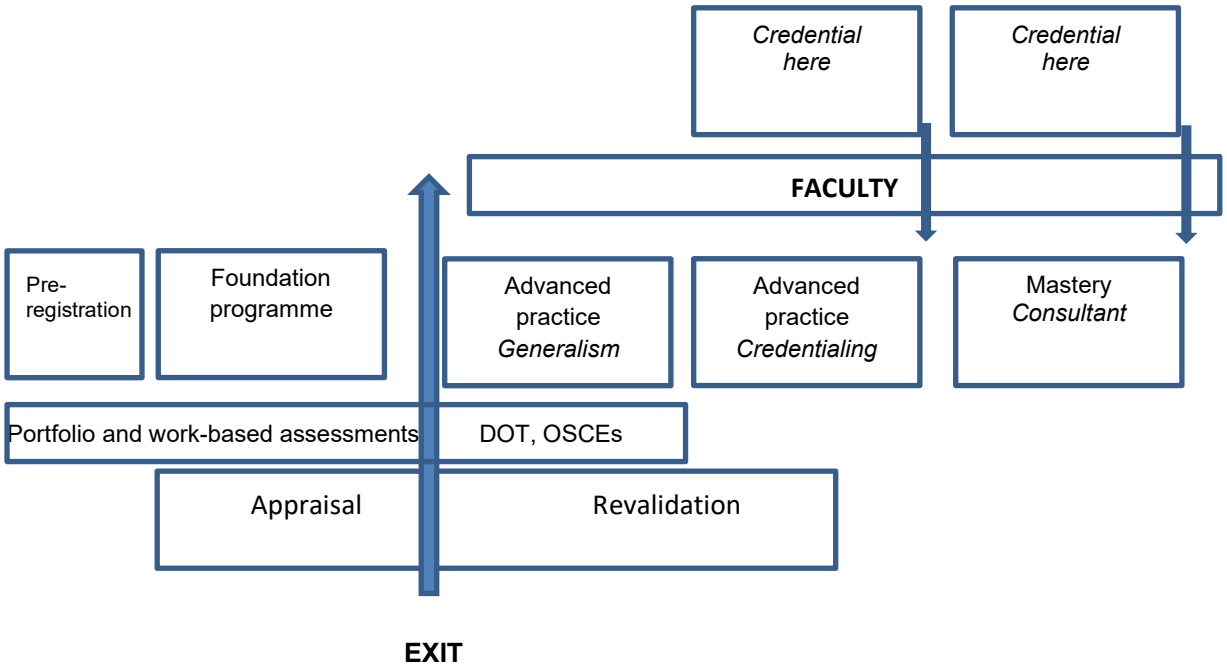
Like other professions, pharmacy is seeing changing demographics of its graduates, with differing approaches to working patterns being demonstrated by the current generation (ie, millennials).

These developments in how the profession will be deployed in the coming years are driving the thinking about the need for a new career framework. The Royal Pharmaceutical Society (RPS) has convened a national task and finish group, chaired by Professor Peter Kopelman, to look at the sustainability of pharmacy careers, with Phase 1 focusing on foundation training (PJ, 2018c).

HEE pharmacy deans are a key part of this task and finish group, alongside colleagues in NHS education structures across the UK. A set of recommendations have been proposed and sent to each of the Chief Pharmaceutical Officers (CPhOs) across the UK. The recommendations include setting up national governance structures with key stakeholders to oversee postgraduate pharmacy training. The

CPhOs have responded positively to these recommendations, with a range of comments to the RPS. Figure 2 sets out one suggested model for this career framework.

Figure 2: Proposed career structure results from the RPS task and finish group



Source: Adapted from PJ, 2018c

4.2.1 Why do we need a national and fresh approach to foundation training?

As outlined above, there is a need to prepare the pharmacy workforce to be able to work across a broad range of settings. The pharmacy workforce needs to be fit for purpose as confident, flexible and competent practitioners, with a set of enhanced skills, including the ability to prescribe. This aligns to the NHS *Long term plan* (NHS Improvement, 2018a; NHS UK, 2019) and HEE national workforce strategy (HEE, 2017c).

Implementing a national approach to foundation training would avoid the need for investment heavy interventions, such as the PhIF programmes for GP practice and care home pharmacists. But it is recognised the education infrastructure is very limited in some sectors.

The workforce consultation survey responses from a wide range of pharmacy organisations received an overwhelming response for a national foundation training approach (HEE, 2017c).

4.2.2 The case for change: the NHS perspective

The evidence we have referenced below assesses the current variable approach to foundation training and identifies its failure to:

- **meet demand:** current models do not and will not meet the demand for a sustainable clinical pharmacy workforce across all existing and emerging sectors (NHS England, 2016);
- **produce clinical pharmacists for future practice:** pharmacists now practising very different to traditional roles, they need new skills such as enhanced consultation skills, diagnostics, clinical examination, using data and digital literacy (SPS, 2018b; Hughes et al, 2017);
- **meet changing work locations and practices:** it is recognised that current post-registration training has not kept pace with the changes in work locations and practices. There is an appetite to develop practitioners who are able to manage complex clinical cases in multiple settings (Baqir et al, 2018; Rathbone et al, 2018).
- **train sufficient numbers of pharmacists, thereby requiring large-scale interventions, such as the PhIF:** this type of intervention means we are training individuals who are already in higher graded (salary) posts, making the education intervention more costly (NHS England, 2018c).

4.2.3 The case for change – the educational perspective

The evidence we have referenced below assesses the current variable approach to foundation training and identifies its failure to:

- **have national agreed standards and outcomes to assure patient safety** (MEE, 2012);
- **meet changing work locations and practices:** current post-registration training has not kept pace with the changes to work locations and practices. There is a need to develop practitioners who are able to manage complex clinical cases in multiple settings (Bradley et al, 2018; Mann et al, 2018, Rathbone et al, 2018).
- **keep up with changes in the MPharm, or to join up career development stages at pre-registration and post-foundation stage** (MEE, 2012);
- **provide the key features of high-quality training for all:** the majority of pharmacists in their early careers do not have access to clinical or education supervision (Magola, Willis and Schafheutle, 2018). Also they do not regularly use a portfolio to track their development, nor undertake robust assessment to understand their learning and development needs.
- **adequately resource training for significant numbers of clinical pharmacists:** there is no nationally agreed model of funding, resulting in huge variation in the investment from HEE, employers and individual pharmacists;
- **drive vocational learning** (Wright and Morgan, 2011; Hawkins, Watson and Newsom, 2018);
- **facilitate multidisciplinary learning and training:** current models do not facilitate or drive multidisciplinary learning, and are inflexible to enable this;

- **deploy appropriate quality control, quality management and quality assurance:** there is very limited oversight in terms of quality across foundation training for pharmacists in England (with the exception of internal processes operated by the relevant higher education institutions and by HEE KSS) (Wright and Morgan, 2011).

4.3 The future landscape - outcomes and principles

Any national vocational foundation pharmacist training would need to deliver **resilient, accountable, autonomous, patient-centred, prescribing pharmacists**. This training programme could build on the GPhC's *Initial education and training standards for pharmacists* and *pre-registration performance standards*, and begin a direction of travel in terms of career development to practising at a post-foundation and advanced clinical practitioner (ACP) level. This will be informed by HEE / RPS co-commissioned work on foundation pharmacist role analysis.

From the evidence presented above, we can estimate that we would need to create a foundation training programme in England to manage approximately 4200 foundation pharmacist trainees over two years (duration to be determined), with the ability to flex the intake to some extent. Moreover, ensuring the foundation programme provided experience in all sectors would mean, in turn, that pharmacy professionals have the skills necessary to work in all sectors of practice.

4.3.1 Proposed principles for vocational foundation pharmacist training

Learning from colleagues in medicine (http://www.foundationprogramme.nhs.uk/) (Shape of Training, 2013; COPMeD, 2017) and dentistry (https://heeoe.hee.nhs.uk/Dental_Foundation_Training), it is proposed that a national approach to vocational foundation pharmacist training could be built on the following principles**:**

- **Principle 1:** a national training programme aligned to a national curriculum (ideally UK), with a career framework, including detailed syllabus, as well as an assessment strategy and a national certificate of completion. The programme would be underpinned by appropriate quality assurance, management and control processes, informed by the experience gained from pilots, as well as lessons learned from medicine and dentistry.
- **Principle 2**: a programme based on experiential learning, with a common approach to assessment. The learning would be provided through a range of platforms and providers, promoting and including multi-professional learning. It would also be supported by robust clinical (practice) and educational supervision.
- **Principle 3:** a programme supported by an efficient and flexible quality assured educational infrastructure, appropriately deployed at national, regional and local levels to include regional/local leadership, e-portfolio, trainee tracking, robust clinical and educational supervision, with trainees requiring additional support (TRAS) systems.

- **Principle 4:** a programme that prepares pharmacists to work across patient-facing areas, including new areas developed through the PhIF and the NHS *Long term plan*, such as general practice, integrated urgent care and care homes.
- **Principle 5:** a programme that is supported and endorsed by early career pharmacists, employers, commissioners and professional bodies.
- **Principle 6:** a programme that is appropriately funded at national, regional, local and individual levels, which provides a reasonable balance of funding from education commissioners, employers and the individual.

4.3.2 Recommendations for reform

The recommendations set out below are evidence-based, reflecting the key issues outlined above and the critical factors explained in the case for change.

1. Work with employers, education providers, professional and regulatory bodies to develop and design a national vocational foundation training programme for pharmacists. This would initially be based on the principles set out in the body of this review, will build on the GPhC consultation and review of initial education and training, and be phased accordingly.

2. Create an England-wide working group to develop an implementation plan for piloting and testing the national vocational foundation training programme for pharmacists. Ensure close working with UK health education colleagues to ensure UK alignment.

3. Work with NHS England and NHS Improvement to create a sustainable funding model for foundation pharmacist training.

Chapter 5
Post-foundation and advanced clinical practice

5.1 Overview of existing training landscape

5.1.1 Defining the current landscape

The terms ‘advanced’, ‘advanced practice’, ‘advanced clinical pharmacist’ and ‘advanced clinical practice’ are used widely in the provision of clinical pharmacy services, although the terms were and are often poorly defined and subject to a large degree of variation in how they are interpreted within pharmacy. Recent work in HEE (described below) has started to provide an evidence base and clarity for pharmacy practice (Aiello et al, 2017; Wright et al, 2018; Hughes et al, 2017), including the development in 2017 of a national advanced clinical practice (ACP) framework by HEE and the significant amount of work that has happened since to give definition and structure to the ACP title and role (HEE, 2017d).

Advanced clinical practice (ACP) is delivered by experienced, registered health and care practitioners. It is a level of practice characterised by a high degree of autonomy and complex decision making. This is underpinned by a master’s level qualification, or equivalent, that encompasses the four pillars: clinical practice; leadership and management; education; and research, with demonstration of core capabilities and area-specific clinical competence (HEE, 2017d). Advanced clinical practice embodies the ability to manage clinical care in partnership with individuals, families and carers. It includes the analysis and synthesis of complex problems across a range of settings, enabling innovative solutions to enhance people’s experience and improve outcomes.

Using the Dreyfus model of post-foundation practice would be to include the definitions of ‘proficiency’ through to ‘mastery’ (Dreyfus and Dreyfus, 1980). It would therefore be expected that all pharmacists should be practising within this range for most of their careers.

However, the current understanding of post-foundation practice for pharmacists is to view it as a spectrum, from the early post-foundation years, extending through to consultant pharmacist status. The ACP role sits within this, though for many individual practitioners there is some overlap between the advanced clinical practice role, with what is characterised as post-foundation in pharmacy.

Post-foundation practice for pharmacists is characterised by extensive knowledge and skills and the ability to manage patients with complex pharmaceutical needs in either a specialist or generalist field. At present, the level of autonomy varies significantly, with those in the first few years post foundation often working closely with the multidisciplinary team, providing expert advice but having a supporting role in the implementation of treatment plans. More experienced post-foundation pharmacists, who are often clinical experts in their area of practice, will generally

have increased autonomy but still work with the multidisciplinary team to implement treatment plans. ACP pharmacists, on the other hand, work with the highest level of autonomy, with additional skills in the assessment and diagnosis of patients; they will synthesise, implement and monitor a treatment plan.

ACP pharmacists work in patient-facing roles only. However, some pharmacists practice at an 'advanced' level in other areas of pharmacy, where their expertise is used to improve patient care indirectly.

5.1.2 The route to advanced clinical practice

Health Education England has developed a common definition of 'advanced clinical practice', with an accompanying framework, applicable to all NHS healthcare professionals occupying advanced clinical practitioner (ACP) roles, including pharmacists (HEE, 2017d). The framework draws on and consolidates existing frameworks of advanced clinical practice from across the UK and provides current and future healthcare professionals working at advanced clinical practice level with guidance and principles that they should follow throughout their professional lives.

The framework comprises four pillars of practice, as outlined in Figure 3 below.

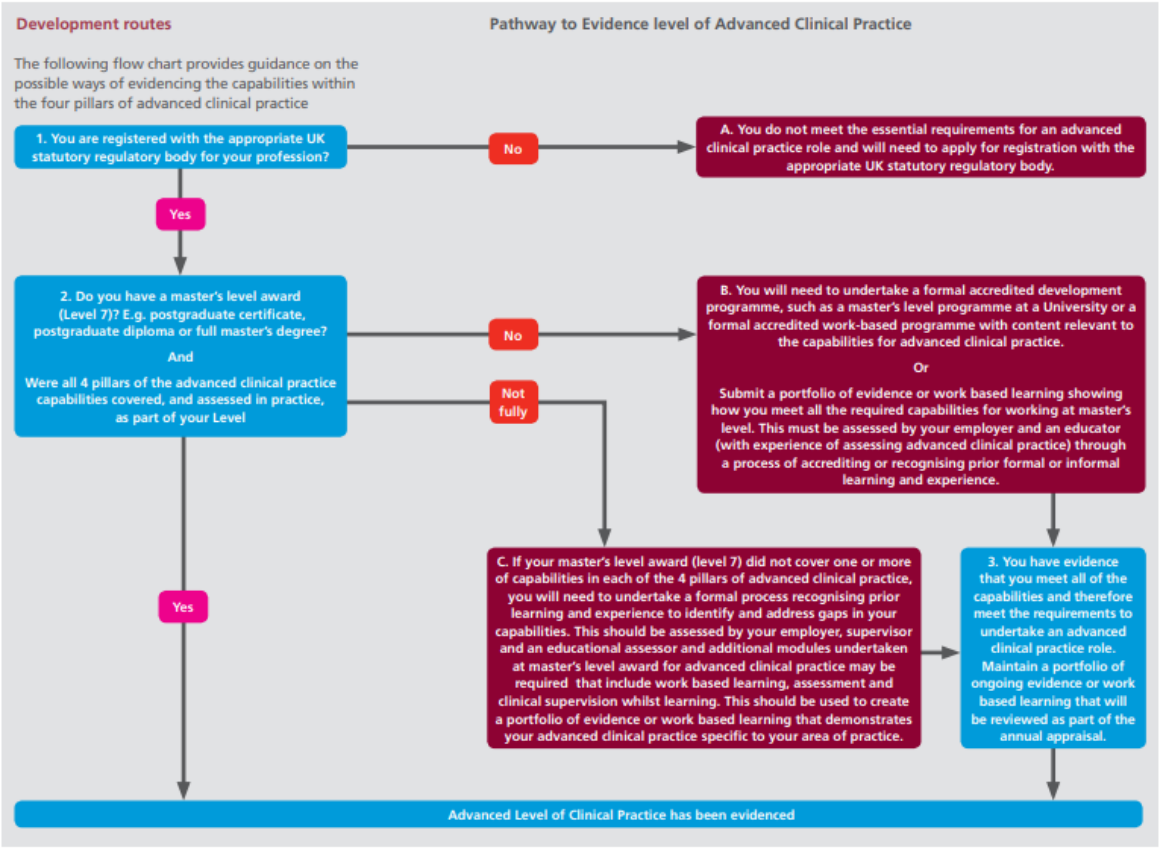
Figure 3: The four pillars of practice

Source: HEE, 2017d

This framework will facilitate transformation of the healthcare workforce and support the delivery of excellent healthcare for the population, by ensuring that the workforce of today and tomorrow has the right numbers, skills, values and behaviours, at the right time and in the right place.

Figure 4 below summarises the HEE pathway to advanced clinical practice.

Figure 4: Health Education England pathway to advanced clinical practice



Source: HEE, 2017d

The HEE framework provides a route, based on prior education and learning, for practitioners to be able to progress to ACP status, without completing a full masters level degree or higher level apprenticeship.

While many pharmacists undertake CPD or more formal post-foundation education and training, achieving the formal status of 'advanced clinical practitioner' (ACP) requires a more formal process.

The HEE ACP Steering Group is working to develop a structure and the necessary processes to manage this approach. Once these are developed, pharmacists (who, since 2000, qualify with a Masters level degree) should be able to work towards ACP status without undertaking a second full Masters qualification.

These aspirations align with those of the pharmacy profession and the HEE ACP framework demonstrates a degree of overlap with the Royal Pharmaceutical Society (RPS) advanced pharmacy framework (RPS Faculty in partnership with CoDEG, 2013).

To date however, the RPS Faculty of Advanced Pharmacy Practice and its associated professional development frameworks have not attracted the engagement with pharmacists at scale; one factor that may be important here is that the RPS framework is not currently linked to career progression. Other factors include the cost associated with undertaking the credentialing process and lack of recognition by employers.

5.1.3 Overview of existing training landscape

Currently, pharmacists wishing to progress through to advanced levels of practice access supporting education and training in several ways. Table 4 below outlines the various drivers that lead individual pharmacists to develop beyond foundation, as well as some of the typical approaches.

Table 4: Routes for pharmacists to develop through to advanced practice

Driver	Typical approaches	Comment
CPD, GPhC revalidation	As determined by regulator. Records of continuing education, reflection, peer review.	Is focused on assuring base level skills against requirements for registration.
Employer lead, service need – accreditation	Additional learning modules, eg, clinical examination skills. CPD modules delivered by HEIs. ACP qualification. CPPE programmes in support of the delivery of advanced services in community pharmacy, but these may not be advanced practice.	Generally not at scale (apart from community pharmacy advanced services training). Locally driven. Some use of nationally recognised frameworks, eg, Royal College of Emergency Medicine ACP.
Individual learning need analysis **Appraisal** **Professional and career aspiration**	Professional frameworks. RPS advanced pharmacy framework. UKCPA	Individually driven. Not at scale. Not meeting strategic needs at scale
National Pharmacy Integration Fund projects – full programmes	HEE commissioned programmes for clinical pharmacy training in care homes, general practice and integrated urgent care.	National scale Focus on meeting role specification in particular care settings. Overlap between programmes.

		Mixture of foundation and advanced level.
National Pharmacy Integration Fund projects - modules	HEE commissioned programmes for clinical pharmacy training, including postgraduate modules, and the Mary Seacole Leadership programme.	National scale. Allows some tailoring for local need. Mixture of foundation and advanced level.

Apart from the minority of pharmacists who have joined the RPS Faculty and have submitted, or are developing, portfolios of evidence for membership, much of the post-foundation level training outlined in Table 4 above is unstructured and is not necessarily building to a consistent or pre-determined outcome.

Some pharmacists working in emergency departments and urgent care centres have joined, or are required to join the Royal College of Emergency Medicine, in order to be considered for ACP roles in urgent and emergency care.

Significant developments include the Pharmacy Integration Funded (PhIF) projects, which cover a range of clinical, operational, managerial and leadership areas. Many of the elements covered by the PhIF funded programmes are relevant to the RPS advanced pharmacy and the HEE ACP frameworks.

5.1.4 Current workforce numbers

There are 55,000 pharmacists on the GPhC register, many of which are in England. CPPE has 44,000 pharmacists registered with them as learners.

Assuming that many pharmacists over the age of 30 would be practising at 'post-foundation' level, then some 80 percent of the register (35,000 pharmacists) (GPhC, 2014) would be working at some level of advanced practice, although it is difficult to describe this situation accurately when judged against the four pillars of advanced clinical practice.

Many post-foundation pharmacists would make a case that they are practising at an 'advanced level', even though this may not be specifically described against a recognised definition of advanced practice, and they may not have the relevant qualifications or credentials. Post-foundation pharmacists may be practising at an advanced clinical pharmacy level but may have specific gaps in evidencing the leadership and management, education and research pillars of ACP.

Many pharmacists undertake a range of post-foundation training.

- Data from CPPE indicate that thousands of pharmacists have completed programmes to support additional services, for example, consultation skills, emergency contraception supply, immunisation and vaccination (CPPE, 2018c).
- There are 4500 pharmacists on the GPhC register that are annotated as independent prescribers (GPhC, 2016b).
- HEE's own data on PhIF projects show hundreds of pharmacists have engaged with GP, care home and integrated urgent care programmes.

- Many hundreds of pharmacists in the acute hospital sector have completed post-graduate clinical pharmacy diplomas.
- More than 500 pharmacists have completed various levels of a specialist mental health clinical pharmacy programme over the past ten years (University of Aston, 2018).

5.1.5 Current finances and funding

The current finances and funding situation is difficult to describe with much certainty for several reasons:

- Most funding, either for full ACP qualifications or specific Level 7 modules, is deployed either at local office or regional level.
- Most funding is deployed for multiprofessional access and not specifically targeted at pharmacists.
- There is currently no central database of ACPs or an electronic staff record (ESR) code.

Table 5 below summarises the way that HEE funding is currently supporting pharmacists to develop towards ACP in 2018/19.

Table 5: Regional funding routes to ACP

Region	Full ACP qualifications
North	NHS trusts, CCGs and GP practices can bid through a regional process, across professions for ACP course funding. North is looking to develop some local staffing to support pharmacy to engage with this agenda.
Midlands and East	NHS trusts can bid through a regional process, across professions for ACP course funding.
London and KSS	In KSS ACP is funded through a central multiprofessional route. Not all applications are accepted for funding as there is more demand than funding available. In addition, this region has funded ACPs in urgent care centres as part of our pilot in that area, ie, six sites and 18 pharmacists. London –There is now also ringfenced multiprofessional funding for ACPs, which includes pharmacists in London. There was some underspend in the prescribing training funds for 2017/18, which funded ten ACP places. This year HEE is signposting and trusts are making their own arrangements.
South (Thames Valley, Wessex and SW)	There is a mixed picture across local offices. There is some commissioning and funding of credit-bearing Level 7 modules.

	Two pharmacists working in mental health are working towards the ACP qualification. There is a pilot scheme to pump-prime developments, by funding Level 7 clinical examination skills, which is proving popular.

5.2 The case for change

Achieving greater consistency and assurance about pharmacists working on the spectrum between post-foundation level and ACP will require careful consideration, in order to meet the training needs of a varied and heterogenous cohort of pharmacists. Here we set out some of the challenges and factors that should be considered.

5.2.1 Key issues, challenges and factors

Is post-foundation practice and ACP the 'career role' for all pharmacists?
Most pharmacists operate at what could be defined as 'post-foundation' or 'advanced' level after a period of experience and, for many, additional CPD, education and training.

At present the formal ACP credential (ie, having a master's qualification in ACP) is seen as a specialist and uncommon role for pharmacists. Also, it is poorly defined outside of general practice and urgent care. However, many more pharmacists are undertaking formal studies at Level 7 that, as the national work on credentialing continues, will put them on the track to achieving ACP status.

The balance between the numbers of pharmacists who are practising at a highly competent post-foundation level and those practising as ACPs will shift as roles develop and are more widely accepted, but not all pharmacists will wish, or be required to, reach and practise at ACP level. However, as evidenced above, in order to meet the requirements of the patient population, the NHS will need to develop many more pharmacist ACPs.

More work is required to consider how many pharmacists working at a highly competent post-foundation practice and an advanced clinical practitioner level are needed (this will require careful definition of the two terms). In reality this will be a dynamic picture that will develop and change in the coming years and may need to be developed against a 'model' or typical health community/sustainability and transformation plan (STP) area and in the context of multiprofessional workforce modelling, alongside the medical, nursing and allied healthcare professional workforce.

Do we need a separate definition of ACP for pharmacists?
Some may argue that pharmacists should have a different definition of ACP. However, this would be unhelpful in a number of ways. As pharmacists work more frequently in multidisciplinary teams, their levels of practice, as defined by the use of the term 'ACP', need to be consistent with other professions. Furthermore, patients

and their carers need to be able to have consistent and clear expectations of what professionals operating at an ACP level can provide for them. In that respect, having a different definition of ACP for pharmacists would be inconsistent with HEE policy, which is primarily to create a common, multiprofessional framework that supports patients, professionals and employers.

Will the move towards ACP homogenise the professions?
There is a likelihood that as pharmacists and other healthcare professionals gain ACP status, they will start to be used in more generic roles. This may prove to be unpopular with the healthcare professions. This risk has been recognised by the HEE ACP Steering Group, who are trying to ensure that the development of ACP results in the creation of broadskilled clinicians who, while achieving the ACP status, remain experts in their field of clinical practice as, for example, pharmacists, radiographers, physiotherapists, etc.

Is the pharmacy profession ready to move in this direction?
(In some of the work cited below, the term 'advanced' is used in a more informal manner to described practice developed post-foundation and is not intended to be equivalent to the HEE definition of ACP.)

There are indications that where opportunities have arisen to undertake either full qualifications that lead to ACP status or additional, individual modules that put people on the track towards ACP, they are taken up. Although numbers are relatively low and further work is required to understand the impact on practice.

The professional pharmacy bodies are enthusiastic:

- The International Pharmaceutical Federation (FIP) (FIP, 2015) has published a major report into advanced and specialist pharmacy practice. Among its conclusions and recommendations is the following statement indicating that the development, through professional frameworks and credentialing is increasingly being globally accepted.

  'The global trend is for pharmacy to continue to become a more clinical, patient-facing profession, with enhanced responsibilities and accountabilities for pharmaceutical care in clinical environments; hence, clear pathways for workforce development, coupled with professional recognition and credentialing of practitioners, becomes an important consideration.'

- The RPS also recognises the need to develop advanced practice and has driven the work to establish a Faculty of Advanced Pharmacy Practice and an associated framework. HEE's view is that this framework would now benefit from co-development.

What role, if any, does HEE have in overseeing the definitions and credentialing of post-foundation practice and advanced clinical practitioner pharmacists?
It seems essential that there should be a consistency between those responsible for securing a workforce that has the necessary skills to meet the needs of patients and the public, and the profession itself, in how levels and standards of practice are determined. Employers and commissioners must be satisfied that a system is in place to assure that levels of competency are established. In this regard HEE has a crucial role to play, alongside regulators, professional bodies, the Department of Health and NHS England.

5.2.2 A global perspective

A report published in 2015 by FIP surveyed 48 countries and territories worldwide to obtain information concerning specialisation and advanced practice policy and implementation at country level (FIP, 2015).

Both terms were described within the context of the survey, in order to assist with responses. Specialisation was taken to mean advanced with narrow scope; advanced practice was taken to mean overt advanced (beyond foundation) with broad scope of practice.

The survey obtained 48 country and territory level responses, ranging across World Health Organization (WHO) regions, economic and demographic characteristics. In addition, a series of case studies (17 countries) illustrates trends in policy development related to specialisation and advancement. From these, and the initial quantitative survey, a preliminary series of definitions and a glossary has been formulated in order to seed global debate about advancement of practice and professional understanding across borders.

This report is the most comprehensive collection of data and evidence that relates to practitioner advancement of practice and policy and maps out a wide range of national initiatives worldwide. The intention is that the report will stimulate further reportage and analysis as engagement in this practice continues to progress.

5.2.3 An Australian perspective

An advanced pharmacy practice framework for Australia was developed in 2012. In developing the framework the Steering Committee used the following definition for 'advanced practice':

'Advanced practice is practice that is so significantly different from that achieved at initial registration that it warrants recognition by professional peers and the public of the expertise of the practitioner and the education, training and experience from which that capability was derived.' (APPFSC, 2012)

The document that sets out the framework explains that:

'this APPF is intended to provide a basis for the further development of the profession and of the roles performed. However, it is also hoped it can underpin a process whereby those pharmacists working at an advanced level can gain formal recognition.' (APPFSC, 2012)

5.2.4 A UK perspective

In 2011, an evaluation of frameworks for professional development in pharmacy was undertaken. The evaluation aimed to provide advice to the Modernising Pharmacy Careers (MPC) Programme Board on developing the registered pharmacy workforce across all fields of practice, to allow patients, the public and the NHS to benefit more completely from the important contribution that the pharmacy workforce makes to health, wellbeing and patient safety (Wright and Morgan, 2011).

The report recommended that:

- generalisable professional development frameworks are used for professional development throughout the pharmacy profession;
  the advanced and consultant level framework (ACLF) should form the core of professional development frameworks for later career pharmacy professionals undertaking more advanced and specialist roles;
- a generalisable professional development framework is developed for early career pharmacists, building on what has been learned from the GLF and ACLF, to encompass hospital, community and primary care pharmacy roles. Also that funding should be identified for the ongoing development and maintenance of such frameworks.
- appropriate national organisations should be identified to assume responsibility for the ongoing development and maintenance of the professional development frameworks; and due to the subjective nature of competency, assessment should be of a formative nature for developmental purposes and summative purposes only for regulatory purposes;
- postgraduate qualifications should be used to encourage reflective practice, networking, and support the development of research, leadership and mentoring skills;
- a more formal mentoring structure for post-registration pharmacist/technician development should be introduced and funded to support the utilisation of generalisable professional development frameworks (Wright and Morgan, 2011).

The report also identified several emerging themes for further exploration:

- Could postgraduate multiprofessional deaneries better support the pharmacy workforce?
- Is there a patient safety concern that requires addressing by formal regulation, to allow for an early career pharmacist making the transition to undertake roles with significant potential for patient harm?
- Are there any advanced or enhanced community pharmacist roles, which may require greater regulation than that currently in place? (Wright and Morgan, 2011).

5.2.5 Interdependencies within other areas of HEE policy and work

Advanced clinical practitioners
The key interdependency is with the HEE workstream on advanced clinical practitioners.

There is good linkage from the pharmacy deans into the HEE ACP project, but more detailed work is now required on the practicalities of connecting the RPS advanced pharmacy systems and processes with those emerging for the HEE ACP programme (HEE, 2017d).

Emergency care
HEE and the Royal College of Emergency Medicine published a report in 2017 on the emergency care workforce, which endorsed both advanced clinical pharmacist and pharmacist ACP roles.

The report states:
'Professional groups, such as advanced clinical practitioners, pharmacist clinicians and physician associates are also being developed and supported to take on collaborative, frontline clinical roles in EDs under the supervision and mentorship of consultants in emergency medicine. These groups form an important part of today's emergency care workforce, giving it greater resilience and sustainability.'

ACPs play a vital and increasing role in many EDs [emergency departments] and come from a variety of backgrounds (pharmacists, paramedics, nurses, occupational therapists and physiotherapists).

HEE's national Pharmacists in Emergency Departments (PIED-Eng) study considered the potential for pharmacist prescribers trained in clinical health assessment skills to be deployed in EDs and acute medical units. The study suggested that pharmacists trained in this way may support the multiprofessional ED team with clinical services including:
- *undertaking medicines-focused duties such as pre-discharge medicines optimisation, medicines reconciliation and prescribing*
- *optimising the use of medicines on admission to emergency and acute care*
- *supporting medicine reconciliation pre-discharge of acutely ill patients.*

(HEE, NHS England, NHS Improvement and Royal College of Emergency Medicine, 2017; Hughes et al, 2017).

Cancer workforce plan
The *Cancer workforce plan* (HEE, 2017a) notes that:

'Whilst oncologists and chemotherapy nurses work exclusively in cancer, many of the professions who support patients on their cancer journey are involved in a whole range of different conditions. Historically, we have only paid attention to those professions who are most active in cancer services, such as radiologists, oncologists, radiographers and histopathologists. The limitations with this traditional approach are three-fold: it only provides us with a partial understanding of the workforce through the professional lens rather than the patients' eyes, thereby neglecting the wider workforce across the pathway of care; it does not help us understand how much capacity exists for diagnostic cancer services because this workforce is often shared with other services, nor does it tell us whether that capacity is in the right place to meet demand. More importantly, this approach risks locking us into current models of service delivery, focussing on individual professions rather than how we might prevent, diagnose and treat cancer patients better and faster. We are currently discussing with partners how we might design out these limitations and our initial thinking (which we welcome views on) is that a pathway-based approach might be more useful (recognising that many professions span more than one part of the cancer journey).'

Medicines value programme
The MVP Board has considered pharmacy workforce issues and acknowledges that they are critical to the delivery of the programme.

5.2.6 The case for change - examples of existing best practice

Clinical pharmacists supporting general practice
The *General practice forward view* (GPFV) (NHS England, 2016) outlined the measures that NHS England are taking to develop general practice. The report suggests that a range of healthcare professionals can become an integral part of the general practice team, in much the same way as nurses have and emphasises the inclusion of pharmacists to contribute to patient care (Mann et al, 2018).

University of Nottingham evaluation
The University of Nottingham (funded by NHS England) undertook a one-year evaluation of the initial pilot phase of the 'Clinical pharmacists in GP practices' scheme (Mann et al, 2018).

The evaluation looked at the impact of clinical pharmacists working in general practice. Each of the clinical pharmacists were trained to work at an advanced level through a bespoke training programme.

The report concluded that clinical pharmacists made a unique and valuable contribution to the primary care skill mix. The evaluation showed that pharmacists contribute significantly to patient safety, bring medicines and prescribing expertise, support with prescribing tasks, support for patients with long-term conditions, including support for healthy lifestyles. They have improved knowledge of medicines in the wider clinical team, leading to the prospect of overall improvements in care

related to medicines. The introduction of pharmacists led to increased capacity in GP practices. Although the role requires financial commitment from practices, GPs believe the role to be sustainable, with most wanting to retain the clinical pharmacist they are working with after the funding expires.

The report outlined a number of recommendations concerning workforce development:

- National, widely publicised competencies for the clinical pharmacist role should be developed to aid role development and progression and to facilitate interprofessional trust.
- Competencies should be based on current and future national needs analysis, through ongoing conversation and liaison with key stakeholders.
- The steering group to develop national competencies for the clinical pharmacist role should include those working in primary care (pharmacists, GPs, site leads and other allied health staff) as well as representative bodies (RPS and RCGP) and those responsible for regulating (GPhC) and funding national pharmacy education (Office for Students informed by NHS England).
- Long-term workforce development and training plans should consider the clinical pharmacist role as the third major career choice for pharmacists, alongside hospital and community practice, including due consideration of remuneration.

Investigation into the evolving role and integration of clinical pharmacists in general practice in England

A longitudinal survey was administered to all Phase 1 registrants on the general practice pharmacist training pathway (GPPTP) to determine what roles and activities they were undertaking. The findings showed that there was an expansion in the patient-facing role, but that pharmacists *'may appreciate more GP time invested in their development'* (Bradley et al, 2018).

Inverclyde Health and Social Care Partnership in Scotland cohort study

Between April 2016 and March 2017 a study of 16 urban general practices assessed the benefit of involving clinical pharmacists in providing prescribing support. The conclusions of the study stated, '*specialist clinical pharmacists are safe and effective in supporting GPs and practices with key prescribing activities in order to directly free GP capacity'* (Maskrey et al, 2018).

The potential for pharmacists to manage young patients attending emergency departments

The aim of this study was to determine if emergency department attendees aged from 10 to 25 years (adolescents) could be clinically managed by community pharmacists or hospital pharmacist independent prescribers, with or without further advanced clinical practice training (Terry et al, 2018).

The study concluded that emergency department attendees who were young patients were judged by independent prescriber pharmacists (IPs) to be suitable for clinical management by community pharmacists (CPs) outside a hospital setting in approximately one in 16 admissions, and by a hospital independent prescriber pharmacist (IPT) in one in 20 cases (Terry et al, 2018).

With further training, it was found that the total proportion of cases that could potentially be managed by a pharmacist (CP, IP, or IPT) came to 48 percent. The study concluded that the greatest potential impact for pharmacist management occurs in general medicine and orthopaedics (Terry et al, 2018).

A pilot study of pharmacists working in an advanced role in the urgent care centre (UCC), emergency department (ED)
The aim of this study was to determine if pharmacist advanced clinical practitioner trainees (PACPts) equipped with advanced skills, such as clinical assessment and diagnostic interpretation, are able to manage patients (Ganasan, Khalid and Cholia, 2018).

A total of 1252 patients presented to the UCC during the study period. The PACPt managed 32.7 percent (n = 410) patients under the supervision of the UCC general practitioner (GP) lead. Of these, 72.4 percent were adult and 27.6 percent were paediatric patients (Ganasan, Khalid and Cholia, 2018).

The PACPt were able to manage 82 percent of these patients with their current skillset and required additional skills in 18 percent of cases (Ganasan, Khalid and Cholia, 2018).

Achieving competency as an advanced paediatric and neonatal pharmacist: description of the long-distance web-based course offered at Liverpool John Moores University
This masters continuing professional development course will provide pharmacists with the necessary skills, expertise and knowledge to develop their role in the safe and effective use of medicines in children and neonates and will support the Advanced Level 1 and some Level 2 competencies suggested by the Neonatal and Paediatric Pharmacist Group (NPPG) in the UK (Aragon-Cuevas, 2017).

5.2.7 The case for change - the need for training

How do pharmacists develop into advanced level practitioners?
This study sought to identify views about training provision from trainee advanced clinical practitioners (tACPs), medical and nursing colleagues in urgent care centres (Whyte et al, 2017).

The results demonstrated support for training pharmacists as ACPs to work within urgent care settings. The pharmacists' skills were recognised and valued by the multiprofessional team. Lessons were learned, for example, to ensure an induction is provided that fills identified gaps in the pharmacists' basic skills. It was also felt that once the ACP qualifies, then career planning and support for future progression would be required (Whyte et al, 2017). And this paper described what the authors considered an effective model for managing, educating, and training pharmacist advanced clinical practitioners (ACPs) in the urgent care centre setting (Wright et al, 2018).

Learning from the experiences of critical care pharmacists
The aim of this study was to identify the strategies, barriers and challenges to achieving advanced level practice (ALP) by learning from the experiences of advanced level critical care pharmacists within the UK. The results highlighted that to increase the number of the RPS Faculty Advanced Stage 2 (MFRPSII) Level practitioners within critical care, support for their ALP development is required. This support involves developing face-to-face access to expert critical care pharmacists within a national training programme. Additionally, chief pharmacists need to implement drivers, including in-house mentorship and peer review programmes, as well as align job descriptions and appraisals to the RPS advanced pharmacy framework (Seneviratne, Bradbury and Bourne, 2017).

Advanced level practice education: UK critical care pharmacists' opinions in 2015
National UK standards for critical care highlight the need for clinical pharmacists to practise at an advanced level and above. The aim of this research paper was to describe the views of UK critical care pharmacists on the current provision of ALP education and accreditation (Warin et al, 2016).

While the response rate was low at 40 percent (166/411), the responses highlighted work-based learning as the main resource for developing ALP, as well as a lack of suitable training packages. The vast majority of pharmacists questioned in this research identified that a national or regional training programme was required for ALP. The results also identified the main barriers to undertaking ALP accreditation were lack of time, uncertainty regarding the process and its professional benefits and a lack of education and training opportunities.

In conclusion, the responses clearly indicated that, for the necessary progression of critical care pharmacists to ALP, a national or regional training programme is required.

A survey of the oncology pharmacy workforce and assessment of capability to undertake advanced roles in the cancer setting
An online questionnaire was developed and distributed to the British Oncology Pharmacy Association membership in February 2017. The results showed that the pharmacy oncology workforce has significant capability to undertake advanced roles in oncology on a larger scale. Results of the survey concluded that providers need to include pharmacists as part of their strategic assessment of their systemic anti-cancer therapy (SACT) prescribing models and invest in pharmacy workforce capacity to ensure services are sustainable (Evans, Purcell and Flint, 2017).

A qualitative study of community pharmacists' clinical decision-making skills
The findings of this study suggest that even though community pharmacists are tasked with advising symptom-presenting patients, their poor clinical reasoning skills are preventing them from reaching appropriate diagnoses. In order for community pharmacists to better perform in this role, greater emphasis should be given in teaching and practising clinical reasoning skills during their studies and through continuous professional development. The study is limited by its small sample size (Sinopouloua, Summerfield and Rutter, 2017).

5.3 The future landscape and recommendations

NHS England and HEE have high expectations of the non-medical professional workforce. Upskilling and new roles are key components of the HEE Workforce Transformation Star and Blue Triangle (HEE, 2018d), which integrates education and training of ACPs into the wider clinical workforce, to improve patient care and improve job satisfaction and retention (HEE, 2017c).

Upskilling is defined as being:
'focused on role enhancement; increasing the depth of a job by extending the skills and responsibilities of an existing role to enable practice at the top of one's licence (HEE, 2017c).

Work on new roles is concerned with:
'health and care roles designed to meet a defined workforce requirement, warranting a new job title; the likely ingredients including additionality to the workforce, a formal education and training requirement (whether that be vocational or academic), an agreed scope within the established Career Framework, and national recognition (although not necessarily regulatory) by clinical governing bodies' (HEE, 2017c).

As mentioned earlier, internationally, the International Pharmaceutical Federation (FIP) (FIP, 2015) has advocated the development of advanced and specialist pharmacy roles, underpinned by standardised competencies. The HEE ACP framework demonstrates an overlap with the RPS advanced pharmacy framework (RPS Faculty in partnership with CoDEG, 2013). To date however, the Faculty and its associated professional development frameworks have not attracted the engagement with pharmacists at scale.

Our recommendations support the creation of a framework that meets the system requirements of the NHS and HEE, as well as the professional aspirations of pharmacists. That means that HEE's multiprofessional frameworks should connect,

translate and read across to, the uniprofessional pharmacist frameworks. This could be achieved by mapping the HEE ACP framework to the RPS advanced pharmacy framework and credentialing for the RPS advanced pharmacy framework should be scoped for equivalence with the HEE ACP framework.

The development of such an approach would enable:

- the NHS to capitalise on the experience to date, which suggests that:
  - many pharmacists are keen to develop wider and higher levels of practice and roles post-foundation;
  - robust training programmes can be successful in enabling role development;
  - these roles are effective and are accepted by other members of the healthcare team;
  - there is scope for role development, at scale, across a range of areas of care;
- the avoidance of duplication and divergence in the way professional frameworks are developed;
- uniprofessional and multiprofessional clinical syllabi are required to be developed, to include ACP pharmacist requirements, alongside other non-medical professions;
- pharmacists progressing from foundation to higher levels of practice to receive appropriate direction and support from their employers and from HEE.

5.3.1 Recommendations for reform

In this chapter we have assumed that, once early years development programmes are well established and delivered at scale, pharmacists in the future will arrive at the start of this stage of their professional career with:

- a masters level pharmacy degree; and
- a robust foundation training experience, that includes independent prescriber status, possibly with additional clinical examination skills training (such as the clinically enhanced pharmacist independent prescribing (CEPIP) programme).

The recommendations set out below are based on the following principles:

- The NHS should actively support the development of pharmacists beyond foundation training, towards higher levels of practice and advanced clinical pharmacist status.
- Professional development frameworks should be used to support post-foundation practice. The framework and credentialing process for pharmacists should be consistent with the more general HEE framework for advanced clinical practice.
- There should be wide ownership of the framework by the professional body, the profession, employers, HEE, NHS England and the GPhC.
- HEE processes should enable pharmacists to progress towards advanced practice with appropriate levels of clinical and educational supervision and access to training programmes. Qualifications for ACP should allow for the optimisation of the accreditation/approval of prior experiential/education and learning (APEL) and for the individualisation of training and development to avoid repetition of training. Training should also be multiprofessional.

The recommendations set out below are evidence-based, reflecting the key issues outlined above and the critical factors explained in the case for change.

1. Work with partners to scope credentialing for the RPS advanced pharmacy framework for equivalence with the HEE ACP framework.

2. Continue to work with the ACP programme to develop multi-professional clinical syllabi, to include ACP pharmacist requirements, alongside other non-medical professions.

3. Along with other professions, simplify the terminology for pharmacists operating at higher levels of post-foundation practice and make it consistent, in order to:
   - provide clarity for patients and their carers about the levels of care that can be expected from professionals; provide consistency across the NHS for professionals about the level of practice associated with titles and descriptors;
   - prevent any confusion between ACP and other levels of practice.

4. Work with the proposed UK Pharmacy Postgraduate Training Board (PPTB) to oversee, with HEE's full involvement, the frameworks and processes for higher levels of pharmacy practice.

5. Work with employers ensuring these changes use professional development frameworks and incorporate educational and clinical supervision for individuals on the development pathway.

Chapter 6
Consultant pharmacists

6.1 Overview of existing training landscape

6.1.1 Background and context

In 2005, the Department for Health launched *Guidance for the development of consultant pharmacist posts* (Department of Health, 2005). The intention was that consultant pharmacists would provide patients with access to high level expertise from practitioners leading the profession, through practice, research, and teaching, in their specialist area. It also served as an alternative career pathway, with the aim of retaining professionals with the highest level of clinical expertise in clinical roles.

The importance of clinical leadership and its impact on both patient outcomes and safety has long been recognised (West et al, 2015). Consultant pharmacists have an important role to play in providing clinical leadership in relation to medicines, both within the profession, as well as across the NHS. This has never been more important, given the gaps in health and wellbeing, care and quality and funding and efficiency, identified in the NHS *Five year forward view* (NHS England et al, 2014). There are a number of national and international initiatives striving to improve the use of medicines to deliver improved patient outcomes (NHS England, 2018b; World Health Organization, 2017) and the clinical leadership offered by consultant pharmacists will be integral in delivering these (PJ, 2015).

Since 2005, the post of consultant pharmacist has been recognised and there has been organic growth across England, usually in response to motivated individuals carving a role for themselves, rather than a strategic assessment of the needs of the health economy.

Work carried out in 2018 identified 80 active consultant pharmacist posts in England, although there is no register of posts. The vast majority of consultant pharmacist posts that have been recognised to date have been in secondary care, with a minority employed by clinical commissioning groups (CCGs) or in national roles. Posts are often focused in highly specialist clinical areas, based out of tertiary referral centres, with a limited number of consultant pharmacists working in generalist roles.

The guidance issued in 2005 sets out the level of competency required of a consultant, which is assessed against the advanced and consultant level framework (ACLF) developed by CoDEG (Department of Health, 2005) which has now been adapted to form the Royal Pharmaceutical Society advanced pharmacy framework (APF) (RPS Faculty, with CoDEG, 2013). The APF was comprehensively reviewed as part of the Modernising Pharmacy Careers programme and its continued use was supported (MEE, 2012).

At present assessment of this competency is the responsibility of the interview panel, with no external assessment or credentialing required. This is different to similar roles in other professions and is discussed below. Also, there is no formal or informal support provided for individuals wishing to become consultant pharmacists.

6.1.2 Impact of existing consultant pharmacists

Although, the number of consultants is currently limited, the impact of individuals in the role has been significant. A number of older people consultants have been involved in successful initiatives to reduce hospital admissions and prevent harm from medicines (Fertleman, Barnett and Patel, 2005; Barnett et al, 2016a, and see boxed text below) as well as writing educational and practice support articles (Barnett et al, 2016b). Antimicrobial consultants, have developed mobile applications, evaluated treatments (Biswas et al, 2015; Allen et al, 2011) and developed curricula (Sneddon et al, 2015) contributing to the battle against antimicrobial resistance. A consultant pharmacist is the current chair of the British Society of Antimicrobial Chemotherapy, the first time this post was held by a non-medical professional (PJ, 2018b). Consultant pharmacists have also contributed to international review articles (Kavita et al, 2014; Kusne et al, 2017) and chapters in a number of books.

They have been instrumental in creating national and international professional networks, such as the UK Renal Pharmacy Group, Pharmacy Infection Network, Solid Organ Transplant Pharmacist Association, and the Critical Care Group.

The scale of achievements of existing consultants is impressive and documenting them all is beyond the scope of this document. More information can be found on the Specialist Pharmacy Service consultant pharmacist page (SPS, 2018a).

Examples of the impact of consultant pharmacists

A consultant pharmacist working across two London clinical commissioning groups (CCGs), led a series of clinics for patients with previously poorly treated hypertension (systolic blood pressure (SBP) greater than160 mmHg). Over 1500 patients were followed up, with an average reduction in SBP of 25mmHg, conferring a reduction in the incidence of coronary heart disease and stroke of between 40 and 70 percent. The same consultant pharmacist developed a virtual clinic model for increasing the uptake of anticoagulation in patients with atrial fibrillation (AF). Over a period of five months, more than 1500 patients were reviewed and almost 1300 of them were anticoagulated, which will prevent 45 strokes per annum across both CCGs, preventing the associated morbidity and mortality.

A consultant pharmacist working at a large teaching hospital led and implemented a project that identified patients with a post-discharge medicine need and created a medicines care plan (MCP) to address this need. Over a period of six months, 204 acute older patients were assessed as requiring additional support post-discharge and were provided with a specific MCP. Of the 204 patients, 175 (86 percent) had a clinical need, for example, monitoring, dose titration or medication review. The number of patients with medicines support needs, for example, compliance aids or prompting of medicines, totalled 73 (36 percent). Some patients had both clinical and medicines support needs. There were 285 re-admissions in the project period. Of the 204 MCP patients, 33 (16 percent) were re-admitted, compared with 252 (22 percent) of the 1161 non-MCP patients. None of the medication-related re-admissions in the MCP group could have been predicted. The project is now 'business as usual' on the older people's wards at the trust (Acomb et al, 2013; Smith et al, 2014).

The international perspective

In healthcare systems across the world, the term consultant pharmacist means different things. In the UK it is used as described above, for pharmacists working at the highest level, leading and implementing change. In the USA it refers to a pharmacist providing a medication review service, usually to patients in residential care (American Society of Consultant Pharmacists, 2018) and in Australia the term is used similarly - it refers to an individual credentialed to perform medicines management reviews, either in care homes or the patient's own home (Australian Association of Consultant Pharmacy, 2018). There are no existing reference sources as to how consultant pharmacists, similar to the role described in the UK, are developed in other countries.

Evidence from the HEE workforce consultation (HEE, 2017c)
The British Oncology Pharmacy Association discussed the need to have a robust career framework, from foundation to consultant, with a focus on progression and supporting all professionals to work at the highest level they can. They also highlighted the importance of ensuring that staff have the skills to work across boundaries and that this is evidenced by way of appropriate credentials.

The London Chief Pharmacist Network, which has representation from all London hospitals, CCGs and commissioning support units (CSUs), highlighted the need to grow the consultant workforce significantly in order to deliver the system leadership that is required over the next ten years. They also discussed the need for robust post-registration education to support this development, as well as an appropriate credentialing mechanism at the end.

The Royal Pharmaceutical Society (RPS) mirrored the calls from other groups to develop a robust career framework to enable pharmacists to progress through their career, working towards achieving a consultant pharmacist level credential.

The Consultant Pharmacist Group, representing the vast majority of consultants in England (and the rest of the UK) felt that the clinical career structure needs to be further developed, stating that a robust career framework was required, which has consultant pharmacists embedded into that framework. They also documented the need to have training available to develop consultant pharmacists and asked for parity with other professional groups (nursing, allied health professionals, healthcare scientists) where funded consultant training is available in some regions. It was also noted that consultant pharmacists are required to provide leadership in areas of identified clinical need or unwarranted variation across health economies to ensure equity of provision for patients nationally. Therefore, opportunities are required to support the development of this important workforce. Finally, the importance of consultant pharmacist roles in retaining clinical experience and expertise was highlighted. Without the support to develop consultant pharmacists, pharmacy professionals with the highest level of clinical experience tend to drift into non-clinical roles.

6.1.3 Current finances and funding

HEE currently administers the post approval process on an interim basis. The process is carried out regionally, with the pharmacy dean in each region having responsibility for the oversight of the process. At present, the process is carried out when required but the time commitment is relatively small.

The panels for post approval are convened virtually and on a volunteer basis. There is currently no central administration or record-keeping. Therefore, the costs incurred by HEE relate only to the time commitment of the HEE staff who co-ordinate the approval panels.

Activity	HEE funding / investment	Other sources of funding / investment	Notes
Post approval process	Use of HEE staff to administer/oversee process,	None	Time required to administer post recognition.
Development of future consultant	None	Employers may invest via their own CPD.	No existing arrangement.
Guidance development	Clinical fellow and deans provide support.	Support from a large number of stakeholders.	

6.2 Key issues and challenges

6.2.1 Post approval

A requirement of the guidance issued in 2005 (Department of Health, 2005) is that consultant pharmacist posts had to be recognised by a panel. At the time these panels were convened by strategic health authorities (SHAs). Then, after SHAs were disestablished, HEE inherited this role as an interim arrangement and continues to provide this service (HEE: London and South East Pharmacy, 2018).

In late 2016, work was carried out within HEE to identify a sustainable recognition process for consultant pharmacist posts. A paper submitted to the HEE leadership team in 2016 analysed the options and highlighted the required next steps; however, due to internal staffing changes, other priorities and challenges, no further action was taken and the interim process remains in place.

A number of stakeholder events were held to establish the opinions of service directors, pharmacy leaders, consultant pharmacists and those aspiring to this role. The concept of post approval was tested repeatedly and the feedback was the same; that posts should continue to be approved, the process should be swift and straightforward and it should ensure the level of practice of the individual in the role, as well as the breadth and proposed impact on the health economy.

6.2.2 Credentialing of individuals

As highlighted above, consultant pharmacists are currently appointed with no external validation of their competency. Given the level at which they work, as senior autonomous clinicians and system leaders, this approach carries a risk and is not in keeping with HEE's mission statement of ensuring the quality of all staff in the NHS.

This question has been raised with a number of stakeholder groups and the consensus was the same; individuals wishing to work as a consultant pharmacist should be credentialed as such, against an agreed and established framework, such as the RPS advanced pharmacy framework (RPS with CoDEG, 2013).

The approach to credentialing of consultants across different professional groups varies; for example, all of the clinical scientist professions are credentialed against a set of standards administered by the Academy for Healthcare Science (Academy for Healthcare Science, 2015). This credential is awarded either after completion of an approved academic qualification, or completion of an equivalence process. This lack of a standard approach across various professional groups could be considered a risk to both the profession and the public.

The expectation of consultants in the various professional groups is similar, but the level of assurance provided is markedly different (HEE, 2018a).

6.2.3 Development of consultant pharmacists

In 2015, a celebration event was held to mark the successes of consultant pharmacists, ten years after the launch of the Department of Health guidance. At this event, Dr Keith Ridge, the Chief Pharmaceutical Officer for England, expressed a desire to grow the number of consultant pharmacists to 500-600 (PJ, 2015). At present there are 80 consultant pharmacist posts in England. Dr Ridge stated that: *'Consultant pharmacists will play an increasingly important role in the next phase of the NHS reforms and the health service should aim to increase the number of posts ten-fold over the next few years'.*

Consultant pharmacists are also seen as playing a key role in reducing unwarranted variation in care and outcomes and contributing to the transformation of clinical pharmacy services (NHS England, Office of the Chief Professional Officers [Chief Pharmaceutical Officer], Medical Directorate, 2016) in order to deliver safe and appropriate care to patients, irrespective of clinical setting, or day of the week.

No formal infrastructure currently exists for pharmacists wishing to become a consultant pharmacist. This lack of infrastructure has resulted in organic and limited development of posts, as evidenced by the range of consultant posts in different areas/organisations. A number of trusts have seven or eight consultant pharmacists, while similar size trusts have one or none (HEE, 2018f). Similarly, the range of specialties demonstrated this organic growth; there are 29 different specialties covered by the 80 consultant posts. Common clinical areas like respiratory disease, diabetes and cardiovascular disease, have a very limited number of consultants (fewer than five each) providing services to one or two organisations only – despite the fact that there are millions of patients with these conditions.

Changes are required to support pharmacists throughout their career. They need to be made aware of the required steps to develop to their full potential, and opportunities need to be available to allow them to develop skills across the four pillars of advanced and consultant practice. Consultant pharmacist posts need to be embedded into the workforce with a supported career structure. Succession planning is required to ensure that a suitable workforce is trained to fill future posts.

6.2.4 National guidance

The current consultant pharmacist guidance was issued in 2005 (Department of Health, 2005). While the principles of this document are as pertinent now as they were then, the challenges faced by both the profession and the NHS at large are more complex. New guidance is needed that reflects the current and emerging pressures, and helps tackle the other relevant issues highlighted above.

There has also been variability in the interpretation of some of the recommendations in the original guidance issued in 2005 (Department of Health, 2005). Much of the confusion has been around the definition of expert practice and many stakeholders identified this as a barrier to post creation.

Other developments have also impacted on the understanding of the role of the consultant pharmacist; namely the widespread roles of advanced clinical practitioners (ACPs) and the multiprofessional framework for advanced clinical practice produced by HEE (HEE, 2017d). Although there are similarities in the roles of ACPs and consultant pharmacists, there are also clear differences (HEE, 2017b). Therefore, a clear definition of the consultant pharmacist role is required.

6.3 The case for change

6.3.1 Interdependencies within other areas of HEE policy and work

The ACP programme team has recently started to look at creating an overarching multiprofessional consultant framework. The ongoing work on consultant pharmacists is being fed into this group.

All parts of the reform programme pertaining to pharmacists feed into the consultant pharmacist work. As an aspirational career point for many clinical pharmacists, the standards and requirements set for consultant pharmacists should build on the standards set for all earlier career points.

The Pharmacy Integration Fund (PhIF) is developing and deploying pharmacists in large numbers, in a number of settings including: GP practices; care homes and urgent care settings (NHS England, 2018c). This will result in much more widespread access for patients to clinical pharmacists. However, it will also result in a large number of professionally isolated clinical pharmacists and pharmacy technicians who will need to access high level specialist expertise. Supporting the development of more consultant pharmacists will enable the clinical pharmacy teams to access appropriate expertise when necessary.

Because the PhIF will result in a number of new sectors of work for pharmacy professionals, there is a need to build career progression for these individuals. This is another important factor in creating development opportunities for consultant pharmacists. It is also important to provide robust credentialing and approval mechanisms in order to protect patients and the public, as well as the value of the consultant title.

The Mental Health Programme team are developing strategies to implement the *Mental health five year forward view* (MH5YFV) (HEE, 2017e). One of the ways that has been proposed for pharmacy teams to help to support this is in the creation of more specialist mental health consultant posts (HEE, 2017c).

6.3.2 Gaps in the evidence base

Although there are multiple examples in the literature of the impact of consultant pharmacists, more evidence of the impact of creating posts should be sought. As there is no formal training available for consultant pharmacists, there is no evidence as to the best way to develop individuals for these posts. Any development programmes that are created or commissioned should be evaluated for impact and outcome.

6.4 The future landscape and recommendations

Recommendations for reform

The recommendations set out below are evidence-based, reflecting the key issues outlined above and the critical factors explained in the case for change.

1. Support the development and publication of new guidance that clearly sets out the role and expectation of consultant pharmacists, including working with key stakeholders (RPS, NHSI, NHSE) to create a post approval process that is fit for purpose.

2. Work with partners, including the RPS, to scope the development of a robust credentialing process for consultant pharmacists.

3. Work with stakeholders to consider a development programme suitable for all types of leadership roles, including consultant pharmacists, to widen participation and succession planning into consultant posts.

Chapter 7
Technical services

7.1 Overview of services, workforce and the existing training landscape

Technical services are a specialist area of pharmacy with responsibility for medicines assurance, quality assurance/control, batch-manufacturing, aseptic and extemporaneous dispensing of a wide range of unlicensed (and some licensed) medicines under good manufacturing practice (GMP); some in MHRA-licensed facilities and some under Section 10 exemptions to the Medicines Act, which is subject to the same principles of GMP but is not directly scrutinised by MHRA.

Responsibilities of technical services include:

- Medicines assurance of procured products.
- Batch manufacture and extemporaneous dispensing of non-sterile oral liquid and topical medicines.
- Batch manufacture of terminally sterilised medicines, including injections.
- Aseptic batch manufacture in MHRA-licensed units and aseptic dispensing (preparation) of individual doses of injections including many high-cost and clinically 'high-risk' injections for adults, children and babies, such as intensive care medicines, parenteral nutrition, anti-cancer chemotherapy and monoclonal antibodies, antibiotics, radiopharmaceuticals for diagnosis and treatment.
- Manufacture of investigational medicinal products (IMP).
- Repacking and over-labelling licensed medicines to provide packs ready for issue to patients from clinics and departments without access to an on-site pharmacy service.

All these functions are critical to NHS care and increasingly form an integral part of routine care and treatment pathways. They are facing increasing demand year on year but are almost universally constrained by difficulties with recruitment, training, retention and succession planning.

The workload of batch-manufacturing under MHRA-licensed units is almost entirely planned and scheduled in advance, with lead times from new request to finished product availability measured in days or weeks. However, demand on this service may be less predictable where there are pressures and inconsistencies in supply from the commercial sector. The workload of aseptic preparation (dispensing) the majority of which is in unlicensed, Section 10 units, is led by real-time clinical demand, with lead times from request prescription to finished product availability for patient administration being more often measured in hours rather than in days.

Aseptic manufacture or preparation involves the manipulation of sterile starting materials and components in a controlled environment in such a way that they minimise the risk of contamination while being prepared for presentation in a form suitable for administration to patients. Aseptic manufacturing and preparation

services have a key role to play in minimising patient safety risks, as well as in minimising financial risk to the NHS. The preparation of cytotoxic anticancer chemotherapy doses in pharmacy facilities, the majority of which are injectable medicines, is mandatory to minimise the risks of staff exposure to potentially harmful agents. Radiopharmacy services dispense and supply patent-ready doses of radioactive substances for diagnosis and treatment, most of which are also injectable medicines. NHS pharmacy aseptic compounding services are now critical and integral to the care of many NHS patients.

The knowledge and skills of the pharmacy technical services workforce is also of critical importance to the key role that pharmacy staff will play in future in terms of system leadership. Their role will ensure safe and effective handling and robust system-wide governance of the use of innovative new medicines, such as advanced therapy medicinal products, the first generation of which have just been licensed in the UK.

Following a modernisation programme in 2013 that resulted in capital investment of £46 million, mainly in MHRA-licensed facilities but not in staffing or unlicensed facilities, the tightening NHS financial climate has meant that NHS aseptic capacity has remained static or been reduced. This has led to steadily growing dependence on non-NHS service suppliers for a significant proportion of NHS demand (around 30 percent in 2017/18). Pharmacy technical services are labour and capital intensive, are often mistakenly perceived by many senior managers as ‘expensive’ to run and may therefore be seen as a cost-reduction opportunity. It may be the case that this perception has been reinforced among managers and some pharmacy staff by the emphasis of Lord Carter’s (NHS Employers, 2016) report on clinical pharmacy.

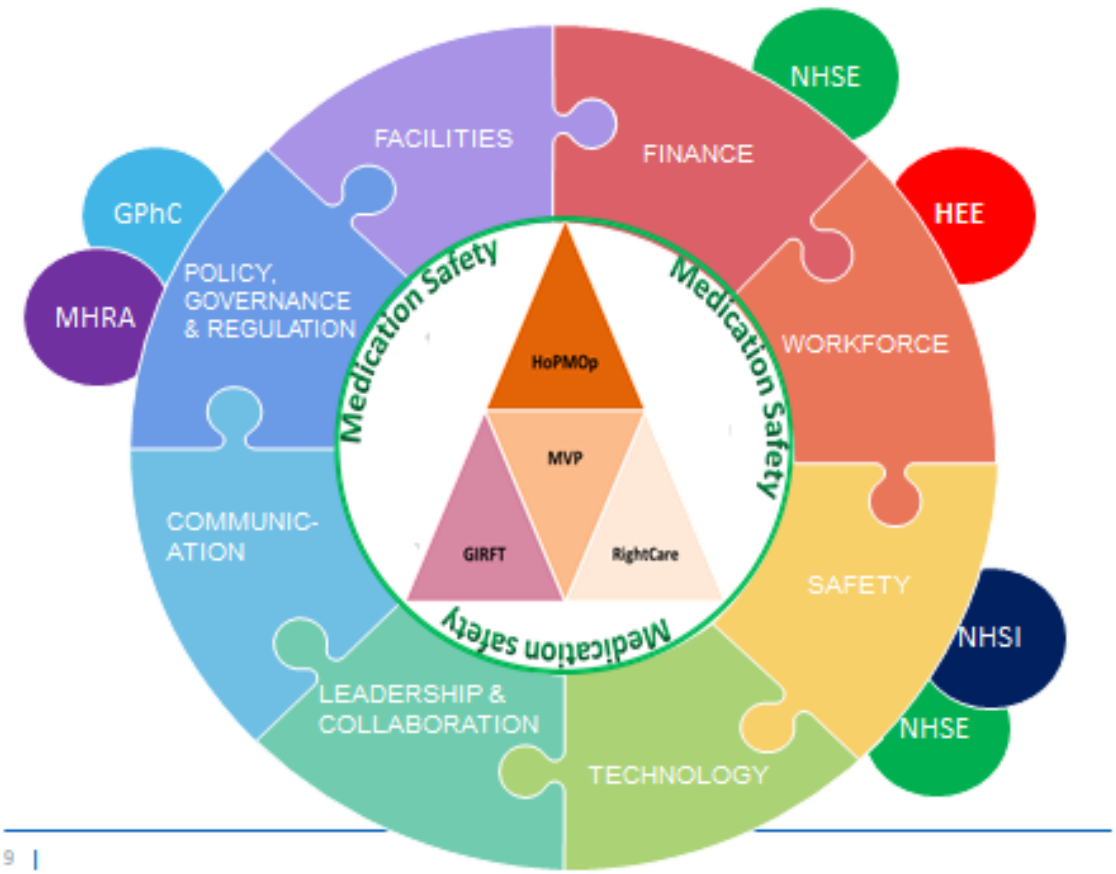
In the last five to ten years, NHS technical service capacity has remained static. In the last two years there has been significant contraction in the non-NHS aseptic service providers’ market, which has reduced the overall sector capacity. These factors, combined with growing demand, mean that all services are now working at capacity, are under very significant pressure, and are faced with a growing unmet demand (estimated to be up to 90 percent of currently used doses of injectable medicines) especially for ready-to-administer doses of high-cost injectable medicines.

In this context in autumn 2017, NHS Improvement commissioned an external review of pharmacy aseptic services in England. The focus of the survey was primarily on NHS services. A full report of the review’s findings has yet to be published but key findings so far made public are that:

- although demand varies by product category, the compound annual two-year growth rate in the number of doses made ranges from 0.9 percent to 6.3 percent;
- there is significant and growing unmet need from the existing NHS medicines inventory, as well new demand from innovative new medicines, pharmaceutical industry development pipelines and clinical trials in the NHS R&D portfolio; all of which represent added complexity, as well as increased numbers of doses needed;
- the rate of loss of qualified persons (*see Section 7.2.6*) from any cause exceeds the rate at which they are being trained;
- at 15-20 percent, average staff turnover is higher than the UK average;

- the vacancy rate for Band 7 is 14 percent. Sixty percent of service managers reported that staffing (rather than space or equipment) limited the service they could provide.
- formally dedicated training periods for junior staff vary from two to seven weeks;
- length of tenure in post is related to seniority: opportunities for career progression within technical services are limited for higher banded posts;
- management of current services is dependent on a disproportionately small cohort of senior, experienced staff;
- senior staff have been in role for an average of 13 years and many are nearing retirement;
- low operating margins for non-NHS units are restricting capital investment and therefore service expansion.

Figure 5: Medication safety stakeholder relationships in the NHS



Source: NHSI, 2018

In the context described above it is essential to the continuity of care of many patient groups that we develop a robust, sustainable and properly resourced strategy for recruitment, training retention and professional development to facilitate career progression for NHS pharmacy technical services staff. When published, the final findings and recommendations of the review will inform the size, skill-mix and training needs of the workforce needed to support pharmacy aseptic services that

are fit for NHS purpose in the future. Figure 5 above explores the connections between the various medication safety stakeholder relationships in the NHS.
It is essential that implementation of the review's recommendations recognises that the workforce in aseptic services is an inseparable part of a larger whole, all of which recruits from the same pool and has the same training and development needs.

7.2 Key issues, challenges and factors

7.2.1 The workforce as a whole

The pharmacy technical services workforce consists of four key staff groups: operational staff; middle managers; senior managers; and pharmaceutical scientists personnel. The staffing levels undertaking these roles vary dependent on licensed status and local variability. Each group of staff has a unique set of knowledge, skills and expertise in formulation that is critical to support informed choice and safe administration of unlicensed medicines and especially of injectable medicines and treatment of vulnerable patients, such as babies and children and all those in intensive care.

For the last 20 years all groups have faced challenges with recruitment, training and retention and succession planning for senior posts.

Good manufacturing practice (GMP) identifies requirements for documented, formal education and training limit the number of rotational and/or trainee staff that services can support.

There is a widely held view that there is restricted access to resources that equip new entrants to the technical services workforce with basic underpinning knowledge.

Staffing models vary with geographical location and, critically, between MHRA-licensed and unlicensed units. Unlicensed units are heavily dependent on registered pharmacy technicians and pharmacists for prescription validation and final release of doses.

7.2.2 Assistant technical officers

Assistant technical officers (ATOs) currently undertake NVQ Level 2 in pharmacy service skills and are trained via internal training programmes, supplemented with training days provided by consortia of NHS trusts or higher education institutions (HEIs).

In 2019, the revised Level 2 Pharmacy Services Assistance Apprenticeship will replace the existing framework. This will require the learner to demonstrate competence in all areas of the apprenticeship framework, which no longer includes technical services areas. This will require a large part of trainees' time to be spent away from technical services in other areas of pharmacy, such as dispensary. Therefore this is no longer a suitable qualification. Other apprenticeship frameworks, from the science manufacturing and healthcare science sectors, are currently being explored by HEE, to identify alternative suitable training pathways.

It is commonly reported that there is a loss of ATOs to other NHS organisations, other NHS pharmacy services, training to become pharmacy technicians or to non-NHS medicines manufacturers/service providers.

7.2.3 Pharmacy technicians

A recent re-development in the GPhC initial education and training for pharmacy technicians has removed the skills requirement for technical services, with baseline knowledge only. This may result in decreased exposure to the services and therefore a reduced number choosing this as a career option. (*see Chapter 1*).

This development may reduce exposure of student pharmacy technicians to technical services and therefore may reduce the number of pharmacy technicians choosing to pursue a career in aseptic services and who are equipped with basic knowledge and skills, possibly removing the current career pathway for first time technical staff. However, units are encouraged to keep these rotations.

Pharmacy technicians are a critical resource in units working without an MHRA licence under Section 10 aseptic units. By developing the role of these registered professionals to take on the role of accredited product approvers means freeing up time for alternative use of pharmacist's expertise. A product approver is an authorised pharmacist or a person who has been approved through a nationally recognised accreditation programme for product approval. There is a risk that proposed changes to initial education and training for pharmacy technicians will severely reduce the numbers of pharmacy technicians interested in or qualified to apply for these posts. Those undertaking higher level roles can access the pharmaceutical technology and quality assurance (PTQA) programme to achieve the PG Cert/Dip/MSc. Changes in the proposed IET will have an impact on these staff. The gap between the pharmacy technician core curriculum and the PTQA programme will widen due to these changes in initial qualification, resulting in fewer pharmacy technicians accessing PTQA.

7.2.4 Early career pharmacists

Pre-registration pharmacist exposure to technical services has been reduced over the past years and often does not feature within their training plans. Reduction in this training means we are deskilling pre-registration and early career pharmacists, as well as reducing the exposure to this area of the profession.

The majority of technical services training for pharmacists is via a local or internal training pathway.

These posts are hard to sustain but are a very important route for recruitment to permanent technical services posts. External recruitment is increasingly rare and the response to external advertisement is generally poor.

At 14 percent the Band 7 vacancy rate is higher than the hospital pharmacy average.

7.2.5 Senior managers

The leadership and quality management of technical services is overseen by a small number of staff, many of whom will retire within the next 10-15 years. There is little advancement opportunity beyond Band 7 and pharmacists (especially) may choose to follow other career pathways.

Development of pharmacists and technicians keen to prepare for management and leadership roles is generally supplemented with an MSc in pharmaceutical technology and quality assurance (PTQA). Access now has to be funded by employers or employees, which leads to variable and sporadic uptake within the NHS and is steadily becoming harder to secure.

This wider issue was highlighted in the Department of Health Modernising Pharmacy Careers programme review (2012), which also had touch-points with the Modernising Scientific Careers programme. The need for a development pathway within technical services was identified, to develop a talent pool for the next generation of leaders. As a result a three-year Scientist Trainee Programme (STp) was made available for clinical pharmaceutical science (CPS). Trainees are co-taught with PTQA trainees; however, they follow a full rotation across technical services specialisms. CPS trainees can be drawn from existing staff (pharmacists, pharmacy technicians or scientists) or new recruits with a science degree, These qualifications also allow those keen to do so to pursue accreditation as qualified persons (QPs) by giving some of the knowledge and experience required. However, there is a significant rate of loss of NHS-trained QPs to the pharmaceutical industry, which offers significantly higher salaries.

Although GMP principles are universal, the NHS technical services environment is fundamentally different from the pharmaceutical industry and salaries are uncompetitive. Successful recruitment by the NHS from the pharmaceutical industry is rare. By contrast, recruitment of NHS-trained staff by non-NHS providers of aseptic compounding services is not uncommon.

7.2.6 Qualified persons

There is a legal requirement for a QP to certify batches of licensed medicinal products or investigational medicinal products and prior to use when manufactured within a MHRA licensed facility. QPs are also used for their expertise in good manufacturing practice and quality (RPS, 2016). There are insufficient QPs in NHS training and those nearing the end of their training are finding it difficult to find sponsors because there are insufficient qualified NHS QPs to take on that role. The knowledge, skills and experience that are needed to achieve QP status are likely to become considerably more important to the NHS in future to support governance and safe use of the latest generation of innovative new medicines, such as biological cell-derived advanced therapy medicinal products, the first of which have recently been licensed in the UK. Many newly qualitied QPs leave the NHS to better paid roles within the commercial sector.

7.2.7 Emerging training and career development pathways

The role of science manufacturing technician (SMT) is currently under development and the first apprenticeships will be available from January 2019. This Level 3 apprenticeship aims to offer a dedicated training pathway for those staff working within technical services (Institute for Apprenticeships, 2018). This dedicated training pathway aims to provide knowledge that more fully relates to the technical services specialty than the previous routes did. However, once qualified, these staff will then not have the skills and knowledge to work elsewhere in hospital pharmacy departments. These staff will also not be registered with the GPhC currently, so will not be able to be accredited product approvers, unless there is a change in guidance.

The STp route needs further review as this has yielded some great expertise, albeit in small numbers. Continuation of funding for this pathway via HEE is critical. Exploration of a further route to higher specialist scientist training (HSST) is also needed to provide specialist oversight to consultant level equivalence.

7.3 The future landscape and recommendations

The report of the NHS Aseptics Review is expected by the end of 2018 and will provide insight into the expected demand for and future structure of NHS technical services.

Recommendations for reform

The recommendations set out below are evidence-based, reflecting the key issues outlined above and the critical factors explained in the case for change.

1. Work with the apprenticeship programme team to explore the science manufacturing technician (SMT) apprenticeship in light of the changes to the initial education and training of pharmacy technicians, while working with stakeholders and partners to increase exposure to technical services within the new qualification for pharmacy technicians.

2. Work with employers to make better use of the wider workforce, such as assistant technical officers (ATOs), through improved training opportunities.

3. Work with employers to increase the number of technical services staff undertaking core (such as Technical Specialist Education and Training Aseptic Processing Programme) and higher level qualifications (such as pharmaceutical technology and quality assurance (PTQA)) to ensure succession planning for senior specialist, quality assurance and QP staff.

Glossary of abbreviations

ACLF	advanced and consultant level framework
ACP	advanced clinical practice
AF	atrial fibrillation
ALP	advanced level practice/practitioner
AfC	agenda for change
APEL	accreditation/approval of prior experiential/education and learning
APF	advanced pharmacy framework
ATMP	advanced therapy medicinal product
ATO	assistant technical officer
BOPA	British Oncology Pharmacy Association
CCA	large chain pharmacy
CCG	clinical commissioning group
CEPIP	clinically enhanced pharmacist independent prescribing
CIVAS	central intravenous additive services
CoDEG	Competency Development and Evaluation Group
CP	community pharmacist
CPhO	Chief Pharmaceutical Officer
CPS	clinical pharmaceutical science
CSU	commissioning support unit
DHSC	Department of Health and Social Care
ED	emergency department
ESR	electronic staff record
FEC	further education college
FIP	International Pharmaceutical Federation
FTE	full time equivalent
FYFV	*Five year forward view*
GLF	general level framework
GMP	good manufacturing practice
GPFV	*General practice forward view*
GPhC	General Pharmaceutical Council
GPPTP	general practice pharmacist training pathway
HEI	higher education institution
HoPMOp	Hospital Pharmacy and Medicines Optimisation Programme
HPTPs	hospital pharmacy transformation plans
HSST	higher specialist scientist training
ICS	integrated care systems
IET	initial education and training
IMP	investigational medicinal products
IP	independent prescriber pharmacist
IPT	hospital independent prescriber pharmacist
IT	information technology
MCP	medicines care plan
MHRA	Medicines and Health products Regulatory Agency
MH5YFV	*Mental health five year forward view*
MPC	Modernising Pharmacy Careers
MVP	Medicines Value Programme

NES	NHS Education for Scotland
NETS	National Education and Training survey
non-CCA	smaller chain and independent pharmacy
PACPt	pharmacist advanced clinical practitioner trainee
PAF	professional attributes framework
PEDC	Pharmacy Education and Development Committee
PQAC	Pharmaceutical QA Committee
PhIF	Pharmacy Integration Fund
PPI	patient and public involvement
PPTB	Pharmacy Postgraduate Training Board
PRPS	pre-registration pharmacist scheme
PTPT	pre-registration trainee pharmacy technician
PTQA	pharmaceutical technology and quality assurance
QP	qualified person
RCGB	Royal College of General Practitioners
RPS	Royal Pharmaceutical Society
SACT	systemic anti-cancer treatment
SHA	strategic health authority
SMT	science manufacturing technician
STp	scientist trainee programme
STP	sustainability and transformation partnership
SBP	systolic blood pressure
tACP	trainee advanced clinical practitioner
TIS	trainee information system
TRAS	trainees requiring additional support
UCC	urgent care centre
WTE	whole time equivalent
WHO	World Health Organization

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